VOC CAPTURE EFFICIENCY TESTS ON COATING LINES NO. 1 AND NO. 2 AND RTO DESTRUCTION EFFICIENCY TESTS

Nailite International, Inc.
Miami-Dade County, Florida

Permit No. 0250407-006-AV

Test Date: March 11-12, 2004
Report Date: April 9, 2004

676-04-01

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Responsible Official Certification:

I certify that, based upon information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate and complete.

John Perry, Vice-President of Operations

Signature

4-20-04

Date:

Copy, Original signed

676-04-01

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To the best of my knowledge, all applicable field and analytical procedures comply with the Florida Department of Environmental Protection requirements and all test data and plant operating data are true and correct.

John B. Koogler, Ph.D., P.E.

State of Florida
Registration No. 12925

04/09/04
Date

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1.0 INTRODUCTION

Koogler & Associates Environmental Services of Gainesville, Florida conducted VOC capture efficiency tests on the No. 1 and No. 2 Paint Lines (EU-001 and EU-004); and VOC destruction efficiency tests on the RTO serving the No. 1 and No. 2 Paint Lines at Nailite International, Inc. (Nailite) in Miami, Dade County, Florida. The testing was conducted during the period March 11-12, 2004.

Nailite is a manufacturing facility producing polypropylene siding and shingles used for architectural and construction applications. The products are manufactured, coated and packaged at the facility for shipping off site. Nailite presently operates under FDEP Air Operating Permit No. 0250407-006-AV issued August 13, 2003.

The No. 1 and No. 2 Production Lines manufacture and coat plastic shingles molded from polypropylene pellets. The No. 1 Line consists of three continuous coating spray booths and a gas fired curing oven. The No. 2 Line consists of three continuous coating spray booths and a curing oven. The coatings used are solvent-based coatings. The No. 1 Line is identified by Permit as Emission Unit 001 and the No. 2 Line as Emission Unit 004. The VOC capture efficiency tests reported herein were conducted on the No. 1 and No. 2 Lines during the period March 11-12, 2004.

The air exhausted from the Spray Booths of Line No. 1 and No. 2 pass through a common regenerative thermal oxidizer (RTO). The RTO uses natural gas as a fuel

to create an operating temperature of 1600-1700°F. The RTO has a design destruction efficiency for VOCs of at least 95 percent. A VOC destruction efficiency test was conducted on the RTO during the test period on March 12, 2004, while both Line No. 1 and No. 2 were operating.

The capture efficiency tests conducted on March 11, 2004 showed EU-001 with a capture efficiency of 74.7 percent. The capture efficiency was calculated using a material balance to determine the VOC release rate (potential to emit) and EPA Method 25A measurements at the inlet of the RTO to determine the VOCs captured. The capture efficiency for EU-001 was determined as a ratio of these two quantities.

The capture efficiency of Line No. 2 was determined on March 11 and 12, 2004. The VOC capture efficiency of this line was 94.9 percent. The method of making this determination was as described for Line No. 1.

The VOC destruction efficiency of the RTO was determined on March 12, 2004 with both Line No. 1 and Line No. 2 operating. The destruction efficiency was determined by simultaneously measuring the mass of VOCs entering the RTO and the mass VOC emission rate from the RTO using EPA Method 25A measurements. The VOC destruction efficiency of the RTO was determined to be 99.18 percent.

2.0 SAMPLING LOCATIONS

RTO Inlet

The inlet to the RTO is a 44-inch diameter duct with two sampling ports located at 90 degrees to one another. The ports are 13.1 diameters downstream and 7.0 diameters upstream of flow disturbance. Gas flow rate measurements and VOC concentration measurements were made through these ports in accordance with EPA Methods 1, 2, 3, 4 and 25A.

RTO Stack

The stack exhausting the RTO is 42 inches in diameter. Two sampling ports are located at 90 degrees to one another in this stack. Gas flow rate measurements and VOC concentration measurements were made through these ports in accordance with EPA Methods 1, 2, 3, 4 and 25A.

3.0 SAMPLING PROCEDURES

EU-001 and EU-004 Capture Efficiency Tests

The VOC capture efficiencies for Line No. 1 and Line No. 2 were determined as required by Permit and Test Protocol (see Appendix). The VOC release rate during each of the three 60-minute test runs on each Line was determined from the VOC content of the coating materials and thinners documented for each of the three test runs. All VOC releases were converted to propane equivalents based on the molecular weight to carbon number ratios of the solvents and propane and on the relative hydrocarbon analyzer response factors for the solvents and propane (see Test Protocol in Appendix). Material Use Records, the VOC content of the coating materials (including thinners) and the MSDS for typical coating materials are all included in the Appendix of this report.

The VOC capture during each of the three test runs of the capture efficiency tests were determined by measuring the mass VOC flow (lb/hr) at the inlet of the RTO. The mass flows of VOCs at the RTO inlet were determined as a function of the total gas flow rates (determined using EPA Methods 1,2,3 and 4) and the VOC concentrations (determined using EPA Method 25A and reported as propane).

All field data sheets and calculations associated with the capture efficiency test measurements are included in the Appendix of this report.

RTO Destruction Efficiency Test

The VOC destruction efficiency test on the RTO was determined with both Line No. 1 (EU-001) and Line No. 2 (EU-004) operating. The VOC destruction efficiency was determined by simultaneously measuring the mass (lb/hr) VOC flow rates at the inlet and outlet of the RTO. Three 60-minute test runs constituted the VOC destruction efficiency test. The VOC concentrations measured at both locations were reported as propane. No conversions were required based on solvent types or response factors as the RTO inlet and outlet measurements were both made using the same methodology and the destruction efficiency is a comparison of the two similar measurements.

The total gas flow rates at the inlet and outlet of the RTO were measured in accordance with EPA Methods 1,2,3 and 4. The VOC concentrations at both locations were simultaneously measured in accordance with EPA Method 25A.

All field data sheets and calculations associated with the VOC destruction efficiency test are included in the Appendix of this report.

4.0 SUMMARY OF RESULTS

EU-001 Capture Efficiency Test

During the VOC capture efficiency test on Line No. 1 (EU-001) on March 11, 2004, typical coatings were being applied at a rate of 38.7 gallons per hour (see Appendix). This resulted in an average of VOC release rate of 192.69 lb/hr (as toluene); based on the VOC content of the coatings and thinners. These data are included in the Appendix of this report for each of the three test runs and the VOC release rates are summarized in Table 1.

The VOC measurements made at the inlet to the RTO are also summarized in Table 1. These data show an average VOC concentration of 1178 ppm (V/V, as propane) in a gas flow of 19,626 standard cubic feet per minute, wet. The gas flow rate is reported on a wet basis as all VOC measurements are made on a wet gas. The mass of VOCs entering the RTO averaged 144.04 lb/hr (as toluene); ranging from 127.56 to 152.65 lb/hr.

The VOC capture efficiency of EU-001 is also reported in Table 1. The capture efficiencies for the three test runs ranged from 68.65 to 78.08 percent and averaged 74.65 percent.

EU-004 Capture Efficiency Test

During the VOC capture efficiency test on Line No. 2 (EU-004) on March 11 and 12, 2004, typical coatings were being applied at a rate of 48.3 gallons per hour (see Appendix). This resulted in an average of VOC release rate of 249.01 lb/hr (as toluene); based on the VOC content of the coatings and thinners. These data are included in the Appendix of this report for each of the three test runs and the VOC release rates are summarized in Table 2.

The VOC measurements made at the inlet to the RTO are also summarized in Table 2. These data show an average VOC concentration of 2382 ppm (V/V, as propane) in a gas flow of 15,927 standard cubic feet per minute, wet. The gas flow rate is reported on a wet basis as all VOC measurements are made on a wet gas. The mass of VOCs entering the RTO averaged 235.67 lb/hr (as toluene); ranging from 209.11 to 284.12 lb/hr.

The VOC capture efficiency of EU-004 is also reported in Table 2. The capture efficiencies for the three test runs ranged from 92.60 to 96.14 percent and averaged 94.91 percent.

VOC Destruction Efficiency Test

The VOC destruction efficiency test on the RTO was conducted on March 12, 2004 with both Line No. 1 (EU-001) and Line No. 2 (EU-004) operating. The destruction efficiency test consisted of three test runs; all 60-minutes in duration.

The Material Use Records, including the VOC content of the coatings and thinners are included in the Appendix of this report. The average coating use during the test period averaged 95.4 gallons per hour (Line No. 1 plus Line No. 2).

The VOC destruction efficiency of the RTO was determined by simultaneously measuring the mass of VOCs (lb/hr) at the inlet and outlet of the RTO in accordance with EPA Method 25A. These data are summarized in Table 3. The VOC concentration at the inlet of the RTO averaged 3499 ppm; reported on a volume basis as propane. The VOC mass rate averaged 555 lb/hr; reported as propane.

At the outlet of the RTO, the VOC concentrations and mass rates were consistent for all three test runs. The VOC concentration averaged 26.2 ppm (V/V, as propane) and the mass emission rate averaged 4.48 lb/hr.

The VOC destruction efficiency of the RTO is also summarized in Table 3. These data demonstrate a VOC destruction efficiency of 99.18 percent with destruction efficiencies ranging from 98.93 percent to 99.45 percent.

Visible emissions observations were conducted on the RTO stack for two 30-minute periods during destruction efficiency Test Runs 1 and 2. There were no visible emissions observed.

The test results of March 11 and 12, 2004 demonstrate that the RTO destruction efficiency is much greater than the design efficiency of 95 percent.

Table 1

Emissons Collection System Capture Efficiency Test

Nailite International, Inc. Miami, Florida Paint Line No. 1 VOC Release Data March 11, 2004				
	VOC Release (lb/hr) (1)			
Run No.	Booth 1	Booth 2	Overspray Recovery	VOC (2) Release
1	95.78	95.78	5.73	185.82
2	101.09	101.09	7.64	194.55
3	103.62	103.62	9.55	197.68
average>>	100.16	100.16	7.64	192.69

(1) Calculated from VOC content of paint and thinners used; see Appendix.

(2) As Toluene (see Appendix)

Emissons Collection System Capture Efficiency Test Nailite International, Inc. Miami, Florida							
Run No.	RTO Inlet Conditions			VOC Captured(4)			Capture Efficiency(7)
	Temp.	Moisture	Flow(3)	As Propane		As Toluene (5)	
	(F)	(%)	(scfm)	(ppm)	(lb/Hr)	(lb/Hr)	(%)
1	77	2.0	18966	1081	140.54	127.56	68.65
2	80	2.0	19953	1223	167.36	151.91	78.08
3	80	2.0	19960	1229	168.17	152.65	77.22
average>	79	2.0	19626	1178	158.69	144.04	74.65

(3) Standard cubic feet per minute, wet basis

(4) VOC maesured at RTO inlet; expressed as propane

(5) lb/hr as Toluene = $\frac{\text{(lb/hr as Propane) x (MW toluene/toluene carbon number)}}{\text{(MW propane/propane carbon number)}} \times Rf_t$ (6)

(6) See Response Factor determination in Appendix = 7/6.91

(7) (VOC capture)/(VOC released); all VOC expressed as propane

Table 2

Emissons Collection System Capture Efficiency Test

Nailite International, Inc. Miami, Florida Paint Line No. 2 VOC Release Data March 11-12, 2004				
	VOC Release (lb/hr) (1)			
Run No.	Booth 1	Booth 2	Overspray Recovery	VOC (2) Release
1	113.93	108.75	0.00	222.68
2	108.75	108.75	0.00	217.50
3	164.04	153.46	10.67	306.83
average>	128.91	123.65	3.56	249.01

(1) Calculated from VOC content of paint and thinners used; see Appendix.

(2) As Toluene (see Appendix)

Emissons Collection System Capture Efficiency Test Nailite International, Inc. Miami, Florida							
Run No.	RTO Inlet Conditions			VOC Captured (6)			Capture Efficiency(7)
	Temp.	Moisture	Flow(3)	As Propane		As Toluene(5)	
	(F)	(%)	(scfm)	(ppm)	(lb/Hr)	(lb/Hr)	(%)
1	89	2.0	16266	2112	235.52	213.77	96.00
2	89	2.0	15892	2114	230.38	209.11	96.14
3	88	2.0	15625	2922	313.02	284.12	92.60
average>	89	2.0	15927	2382	259.64	235.67	94.91

(3) Standard cubic feet per minute, wet basis

(4) VOC measured at RTO inlet; expressed as propane

(5) lb/hr as Toluene = $\frac{\text{(lb/hr as Propane) x (MW toluene/toluene carbon number)}}{\text{(MW propane/propane carbon number)}} \times Rf_t$ (6)

(6) See Response Factor determination in Appendix = 7/6.91

(7) (VOC capture)/(VOC released); all VOC expressed as propane

Table 3

RTO Destruction Efficiency Test
(Paint Lines 1 and 2)

Nailite International, Inc. Miami, Florida RTO Destruction Efficiency Test March 12, 2004									
Run No.	RTO Inlet				RTO Outlet				VOC Destruction Efficiency(2)
	Temp.	Flow (1)	Total Hydrocarbon as Propane		Temp.	Flow (1)	Total Hydrocarbon as Propane		
	(F°)	(scfm)	(ppm)	(lb/Hr)	(F°)	(scfm)	(ppm)	(lb/Hr)	(%)
1	90.3	23962	3086	507	193	25282	23.9	4.15	99.18
2	92.4	23226	3467	552	221	25257	34.2	5.92	98.93
3	92.3	22420	3943	606	261	23962	20.4	3.36	99.45
average	91.7	23203	3499	555	225	24834	26.2	4.48	99.18

(1) Standard cubic feet per minute; wet basis
(2) Based on hydrocarbon masses at RTO inlet and outlet.

Appendix

Test Protocol
Hydrocarbon Response Factor Data
General Plant Information

Line No. 1 Capture Efficiency Tests
- Calculations
- Field Data Sheets
- Plant Operating Logs

Line No. 2 Capture Efficiency Tests
- Calculations
- Field Data Sheets
- Plant Operating Logs

RTO Destruction Efficiency Tests
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  - Gas Flow Outlet
  - THC Monitoring Data
- Field Data Sheets
- Plant Operating Logs

Visible Emissions Observations
- Calculations
- Field Data Sheets
- Observer Certification

Typical MSDS For Coatings

Calibration Gas Certifications

Project Participants

Test Protocol

DRAFT

TEST PROTOCOL
FOR
VOC CAPTURE EFFICIENCY
AND
VOC DESTRUCTION EFFICIENCY
TESTS

NAILITE INTERNATIONAL, INC.
Miami, Florida

January 15, 2003

1.0 INTRODUCTION

Measurements are scheduled for the week of January 20, 2003 at Nailite International, Inc. (Nailite) in Miami, Dade County, Florida, to determine the VOC Capture Efficiency of two spray coating lines, and the destruction efficiency of a Regenerative Thermal Oxidizer (RTO) controlling VOC emissions from the two spray coating lines. The test protocol for these measurements is set forth herein. Nailite manufactures and coats polypropylene siding used for architectural and consumer applications. The facility is permitted by FDEP Permit NO. 0250407-004-AV.

The spray coating operations consist of two spray coating lines. The No. 1 Line includes three continuous spray coating spray booths and an electric curing oven. The No. 2 Line consists of three continuous spray coating booths and a curing oven. Emissions from both coating lines are captured by an air pollution control system consisting of an RTO with a designed destruction efficiency for VOC of 95 percent.

The coatings used by Nailite are solvent-based color coatings. The primary solvent in the coatings is toluene and the primary solvent used for cutting the coatings is toluene. During the test period, the week of January 20, 2003, representative coatings will be used in the No. 1 and No. 2 Lines. These coatings will be applied at 90-100 percent of permitted rates; or 31-35 gallons per hour per Line. The MSDS of each coating will be included in the test report, as will the MSDS of any blended solvent. MSDS will not be provided for pure solvents such as toluene and xylene.

Per Nailite, the above numbers sound completely valid and very realistic for the systems that were in place at the time of the testing. However, now with advent of the line improvements, transfer efficiency increases, and, more importantly, high solids coatings, the maximum flow rates of coatings has changed. This is due to the fact that the high solids paint is more "concentrated" than its lower solid equivalent, containing less solvent and more paint. Basically for every gallon of coating applied, the solvent content is substantially less and the "paint" content is substantially more per volume than with the equivalent lower solids version of the coating. To illustrate, assume a 20 percent solids coating that got converted to a 30 percent solids coating. The remainder of the coating can be assumed to be solvent that serves primarily as a carrier for the solids. The increase in this case would allow the same amount of product to be painted with one third less paint because the solids portion of the paint has been increased.

Nailite is not limited by the ability to apply the proper volume of coating but rather by other factors such as conveyor speed limitations, drying limitations, and handing limitations. Mechanical limitations and handling logistics limit the second line to maximum of about 33-36 feet per minute. The spray is adjusted accordingly .The rate of spray at this maximum line rate is approximately 115 ounces/minute, 0.9 gallons/minute, which equates to approximately 54 gallons per hour of applied coating. Line 1 typically runs at a maximum rate of about 30 feet per minute but is not as efficient mechanically, and therefore often uses a similar amount of coating.

The VOC concentration measurements required during the test period will be conducted in accordance with EPA Method 25A as described in 40 CFR 60, Appendix A. The FID instruments used for the EPA Method 25A measurements will be calibrated using propane standards. The response of the analyzers to toluene will be determined either from published data or from the response of the instruments to the introduction of a toluene standard. Gas flow rate measurements, where required, will be made in

accordance with EPA Methods 1, 2, and 3 (40 CFR 60, Appendix A). The moisture content of gas streams, where required, will be measured using wet-bulb/dry-bulb psychrometry.

As the primary solvent used by Nailite is toluene (C_7H_8) and the hydrocarbon concentration measurements made in gas streams will be made with instruments calibrated with propane (C_3H_8), mathematical adjustments will be made to the measured hydrocarbon concentrations associated with the collection efficiency tests so that both the hydrocarbons released during coating application and the hydrocarbons captured and measured at the RTO inlet will be reported on a toluene basis. The correction will be as follows:

- Propane (Instrument Calibration Gas)
  - Formula - C_3H_8
  - Formula Wt. - 44 lb/lb - mol.
  - Formula wt./Carbon - 44/3
  - - 14.67
- Toluene (Solvent Released by Spray Coating)
  - Formula - C_7H_8
  - Formula Wt. - 92 lb/lb - mol.
  - Formula wt./Carbon - 92/7
  - - 13.14

- The FID used for the Method 25A measurements responds to carbon atoms. As the FID is calibrated with propane, the relative mass of hydrocarbons represented by each carbon atom measured by the FID is 14.67.

- The primary solvent used by Nailite is toluene and the relative mass of toluene associated with each carbon atom is 13.14.

- The relative FID response to toluene will be near 7.0 (the number of carbon atoms in a toluene molecule). This response factor will be determined for the instruments used, either from published data or from the measured instrument response to a toluene standard. For this protocol, the response factor will be denoted as ***rf***.

- The ideal analyzer relative response to toluene is 7.0.

- To correct the mass of hydrocarbons measured by EPA Method 25A (at the RTO inlet) to a toluene equivalent and to correct for the analyzer toluene response factor, the hydrocarbon mass determined by EPA Method 25A will be multiplied by the factor 13.14/14.67, (or 0.896) and by the factor 7.0/***rf***.

- For the capture efficiency tests, these corrections will assure that the solvent released (primarily toluene) and the hydrocarbons measured by EPA Method 25A at the RTO inlet are both reported on the same basis; a toluene basis.

The corrections described above are not necessary for the RTO destruction efficiency tests as the hydrocarbons will be measured simultaneously at the inlet and outlet of the RTO using Method

25A; in other words, the hydrocarbons will be directly measured on an equivalent basis at the inlet and outlet locations and the RTO destruction efficiency will be calculated from these measurements.

2.0 CAPTURE EFFICIENCY TESTS

During the spray application of coating materials and the subsequent drying of the coating materials, the solvents contained in the coating are released. For purposes of the testing described herein, it will be assumed that 100 percent of the solvents in the coating material will be released during the application and drying processes. This includes both the solvent originally in the coating and any solvent added to the coating prior to application.

The hydrocarbon capture efficiency of Lines 1 and 2 will be reported as a ratio of the hydrocarbons captured by the collection system and vented to the RTO to the total hydrocarbons (solvents) released during the test period. As stated previously, for the capture efficiency tests, the solvent release rate and the measure of the hydrocarbons captured and measured at the inlet of the RTO will both be reported on a toluene basis.

2.1 RTO Inlet Measurements

During the capture efficiency tests on Lines 1 and 2, Nailite will use representative coating materials and the coatings will be applied at 90-100 percent of the permitted rate for each Line. On each Line, three replicate capture efficiency tests will be conducted. Each test run will be one hour in duration and will consist of simultaneous measurements of the hydrocarbons captured and delivered to the RTO and measurements of solvent release.

The hydrocarbons captured and delivered to the RTO will be measured in accordance with EPA Method 25A in the duct at the inlet to the RTO. Hydrocarbon concentration measurements will be corrected to a toluene basis and will be corrected for the analyzer response factor to toluene. The air flow rate will be measured in accordance with EPA Methods 1-3 and the moisture in the gas stream will be measured using wet-bulb/dry-bulb psychrometry.

During the capture efficiency tests on Line No. 1, Line No. 2 will not operate and conversely, during the capture efficiency tests on Line No. 2, Line No. 1 will not operate.

The mass of hydrocarbons delivered to the RTO for each of the three test runs on Line No. 1 and each of the three test runs on Line No. 2 will be calculated on a mass basis and expressed as pounds per hour of toluene.

2.2 Solvent Release Measurements

During each of the three one-hour test runs on Line No. 1 and Line No. 2, Nailite personnel will accurately measure coating use and solvent use. The coating use and solvent use will be reported for each test run, including the type of coating, the solvent content of the coating, the type of solvent in the coating, and the quantity and type of any solvent used to cut the coating. It will be assumed that all solvent in the coating and all solvent used for cutting during each test run is released and is subject to capture. The quantity of solvent used/released during each of the three test runs on Line No. 1 and Line No. 2 will be reported on a toluene basis and expressed as pounds per hour of toluene.

Thanks for faxing the proposed test protocols. I have the following comments:

1. In addition to the 0.896 factor, a correction must also be made for the FIA's toluene response factor, determined from freshly prepared and known toluene samples, or obtained from the analyzer manufacturer's published values.
2. The permit requires that the tests be conducted "at permitted capacity" defined as 90-100 percent of the maximum operation rate allowed by the permit. Theorectically, I suppose, this would be a coating application rate of 90-100 percent of 300,000/8760 = 31-35 gph per line. For the 2001 tests, they used a little over 36 gph, and in 2002, looks like around 30 or so on average. Would be best to stay above 31 per line for the 2003 tests. 3. For the destruction tests, be sure that both lines are running simultaneously, each at "permitted capacity."

Thanks again for this opportunity to comment.

John Reynolds DEP-Bureau of Air Regulation

Ray - DERM

Propane lb/hr (.896)(7/6.91)

1.013

0.908

Hydrocarbon Response Factor Data

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Response Factors for Flame Ionization Detectors

Table 1 Effective Carbon Numbers for Elements Associated with Chemical Groups

Type Atom	ECN (Effective Carbon Number) Contribution	Reference
Aliphatic Carbon	1.0	3
Aromatic Carbon	1.0	3
Carbonyl Carbon	0.0	3
Carboxyl Carbon	0.0	3
Ether Oxygen	-1.0	3
Primary Alcohol Oxygen	-0.5, -0.6	3,4

Table 2 Measured and Empirical Effective Carbon Numbers

Compound	Measured ECN	Reference	Empirical ECN	Reference
Acetic Acid			1.0	3
Acetone	2.06, 2.00, 2.00	5,4,5	2.0, 2.0	1,3
Benzene	6	4		
Butanol	3.02, 2.97	7,8	3.0, 3.0	1,3
Ethanol	1.70, 1.49	5,6	1.55, 1.50	1,3
MEK	3.16, 3.31, 3.27	1,3	3.0, 3.0	1,3
Methane	1.02	4		
Methanol	0.75, 0.75	4,5	0.55, 0.5	1,3
MIBK			5	3
Phenol	5.21	2		
Propane	3.0	4		
Toluene	6.91	4		

Estimation of Response Factors

(1) For the purposes of this document **Response Factor**, RF, will be defined as (Instrument ppm as Carbon)/(Actual ppm as Carbon).

Example: If 100 ppm of methanol responds or reads as 75 ppm at the instrument, the Response Factor for that compound, for that instrument = (75/100) * 100 = 75%.

(2) ECNs, effective carbon numbers, are a means by which one can estimate the response of a compound in a flame ionization detector (which has been calibrated with a straight-chain hydrocarbon or alkane, such as methane or propane). Empirical ECNs are based on values similar to those in Table 1.

(3) RFs, response factors, may be calculated from ECNs as follows:
RF = (ECN/No. carbon atoms in compound) * 100

Example: For Butanol the empirical ECN is 3.0 and the number of carbon atoms is 4. The response factor then is (3/4) * 100 = 75%. Thus, if you have 25 ppm of butanol in a certified bottled gas, which is 100 ppm butanol expressed as carbon, theoretically an analyzer calibrated with methane would read 75 ppm. (Note that an analyzer calibrated with propane would not read 75 ppm, but would read 25 ppm as propane).

Butanol has the formula CH3-CH2-CH2-CHO. The first three carbons are aliphatic carbons and each has an ECN of 1.0 (see Table 1). The fourth carbon, a carbonyl carbon, does not respond in a FID and has an ECN of 0.0 (see Table 1). The total ECN for the compound is 1+1+1+0 = 3. Note that the carbonyl group affects only the one carbon atom that is associated with that group.

(4) Ethanol has the formula CH3-CH2OH. Ethanol, like methanol, is a primary alcohol. Table 1 provides an ECN of either –0.5 or –0.6 for an oxygen atom associated with a primary alcohol group. Using the value of –0.5, the ECN for Ethanol is 1+(1-0.5) = 1 + 0.5 = 1.5. Note the empirical and measured ECNs for ethanol are not equal (see Table 2). The discrepancy between empirical and measured ECNs for methanol is even greater.

The estimated response factor for ethanol would be approximately (1.5/2) * 100 = 75% (see equation in step (3) above). Ethanol at 50 ppm (expressed as ethanol or some other two carbon compound) is 100 ppm expressed as carbon. If a 50 ppm ethanol standard gas were tested on an FID calibrated with methane, the measured value would be approximately 75 ppm.

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This paper was written by David Word, Program Manager, NCASI, Gainesville, FL. (352) 377-4708. This paper has not been published. It was written simply to provide assistance to NCASI member companies.

File = ECN_RF.doc

General Plant Information

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

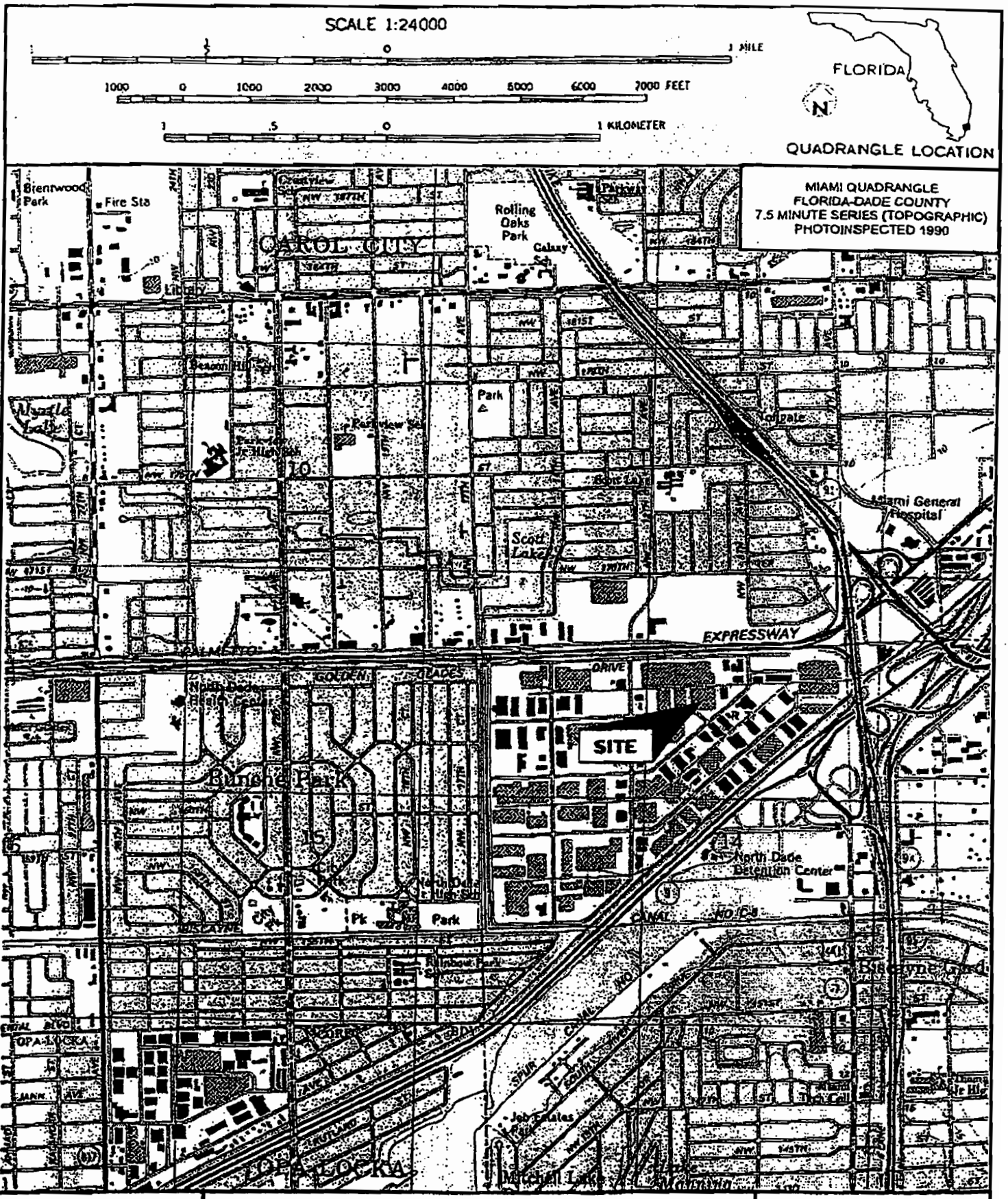


FIGURE 1

USGS TOPOGRAPHIC MAP & SITE LOCATION MAP
FORMER NAILITE INTERNATIONAL
1111 N.W. 165th STREET
MIAMI, FLORIDA

CRB

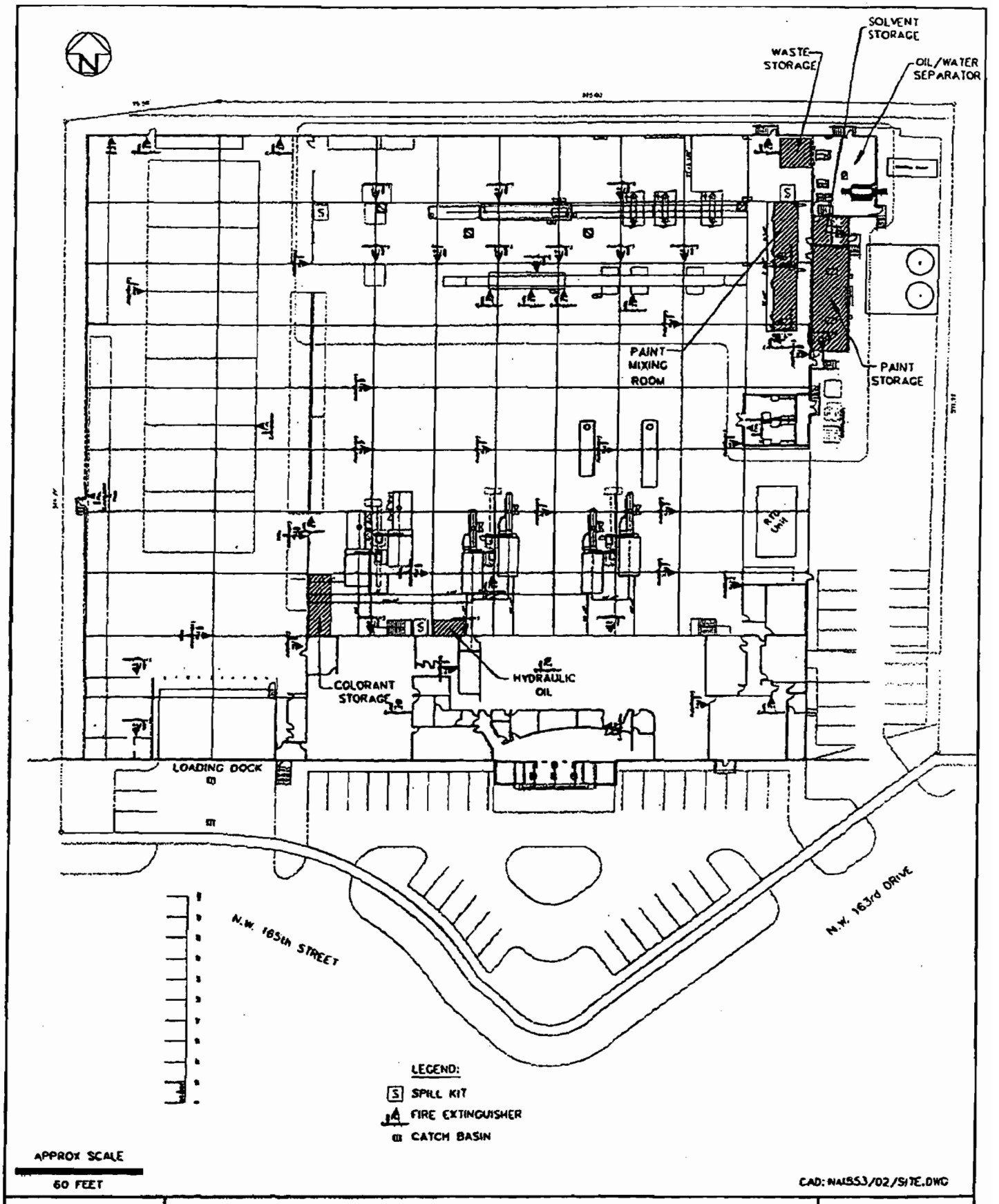


FIGURE 2

FACILITY LAYOUT
NAILITE INTERNATIONAL
1111 N.W. 165th STREET
MIAMI, FLORIDA

CRB

MARCH 4, 2002

RTO Design Specifications

5/5

JOB 2317-NAILITE INTERNATIONAL

SECTION 3

DESIGN DATA & PERFORMANCE TESTING

THE PERFORMANCE GUARANTEE IS BASED ON THE FOLLOWING PROCESS CONDITIONS:

3.0 Design Data	Measurement
• Maximum process air flow, SCFM	27,000
• Minimum process air flow, SCFM	9,000
• Maximum process temperature, °F	80
• Minimum process temperature, °F	60
• Maximum solvent concentration, #/Hr	366
• Minimum solvent concentration, #/Hr	123
• Maximum pressure at inlet of oxidizer, "w.c.	14
• Electrical power requirement for main control panel, CP-101 (380 VAC/3 phase/60 Hz), Amps	23
• Electrical power requirement for main process fan (460 VAC./3 phase/60 Hz), Amps	150
• Heat recovery efficiency, %	95
• Hydrocarbon destruction efficiency (to lower limit of 20 ppm of C^1), %	98
• Compressed air requirements @ 90 psig, SCFH	280
• Natural gas requirement @ 5 psig, SCFH	7,150

NOTE: *The compressed air requirement above is an hourly average based on one stroke of the inlet and outlet poppet valves at 4 minute intervals.*

Line No. 1 Capture Efficiency Tests

Calculations

Company: Nailite International
Source: No. 1 Paint Line (Capture)

Location: Miami, FL
Date: 11-Mar-04

pts-> 12
Sqrt.Dp= 0.5320

T(s)= 77.42

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.22	77
2	0.31	77
3	0.34	78
4	0.33	78
5	0.24	78
6	0.26	78
7	0.21	77
8	0.32	77
9	0.33	77
10	0.34	78
11	0.28	77
12	0.24	77
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.38	in Hg
Ps =	-1.8	in H2O
%O2 =	19	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	1080.6	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: No. 1 Paint Line (Capture) | Date: 38057

vs =	30.14	FT/SEC	As =	10.5592	ft^2
Q =	19095	acfm -	not corrected		
Q(stnd) =	18586	dscfm -	both temperature and moisture corrected		
Q(moist)=	18918	dcfm -	only moisture corrected		
Q(temp) =	18966	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) =	#VALUE!		Bws =	#VALUE!	| Lower Bws
Vw(Std) =	#VALUE!	Bws @sat =		0.030919	| Value used
		Percent Moist =		2.00	

Emission Rates:	CO =	#VALUE!	lb/hr	
	NOx =	#VALUE!	lb/hr	as NO2
	SO2 =	#VALUE!	lb/hr	
	THC =	140.8411	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks

or

As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: No. 1 Paint Line (Capture)
Run 2

points-> 12

Sqrt.Dp= 0.5612

T(s)= 79.92

Location: Miami, FL
Date: 11-Mar-04

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.27	79
2	0.32	80
3	0.36	80
4	0.35	80
5	0.29	80
6	0.24	79
7	0.26	80
8	0.37	80
9	0.38	80
10	0.36	81
11	0.33	80
12	0.27	80
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.38	in Hg
Ps =	-1.8	in H2O
%O2 =	19.5	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	1223.2	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International Location: Miami, FL
Source: No. 1 Paint Line (Capture) Date: 38057
Run 2

vs =	31.86	FT/SEC		As = 10.5592	ft^2
Q =	20183	acfm -	not corrected		
Q(stnd) =	19554	dscfm -	both temperature and moisture corrected		
Q(moist)=	19996	dcfm -	only moisture corrected		
Q(temp) =	19953	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! Bws @sat = 0.034128 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	167.7281	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: No. 1 Paint Line (Capture)
Run 3

Location: Miami, FL
Date: 11-Mar-04

pts-> 12

Sqrt.Dp= 0.5612

T(s)= 79.92

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.27	79
2	0.32	80
3	0.36	80
4	0.35	80
5	0.29	80
6	0.24	79
7	0.26	80
8	0.37	80
9	0.38	80
10	0.36	81
11	0.33	80
12	0.27	80
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.38	in Hg
Ps =	-1.8	in H2O
%O2 =	19	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	1228.7	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: No. 1 Paint Line (Capture) | Date: 38057
Run 3

vs =	31.87	FT/SEC		As = 10.5592	ft^2
Q =	20189	acfm -	not corrected		
Q(stnd) =	19561	dscfm -	both temperature and moisture corrected		
Q(moist)=	20002	dcfm -	only moisture corrected		
Q(temp) =	19960	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! | Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! | Bws @sat = 0.034128 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	168.5401	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

EPA Protocol Gas Analyzer Calibration Data
THC Concentration Instrument Range Setting (0 - 10,000 ppm as Propane)
March 11, 2004

Calibration Gas	Conc. (ppmv)	Run No.	Date/Time	Response through Train System Loop (ppmv)	Drift (% of Range)	Accuracy Diff. from Actual (% of Range)
Zero	0.0	R1-Pre	3/11/2004 7:30	0.00		0.00
Zero	0.0	R1-Post	3/11/2004 9:24	7.47	0.07	0.07
Propane	1020	R1-Pre	3/11/2004 7:40	1071		0.51
Propane	1020	R1-Post	3/11/2004 9:25	1054	-0.17	0.34
Propane	3010	R1-Pre	3/11/2004 7:37	2979		-0.31
Propane	8504	R1-Pre	3/11/2004 7:33	8517		0.13
Zero	0.0	R2-Pre	3/11/2004 9:24	7.47		0.07
Zero	0.0	R2-Post	3/11/2004 11:08	2.49	-0.05	0.02
Propane	1020	R2-Pre	3/11/2004 9:25	1054		0.34
Propane	1020	R2-Post	3/11/2004 11:10	1049	-0.05	0.29
Zero	0.0	R3-Pre	3/11/2004 11:08	2.49		0.02
Zero	0.0	R3-Post	3/11/2004 12:47	4.98	0.02	0.05
Propane	1020	R3-Pre	3/11/2004 11:10	1049		0.29
Propane	1020	R3-Post	3/11/2004 12:49	1031	-0.17	0.11
Zero	0.0	R1-Pre*	3/11/2004 7:30	0.00		0.00
Zero	0.0	R3-Post	3/11/2004 12:47	4.98	0.05	0.05
Propane	1020	R1-Pre*	3/11/2004 7:40	1071		0.51
Propane	1020	R3-Post	3/11/2004 12:49	1031	-0.40	0.11
Propane	3010	R1-Pre*	3/11/2004 7:37	2979		-0.31
Propane	3010	R3-Post	3/11/2004 12:52	2920	-0.60	-0.90
Propane	8504	R1-Pre*	3/11/2004 7:33	8517		0.13
Propane	8504	R3-Post	3/11/2004 12:55	8567	0.50	0.63

Range Setting (0 - 10,000 ppm as Propane)

Cal. Gas ppm	% of Range
1020	10.20
3010	30.10
8504	85.04

Nailite Corp.
Miami, Florida

Painting Line No. 1 Fume Capture Efficiency

TimeStamp	THC			
3/11/2004 7:25	254.1			
3/11/2004 7:26	89.7			
3/11/2004 7:27	109.6			
3/11/2004 7:28	5.0			
3/11/2004 7:29	0.0	<<Zero air		
3/11/2004 7:30	0.0		THC	
3/11/2004 7:31	4673.5		0.00	<average
3/11/2004 7:32	8514.9	High-gas 8504 ppm Propane		
3/11/2004 7:33	8519.9	8517		<average
3/11/2004 7:34	7648.0			
3/11/2004 7:35	2984.5			
3/11/2004 7:36	2979.5	Mid-gas 3010 ppm Propane		
3/11/2004 7:37	2979.5	2979		<average
3/11/2004 7:38	2197.2			
3/11/2004 7:39	1071.2			
3/11/2004 7:40	1071.2	Low-gas 1020 ppm Propane		
3/11/2004 7:41	1071.2	1071		<average
3/11/2004 7:42	528.1			
3/11/2004 7:43	174.4			
3/11/2004 7:44	254.1			
3/11/2004 7:45	149.5			
3/11/2004 7:46	264.1			
3/11/2004 7:47	109.6			
3/11/2004 7:48	104.6			
3/11/2004 7:49	94.7			
3/11/2004 7:50	79.7			
3/11/2004 8:15	1091.1			
3/11/2004 8:16	1121.0			
3/11/2004 8:17	1116.1			
3/11/2004 8:18	1101.1			
3/11/2004 8:19	1106.1	<<Start Run 1		
3/11/2004 8:20	1101.1			
3/11/2004 8:21	1106.1			
3/11/2004 8:22	1101.1			
3/11/2004 8:23	1096.1			
3/11/2004 8:24	1106.1			
3/11/2004 8:25	1111.1			
3/11/2004 8:26	1106.1			
3/11/2004 8:27	1101.1			
3/11/2004 8:28	1111.1			
3/11/2004 8:29	1106.1			
3/11/2004 8:30	1111.1			
3/11/2004 8:31	1096.1			

3/11/2004 8:32	1116.1
3/11/2004 8:33	1116.1
3/11/2004 8:34	1111.1
3/11/2004 8:35	1101.1
3/11/2004 8:36	1101.1
3/11/2004 8:37	1106.1
3/11/2004 8:38	1116.1
3/11/2004 8:39	1086.2
3/11/2004 8:40	1101.1
3/11/2004 8:41	1111.1
3/11/2004 8:42	1116.1
3/11/2004 8:43	1096.1
3/11/2004 8:44	1121.0
3/11/2004 8:45	1126.0
3/11/2004 8:46	1126.0
3/11/2004 8:47	1121.0
3/11/2004 8:48	1121.0
3/11/2004 8:49	1126.0
3/11/2004 8:50	1121.0
3/11/2004 8:51	1101.1
3/11/2004 8:52	1126.0
3/11/2004 8:53	1136.0
3/11/2004 8:54	1121.0
3/11/2004 8:55	1116.1
3/11/2004 8:56	1116.1
3/11/2004 8:57	1121.0
3/11/2004 8:58	1126.0
3/11/2004 8:59	1116.1
3/11/2004 9:00	1131.0
3/11/2004 9:01	1131.0
3/11/2004 9:02	1131.0
3/11/2004 9:03	1150.9
3/11/2004 9:04	1150.9
3/11/2004 9:05	1150.9
3/11/2004 9:06	1150.9
3/11/2004 9:07	1146.0
3/11/2004 9:08	1146.0
3/11/2004 9:09	1165.9
3/11/2004 9:10	1160.9
3/11/2004 9:11	1165.9
3/11/2004 9:12	1146.0
3/11/2004 9:13	1170.9
3/11/2004 9:14	1165.9
3/11/2004 9:15	1160.9
3/11/2004 9:16	1150.9
3/11/2004 9:17	1165.9
3/11/2004 9:18	1160.9
3/11/2004 9:19	1170.9
3/11/2004 9:20	269.1
3/11/2004 9:21	10.0
3/11/2004 9:22	10.0
3/11/2004 9:23	5.0

<<End Run 1

AVERAGE
THC
1125

<<Zero air	
	THC

3/11/2004 9:24	373.7		7.47	<average
3/11/2004 9:25	1051.3	Low-gas 1020 ppm Propane		
3/11/2004 9:26	1056.3	1054		<average
3/11/2004 9:27	483.3			
3/11/2004 9:28	124.6			
3/11/2004 9:29	114.6			
3/11/2004 9:30	174.4			
3/11/2004 9:31	129.5			
3/11/2004 9:32	204.3			
3/11/2004 9:33	104.6			
3/11/2004 9:34	124.6			
3/11/2004 9:35	179.4			
3/11/2004 9:36	94.7			
3/11/2004 9:37	84.7			

RUN 1	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC	1125	3.74	1020	1063	1081

Nailite Corp.
Miami, Florida

Painting Line No. 1 Fume Capture Efficiency

TimeStamp	THC	
3/11/2004 9:55	59.8	
3/11/2004 9:56	59.8	
3/11/2004 9:57	493.3	
3/11/2004 9:58	1036.3	
3/11/2004 9:59	1146.0	
3/11/2004 10:00	1205.7	
3/11/2004 10:01	1225.7	
3/11/2004 10:02	1255.6	
3/11/2004 10:03	1285.5	<<Start Run 2
3/11/2004 10:04	1270.5	
3/11/2004 10:05	1260.6	
3/11/2004 10:06	1270.5	
3/11/2004 10:07	1265.5	
3/11/2004 10:08	1275.5	
3/11/2004 10:09	1260.6	
3/11/2004 10:10	1275.5	
3/11/2004 10:11	1285.5	
3/11/2004 10:12	1285.5	
3/11/2004 10:13	1250.6	
3/11/2004 10:14	1280.5	
3/11/2004 10:15	1260.6	
3/11/2004 10:16	1275.5	
3/11/2004 10:17	1260.6	
3/11/2004 10:18	1280.5	
3/11/2004 10:19	1260.6	
3/11/2004 10:20	1265.5	
3/11/2004 10:21	1255.6	
3/11/2004 10:22	1265.5	
3/11/2004 10:23	1275.5	
3/11/2004 10:24	1280.5	
3/11/2004 10:25	1250.6	
3/11/2004 10:26	1270.5	
3/11/2004 10:27	1285.5	
3/11/2004 10:28	1290.4	
3/11/2004 10:29	1270.5	
3/11/2004 10:30	1285.5	
3/11/2004 10:31	1285.5	
3/11/2004 10:32	1265.5	
3/11/2004 10:33	1235.6	
3/11/2004 10:34	1245.6	
3/11/2004 10:35	1250.6	
3/11/2004 10:36	1250.6	
3/11/2004 10:37	1250.6	
3/11/2004 10:38	1270.5	
3/11/2004 10:39	1260.6	

3/11/2004 10:40	1265.5
3/11/2004 10:41	1260.6
3/11/2004 10:42	1265.5
3/11/2004 10:43	1275.5
3/11/2004 10:44	1275.5
3/11/2004 10:45	1250.6
3/11/2004 10:46	1230.7
3/11/2004 10:47	1220.7
3/11/2004 10:48	1220.7
3/11/2004 10:49	1220.7
3/11/2004 10:50	1215.7
3/11/2004 10:51	1235.6
3/11/2004 10:52	1240.6
3/11/2004 10:53	1240.6
3/11/2004 10:54	1230.7
3/11/2004 10:55	1230.7
3/11/2004 10:56	1235.6
3/11/2004 10:57	1235.6
3/11/2004 10:58	1220.7
3/11/2004 10:59	1270.5
3/11/2004 11:00	1280.5
3/11/2004 11:01	1280.5
3/11/2004 11:02	1260.6
3/11/2004 11:03	1265.5
3/11/2004 11:04	538.1
3/11/2004 11:05	10.0
3/11/2004 11:06	5.0
3/11/2004 11:07	0.0
3/11/2004 11:08	413.5
3/11/2004 11:09	1046.3
3/11/2004 11:10	1051.3
3/11/2004 11:11	647.7

<<End Run 2

AVERAGE
THC
1259.73

<<Zero air		
	THC	
	2.49	<average
Low-gas 1020 ppm Propane		
1049		<average

RUN 2	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC	1259.7	5.0	1020.0	1051.3	1223.2

Nailite Corp.
Miami, Florida

Painting Line No. 1 Fume Capture Efficiency

3/11/2004 11:40	1240.6	
3/11/2004 11:41	1240.6	
3/11/2004 11:42	1245.6	<<Start Run 3
3/11/2004 11:43	1255.6	
3/11/2004 11:44	1270.5	
3/11/2004 11:45	1295.4	
3/11/2004 11:46	1300.4	
3/11/2004 11:47	1270.5	
3/11/2004 11:48	1300.4	
3/11/2004 11:49	1315.4	
3/11/2004 11:50	1295.4	
3/11/2004 11:51	1270.5	
3/11/2004 11:52	1295.4	
3/11/2004 11:53	1295.4	
3/11/2004 11:54	1290.4	
3/11/2004 11:55	1265.5	
3/11/2004 11:56	1285.5	
3/11/2004 11:57	1275.5	
3/11/2004 11:58	1275.5	
3/11/2004 11:59	1265.5	
3/11/2004 12:00	1265.5	
3/11/2004 12:01	1270.5	
3/11/2004 12:02	1260.6	
3/11/2004 12:03	1250.6	
3/11/2004 12:04	1255.6	
3/11/2004 12:05	1245.6	
3/11/2004 12:06	1255.6	
3/11/2004 12:07	1235.6	
3/11/2004 12:08	1245.6	
3/11/2004 12:09	1260.6	
3/11/2004 12:10	1265.5	
3/11/2004 12:11	1265.5	
3/11/2004 12:12	1275.5	
3/11/2004 12:13	1275.5	
3/11/2004 12:14	1265.5	
3/11/2004 12:15	1265.5	
3/11/2004 12:16	1285.5	
3/11/2004 12:17	1275.5	
3/11/2004 12:18	1270.5	
3/11/2004 12:19	1250.6	
3/11/2004 12:20	1240.6	
3/11/2004 12:21	1260.6	
3/11/2004 12:22	1250.6	
3/11/2004 12:23	1235.6	
3/11/2004 12:24	1205.7	
3/11/2004 12:25	1210.7	

3/11/2004 12:26	1210.7
3/11/2004 12:27	1205.7
3/11/2004 12:28	1205.7
3/11/2004 12:29	1235.6
3/11/2004 12:30	1220.7
3/11/2004 12:31	1210.7
3/11/2004 12:32	1200.8
3/11/2004 12:33	1225.7
3/11/2004 12:34	1210.7
3/11/2004 12:35	1230.7
3/11/2004 12:36	1210.7
3/11/2004 12:37	1230.7
3/11/2004 12:38	1235.6
3/11/2004 12:39	1225.7
3/11/2004 12:40	1230.7
3/11/2004 12:41	1245.6
3/11/2004 12:42	1131.0
3/11/2004 12:43	269.1
3/11/2004 12:44	14.9
3/11/2004 12:45	5.0
3/11/2004 12:46	5.0
3/11/2004 12:47	373.7
3/11/2004 12:48	1031.4
3/11/2004 12:49	1031.4
3/11/2004 12:50	1534.6
3/11/2004 12:51	2914.7
3/11/2004 12:52	2924.7
3/11/2004 12:53	3806.6
3/11/2004 12:54	8554.8
3/11/2004 12:55	8579.7
3/11/2004 12:56	3228.6
3/11/2004 12:57	49.8
3/11/2004 12:58	-5.0
3/11/2004 12:59	-5.0
3/11/2004 13:00	-5.0
3/11/2004 13:01	-5.0
3/11/2004 13:02	617.8
3/11/2004 13:03	169.4

<<End Run 3

AVERAGE
THC
1252.14

<<Zero air		
	THC	
	4.98	<average
Low-gas 1020 ppm Propane		
1031		<average

Mid-gas 3010 ppm Propane	
2920	<average

High-gas 8504 ppm Propane	
8567	<average

RUN 3	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC	1252	3.74	1020	1040	1229

Field Data Sheets

AVG. FLOW
19,233.67

Traverse Data Sheet and Cyclonic Flow Check

RAC 3/11/04

Plant: Nailite International
Location/Site: Miami, FL

Date: 3/11/04
Stack Unit: RTO INLET Line #1

44" dia.

Pitot Leak check ✓ good

Stack Cross Section

Pitot Corr. Factor: 0.84

DB: _____ F WB: _____ F DP: _____ F

V.P. at DP: _____ "Hg Fract. D.A.: _____

Weather: Clear

Ambient Temp. F 87 Barometric Pressure: 30.38 "Hg

Wind Direction: NE Wind Speed: 3-5

Pitot Line came off

Point Number		Distance From Stack Wall	Cyclonic Check Null Angle Horizontal	Cyclonic Check Null Angle Verticle	Time: Run# 1 Stack Pressure: -1.8 Traverse No. 1 △ P	Run# 1 Temp. F	Time: Run #2 Stack Pressure: -1.8 Traverse No. 2 △ P	Run #2 Temp. F	Time: Run #3 Stack Pressure: -1.8" Traverse No. 3 △ P	Run #3 Temp. F	Time: Stack Pressure: Traverse No. 4 △ P	Traverse No. 4 Temp. F
1	1		0.22	0.22	1.75	77	0.27	79	0.26	82		
2	2		0.31	0.31	1.8	77	0.32	80	0.35	82		
3	3		0.34	0.34	1.9	78	0.36	80	0.39	83		
4	4		0.33	Pitot line off 0.33	1.8	78	0.35	80	0.36	83		
5	5		0.24		1.8	78	0.29	80	0.32	82		
6	6		0.26		1.75	78	0.24	79	0.26	81		
7	7				0.21	77	0.26	80	0.24	80		
8	8				0.32	77	0.37	80	0.33	81		
9	9				0.33	77	0.38	80	0.36	81		
10	10				0.34	78	0.36	81	0.35	82		
11	11				0.28	77	0.33	80	0.34	82		
12	12				0.24	77	0.27	80	0.26	81		
1	13											
2	14											
3	15											
4	16											
5	17				O_2 =	19.0%	O_2 =	19.5%	O_2 =	19.0%		
6	18				CO_2 =	0.0	CO_2 =	0.0	CO_2 =	0.0		
7	19											
8	20				T_{SW} =	64	T_{SW} =	64	T_{SW} =	65		
9	21											
10	22				moist.	2.0%	moist	2.0%				
11	23											
12	24				18586	dscfm	19,554	dscfm	19561			

1080.4 ppm 1223.2 ppm 1228.7
140.1 lb/hr 167.7 lb/hr 168.5

Nailite
3/10/04
No. 1 Line Capture Test
0-10,000 ppm range

Mention:
Improvements
to paint lines

07:28	Zero air on
07:29	Zero air = 0
07:30	8504 Prop on
07:32	8504 Prop = 8500
07:34	3010 prop on
07:36	3010 = 2984
07:38	1020 prop on
07:40	1020 prop = 1071
08:19	Start Run # 1
09:19	End Run # 1
09:20	Zero air on
09:21	Zero air = 14.9 ~ 9.97 ~ 4.98
09:24	1020 on
09:25	1020 = 1051.3
10:03	Start Run # 2
11:03	End Run # 2
11:04	Zero air on
11:06	Zero air = 4,98
11:08	1020 prop on
11:09	1020 prop = 1046, 3
11:42	Start Run # 3
12:42	End Run # 3
12:43	Zero air on
12:45	Zero air = 9,97 ~ 4,98 ~ 0
12:47	1020 prop on
12:48	1020 prop = 1026, to 1031.4
12:50	3010 prop on
12:51	3010 prop = 2914.7
12:52	8504 prop on
12:54	8504 = 8564.7

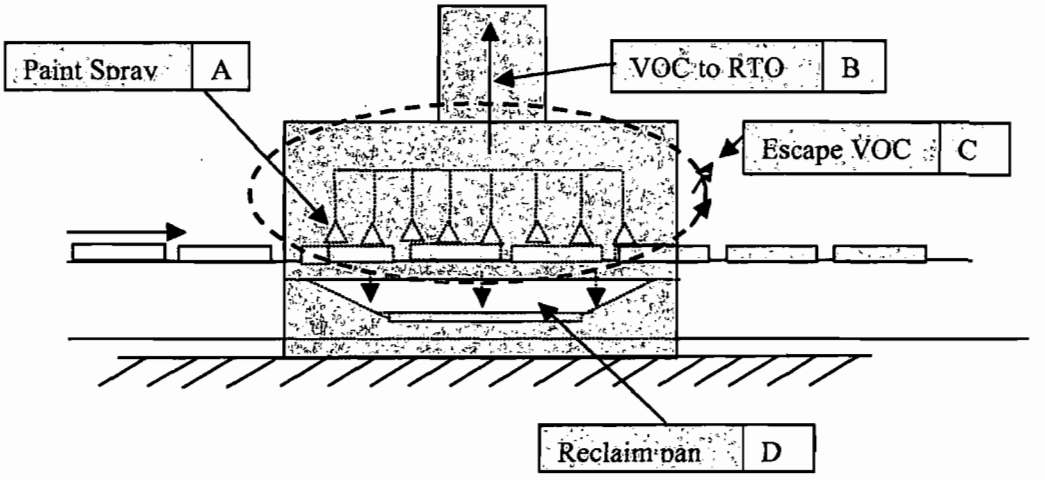
Plant Operating Logs

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

Given Information:

1) Refer to **Figure 1** *Paint Booth Material Mass Balance* for a figurative representation of what is tabulated in the Material Mass Balance section at the bottom of each Capture Trial Tab.
2)Solvent content of reclaimed paint derived from Nailite density study and Severn Trent lab analysis.
3)Typical reclaimed paint density: 245g/ 150 ml= 13.64 lbs/ gal per experimentation conducted by Nailite
4)Typical solvent content of reclaim assumed to be constant and equal to approximately 14 % per lab analysis of reclaim conducted by Severn Trent on 02/03/04
5)The 60 minute trial times were maintained utilizing stopwatches by Nailite personnel. The listed start and stop times are approximations.

Figure 1
Spray Booth Material Mass Balance



Input-Output=Accumulation (eq. 1)

A(lbs/ hr)=B (lbs/ hr)+ C (lbs/hr)+ D (lbs/hr) ; (eq. 2)

Where A = Input (lbs/hr VOC)
B = Output to RTO (lbs/ hr) (Koogler carbon count)
C = Output (Escape VOC, lbs/ hr)
D = Output (Reclaimed over spray, lbs/hr)

2004 Capture Effeciency Testing

Thursday **3/11/2004** **Trial 1**
Paint Line 1

Booth #	1	Booth #	2
Nailite Coating Name*	2H Alpine White	Nailite Coating Name*	2H Alpine White
Nailite Color Number	W35-0129	Nailite Color Number	W35-0129
Manufacturer	Strathmore	Manufacturer	Strathmore
Begin Trial Time	8:20	Begin Trial Time	8:20
End Trial Time	9:20	End Trial Time	9:20
Begin Trial Volume (Reduced Paint-gal)	43	Begin Trial Volume (Reduced Paint-gal)	43
End Trial Volume (Reduced Paint-gal)	24.5	End Trial Volume (Reduced Paint-gal)	24.5
Volume of Reduced Paint Used-gal	18.5	Volume of Reduced Paint Used-gal	18.5
Cut Ratio (expressed as % solvent)	25	Cut Ratio (expressed as % solvent)	25
Cut Ratio (expressed as % paint)	75	Cut Ratio (expressed as % paint)	75
% Toluene used as % of total reducer	100	% Toluene used as % of total reducer	100
% Hisol used as % of total reducer	0	% Hisol used as % of total reducer	0
% Acetone used as % of total reducer	0	% Acetone used as % of total reducer	0
Volume of Paint used (nonreduced)	13.9	Volume of Paint used (nonreduced)	13.9
Volume of Reducer-Toluene	4.6	Volume of Reducer Used-gal	4.6
Volume of Reducer-Hisol Used	0	Volume of Reducer-Hisol Used	0
Volume of Reducer-Acetone	0	Volume of Reducer-Acetone	0
Vol. Recycled material in drum before	0	Vol. Recycled material in drum before	0
Vol. Reduced material in drum after	1.5	Vol. Reduced material in drum after	1.5

*See attached MSDS for coating information, VOC composition etc.

Gallons of paint used**	27.8
Gallons of toluene used	9.2
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

% volume solids in paint	37.79
% volume VOC in paint	62.21
Gallons VOC in paint used	17.29
comp of paint-% Tol	100
comp of paint-% Hisol	0
comp of paint-% Acetone	0
Total Tol in mixture used (Gallons)	26.49
Total Hisol in Mix used (Gallons)	0.00
Total Acetone in mix used (Gallons)	0.00

Koogler's carbon count	140.3
given:	
s.g. Toluene	0.866
s.g. Hisol	
s.g. Acetone	0.791
s.g. Xylene	0.864
s.g. Benzene	0.879
water =62.43 lbs/ ft**3	
typical reclaim material density = 13.64 lbs/ gallon	
Reclaimed material is approximately 14 % solvent/ 86 % paint	

(158.4 as Propane)

DENSITY	Molecular weights
7.23	acetone=58.08; c=3
	toluene=92.13; c=7
6.6	propane=44.09;c=3
7.21	
7.34	

NOTE: propane to toluene conversion:

lb propane/hr= (lb/ hr toluene)x((MW propane / propane carbon #)/(MW toluene/ toluene carbon#)) x Rft*

* Rft= relative response factor for toluene=7.00/6.91(5)=1.013

Material Mass Balance	
Stream A Paint	
Paint weight In	298.016
Solvent Weight (in paint)	125.378
Paint Weight -solids	172.638
Stream A Solvent	
Solvent weight in	66.516
Stream A -Totalized values	
Total Mass Paint	172.638
Total Mass Solvent	191.894
Wt % solvent	52.64
Stream B -Pounds of Toluene	
	140.2
Stream C -Noncaptured VOC	
??????	
Stream D-Reclaimed Paint	
Gallons of overspray captured	3
Pounds of reclaimed overspray	~~40.92~~
Pounds of reclaimed solvent	5.73
Noncaptured VOC (Stream C)	~~45.07~~
% Capture	76.0

certified

2004 Capture Effeciency Testing

Thursday **3/11/2004** **Trial 2**
Paint Line 1

Booth #	1	Booth #	2
Nailite Coating Name*	2H Alpine White	Nailite Coating Name*	2H Alpine White
Nailite Color Number	W35-0129	Nailite Color Number	W35-0129
Manufacturer	Strathmore	Manufacturer	Strathmore
Begin Trial Time	10:05	Begin Trial Time	10:05
End Trial Time	11:05	End Trial Time	11:05
Begin Trial Volume (Reduced Paint-gal)	44.5	Begin Trial Volume (Reduced Paint-gal)	45
End Trial Volume (Reduced Paint-gal)	25	End Trial Volume (Reduced Paint-gal)	25.5
Volume of Reduced Paint Used-gal	19.5	Volume of Reduced Paint Used-gal	19.5
Cut Ratio (expressed as % solvent)	25	Cut Ratio (expressed as % paint)	25
Cut Ratio (expressed as % paint)	75	Cut Ratio (expressed as % paint)	75
% Toluene used as % of total reducer	100	% Toluene used as % of total reducer	100
% Hisol used as % of total reducer	0	% Hisol used as % of total reducer	0
% Acetone used as % of total reducer	0	% Acetone used as % of total reducer	0
Volume of Paint used (nonreduced)	14.6	Volume of Paint used (nonreduced)	14.6
Volume of Reducer-Toluene	4.9	Volume of Reducer Used-gal	4.9
Volume of Reducer-Hisol Used	0	Volume of Reducer-Hisol Used	0
Volume of Reducer-Acetone	0	Volume of Reducer-Acetone	0
Vol. Recycled material in drum before	5	Vol. Recycled material in drum before	5
Vol. Recycled material in drum after	9	Vol. Reduced material in drum after	9

*See attached MSDS for coating information, VOC composition etc.

Gallons of paint used**	29.2
Gallons of toluene used	9.8
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

% volume solids in paint	37.79
% volume VOC in paint	62.21
Gallons VOC in paint	18.17
comp of paint-% Tol	100
comp of paint-% Hisol	0
comp of paint-% Acetone	0
Total Tol in mixture used (Gallons)	27.97
Total Hisol in Mix used (Gallons)	0.00
Total Acetone in mix used (Gallons)	0.00

Koogler's carbon count	148.4
given:	
s.g. Toluene	0.866
s.g. Hisol	
s.g. Acetone	0.791
s.g. Xylene	0.864
s.g. Benzene	0.879
water =62.43 lbs/ ft**3	

(167.7 lbs/ hr as propane)

DENSITY	Molecular weights
7.23	acetone=58.08; c=3
	toluene=92.13; c=7
6.6	propane=44.09;c=3
7.21	
7.34	

NOTE: propane to toluene conversion:

lb propane/hr= (lb/ hr toluene)x((MW propane / propane carbon #)/(MW toluene/ toluene carbon#)) x Rft*

* Rft= relative response factor for toluene=7.00/6.91(5)=1.013

Material Mass Balance	
Stream A Paint	
Paint weight In	313.024
Solvent Weight (in paint)	131.692
Paint Weight	181.332
Stream A Solvent	
Solvent weight in	70.854
Stream A -Totalized values	
Total Mass Paint	181.332
Total Mass Solvent	202.546
Wt % solvent	52.76
Stream B -Pounds of Toluene	
	148.4
Stream C -Noncaptured VOC	
	????
Stream D-Reclaimed Paint	
Gallons of overspray captured	4
Pounds of reclaimed overspray	~~54.56~~
Pounds of reclaimed solvent	7.64
Noncaptured VOC (Stream C)	~~46.51~~
% Capture	77.0

certified

2004 Capture Effeciency Testing

Thursday **3/11/2004 Trial 3**
Paint Line 1

Booth #	1	Booth #	2
Nailite Coating Name*	2H Alpine White	Nailite Coating Name*	2H Alpine White
Nailite Color Number	W35-0129	Nailite Color Number	W35-0129
Manufacturer	Strathmore	Manufacturer	Strathmore
Begin Trial Time	11:45	Begin Trial Time	11:45
End Trial Time	12:45	End Trial Time	12:45
Begin Trial Volume (Reduced Paint-gal)	46	Begin Trial Volume (Reduced Paint-gal)	35
End Trial Volume (Reduced Paint-gal)	26	End Trial Volume (Reduced Paint-gal)	15
Volume of Reduced Paint Used-gal	20	Volume of Reduced Paint Used-gal	20
Cut Ratio (expressed as % solvent)	25	Cut Ratio (expressed as % paint)	25
Cut Ratio (expressed as % paint)	75	Cut Ratio (expressed as % paint)	75
% Toluene used as % of total reducer	100	% Toluene used as % of total reducer	100
% Hisol used as % of total reducer	0	% Hisol used as % of total reducer	0
% Acetone used as % of total reducer	0	% Acetone used as % of total reducer	0
Volume of Paint used (nonreduced)	15	Volume of Paint used (nonreduced)	15
Volume of Reducer-Toluene	5	Volume of Reducer Used-gal	5
Volume of Reducer-Hisol Used	0	Volume of Reducer-Hisol Used	0
Volume of Reducer-Acetone	0	Volume of Reducer-Acetone	0
Vol. Recycled material in drum before	9	Vol. Recycled material in drum before	9
Vol. Reduced material in drum after	14	Vol. Reduced material in drum after	14

*See attached MSDS for coating information, VOC composition etc.

Gallons of paint used**	30
Gallons of toluene used	10
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

% volume solids in paint	37.79
% volume VOC in paint	62.21
Gallons VOC in paint	18.66
comp of paint-% Tol	100
comp of paint-% Hisol	0
comp of paint-% Acetone	0
Total Tol in mixture used (Gallons)	28.66
Total Hisol in Mix used (Gallons)	0.00
Total Acetone in mix used (Gallons)	0.00

Koogler's carbon count	149.11
given:	
s.g. Toluene	0.866
s.g. Hisol	
s.g. Acetone	0.791
s.g. Xylene	0.864
s.g. Benzene	0.879
water =62.43 lbs/ ft**3	

(168.5 lbs/ hr as Propane)

DENSITY
7.23
6.6
7.21
7.34

NOTE: propane to toluene conversion:

lb propane/hr= (lb/ hr toluene)x((MW propane / propane carbon #)/(MW toluene/ toluene carbon#)) x Rft*

* Rft= relative response factor for toluene=7.00/6.91(5)=1.013

Material Mass Balance	
Stream A Paint	
Paint weight In	321.6
Solvent Weight (in paint)	135.3
Paint Weight	186.3
Stream A Solvent	
Solvent weight in	72.3
Stream A -Totalized values	
Total Mass Paint	186.3
Total Mass Solvent	207.6
Wt % solvent	52.70
Stream B -Pounds of Toluene	
	149.11
Stream C -Noncaptured VOC	
	????
Stream D-Reclaimed Paint	
Gallons of overspray captured	5
Pounds of reclaimed overspray	~~69.20~~
Pounds of reclaimed solvent	9.55
Noncaptured VOC (Stream C)	~~48.94~~
% Capture	76.4

Line No. 2 Capture Efficiency Tests

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

Calculations

Company: Nailite International
Source: No..2 Paint Line (Capture)
Run 1

Location: Miami, FL
Date: 11-Mar-04

pts-> 12
Sqrt.Dp= 0.4612

T(s)= 89.33

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.18	91
2	0.22	91
3	0.25	91
4	0.25	91
5	0.23	90
6	0.15	90
7	0.19	86
8	0.22	88
9	0.24	89
10	0.25	89
11	0.23	89
12	0.16	87
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.38	in Hg
Ps =	-1.7	in H2O
%O2 =	19	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	2111.6	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: No. 2 Paint Line (Capture) | Date: 38057
Run 1

vs =	26.42	FT/SEC	As =	10.5592	ft^2
Q =	16736	acfm -	not corrected		
Q(stnd) =	15940	dscfm -	both temperature and moisture corrected		
Q(moist)=	16584	dcfm -	only moisture corrected		
Q(temp) =	16266	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! | Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! | Bws @sat = 0.045543 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	236.0366	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: No. 1 Paint Line (Capture)
Run 2

Location: Miami, FL
Date: 11-Mar-04

pts-> 12

Sqrt.Dp= 0.4503

T(s)= 88.67

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.2	86
2	0.21	88
3	0.23	89
4	0.21	90
5	0.2	90
6	0.2	90
7	0.17	87
8	0.21	88
9	0.23	89
10	0.22	90
11	0.2	89
12	0.16	88
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.38	in Hg
Ps =	-1.7	in H2O
%O2 =	19	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	2114.1	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International Location: Miami, FL
Source: No. 1 Paint Line (Capture) Date: 38057
Run 2

vs =	25.78	FT/SEC		As = 10.5592	ft^2
Q =	16331	acfm -	not corrected		
Q(stnd) =	15574	dscfm -	both temperature and moisture corrected		
Q(moist)=	16184	dcfm -	only moisture corrected		
Q(temp) =	15892	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) =	#VALUE!	Bws =	#VALUE!	| Lower Bws
Vw(Std) =	#VALUE!	Bws @sat =	0.045543	| Value used
		Percent Moist =	2.00	

Emission Rates:	CO =	#VALUE!	lb/hr
	NOx =	#VALUE!	lb/hr as NO2
	SO2 =	#VALUE!	lb/hr
	THC =	230.8860	lb/hr as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: No. 1 Paint Line (Capture)
Run 3

pts-> 12
Sqrt.Dp= 0.4420

T(s)= 88.08

Location: Miami, FL
Date: 12-Mar-04

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.17	88
2	0.21	89
3	0.21	89
4	0.22	89
5	0.21	89
6	0.16	88
7	0.19	86
8	0.2	87
9	0.22	88
10	0.2	88
11	0.17	88
12	0.19	88
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-1.5	in H2O
%O2 =	18	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	2921.6	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International Location: Miami, FL
Source: No. 1 Paint Line (Capture) Date: 38058
Run 3

vs =	25.29	FT/SEC		As = 10.5592	ft^2
Q =	16021	acfm -	not corrected		
Q(stnd) =	15312	dscfm -	both temperature and moisture corrected		
Q(moist)=	15894	dcfm -	only moisture corrected		
Q(temp) =	15625	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! Bws @sat = 0.044078 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	313.7053	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

EPA Protocol Gas Analyzer Calibration Data THC Concentration Instrument Range Setting (0 - 10,000 ppm as Propane) March 11-12, 2004						
Calibration Gas	Conc. (ppmv)	Run No.	Date/Time	Response through Train System Loop (ppmv)	Drift (% of Range)	Accuracy Diff. from Actual (% of Range)
Zero	0.0	R1-Pre	3/11/2004 12:46	4.98		0.05
Zero	0.0	R1-Post	3/11/2004 15:56	2.49	-0.02	0.02
Propane	1020	R1-Pre	3/11/2004 12:49	1031		0.11
Propane	3010	R1-Pre	3/11/2004 12:49	2920		-0.90
Propane	3010	R1-Pre	3/11/2004 15:59	2975	0.55	-0.35
Propane	8504	R1-Pre	3/11/2004 12:55	8567		0.63
Zero	0.0	R2-Pre	3/11/2004 15:56	2.49		0.02
Zero	0.0	R2-Post	3/11/2004 18:40	4.98	0.02	0.05
Propane	3010	R2-Pre	3/11/2004 15:59	2975		-0.35
Propane	3010	R2-Post	3/11/2004 18:46	2977	0.02	-0.33
Zero	0.0	R1-Pre*	3/11/2004 12:46	4.98		0.05
Zero	0.0	R2-Post*	3/11/2004 18:40	4.98	0.00	0.05
Propane	1020	R1-Pre*	3/11/2004 12:49	1031		0.11
Propane	1020	R2-Post*	3/11/2004 18:43	1046	0.15	0.26
Propane	3010	R1-Pre*	3/11/2004 12:49	2920		-0.90
Propane	3010	R2-Post*	3/11/2004 18:46	2977	0.57	-0.33
Propane	8504	R1-Pre*	3/11/2004 12:55	8567		0.63
Propane	8504	R2-Post*	3/11/2004 18:50	8395	-1.72	-1.09
Zero	0.0	R3-Pre	3/12/04, 07:30	0.00		0.00
Zero	0.0	R3-Post	3/12/2004 9:25	2.49	0.02	0.02
Propane	1020	R3-Pre	3/12/04, 07:41	1066		0.46
Propane	1020	R3-Post	3/12/2004 9:27	1031	-0.35	0.11
Propane	3010	R3-Pre	3/12/04, 07:38	2984		-0.26
Propane	3010	R3-Post	3/12/2004 9:31	2975	-0.09	-0.35
Propane	8504	R3-Pre	3/12/04, 07:35	8514		0.10
Propane	8504	R3-Post	3/12/2004 9:34	8495	-0.19	-0.09

Range Setting (0 - 10,000 ppm as Propane)

Cal. Gas ppm	% of Range
1020	10.20
3010	30.10
8504	85.04

Nailite Corp.
Miami, Florida

Painting Line No. 2 Fume Capture Efficiency

TimeStamp	THC			
3/11/2004 12:40	1230.7			
3/11/2004 12:41	1245.6			
3/11/2004 12:42	1131.0			
3/11/2004 12:43	269.1			
3/11/2004 12:44	14.9			
3/11/2004 12:45	5.0	<<Zero air		
3/11/2004 12:46	5.0		THC	
3/11/2004 12:47	373.7		4.98	<average
3/11/2004 12:48	1031.4	Low-gas 1020 ppm Propane		
3/11/2004 12:49	1031.4	1031		<average
3/11/2004 12:50	1534.6			
3/11/2004 12:51	2914.7	Mid-gas 3010 ppm Propane		
3/11/2004 12:52	2924.7	2920		<average
3/11/2004 12:53	3806.6			
3/11/2004 12:54	8554.8	High-gas 8504 ppm Propane		
3/11/2004 12:55	8579.7	8567		<average
3/11/2004 12:56	3228.6			
3/11/2004 12:57	49.8			
3/11/2004 12:58	-5.0			
3/11/2004 12:59	-5.0			
3/11/2004 13:00	-5.0			
3/11/2004 13:01	-5.0			
3/11/2004 13:02	617.8			
3/11/2004 13:03	169.4			
3/11/2004 13:04	149.5			
3/11/2004 13:05	124.6			
3/11/2004 13:06	109.6			
3/11/2004 13:07	104.6			
3/11/2004 13:08	99.6			
3/11/2004 13:09	94.7			
3/11/2004 13:10	89.7			
3/11/2004 13:11	89.7			
3/11/2004 13:12	84.7			
3/11/2004 13:13	79.7			
3/11/2004 13:14	79.7			
3/11/2004 13:15	74.7			
3/11/2004 13:16	74.7			
3/11/2004 13:17	74.7			
3/11/2004 13:18	74.7			
3/11/2004 13:19	69.8			
3/11/2004 13:20	74.7			
3/11/2004 13:21	69.8			
3/11/2004 13:22	69.8			
3/11/2004 13:23	69.8			
3/11/2004 13:24	119.6			

3/11/2004 13:25	219.2	
3/11/2004 13:26	1011.4	
3/11/2004 13:27	2281.9	
3/11/2004 13:28	7443.7	
3/11/2004 13:29	308.9	
3/11/2004 13:30	179.4	
3/11/2004 13:31	174.4	
3/11/2004 13:32	169.4	
3/11/2004 13:33	169.4	
3/11/2004 13:34	99.6	
3/11/2004 13:35	84.7	
3/11/2004 13:36	89.7	
3/11/2004 13:37	89.7	
3/11/2004 13:38	89.7	
3/11/2004 13:39	89.7	
3/11/2004 13:40	89.7	
3/11/2004 13:41	89.7	
3/11/2004 13:42	94.7	
3/11/2004 13:43	134.5	
3/11/2004 13:44	164.4	
3/11/2004 13:45	199.3	
3/11/2004 13:46	204.3	
3/11/2004 13:47	204.3	
3/11/2004 13:48	194.3	
3/11/2004 13:49	194.3	
3/11/2004 13:50	294.0	
3/11/2004 13:51	453.4	
3/11/2004 13:52	408.6	
3/11/2004 13:53	438.5	
3/11/2004 13:54	348.8	
3/11/2004 13:55	279.0	
3/11/2004 13:56	234.2	
3/11/2004 13:57	224.2	
3/11/2004 13:58	219.2	
3/11/2004 13:59	209.3	
3/11/2004 14:00	194.3	
3/11/2004 14:01	189.3	
3/11/2004 14:02	194.3	
3/11/2004 14:03	204.3	
3/11/2004 14:04	194.3	
3/11/2004 14:05	323.9	
3/11/2004 14:06	807.2	
3/11/2004 14:07	1290.4	
3/11/2004 14:08	1674.1	
3/11/2004 14:09	1883.4	
3/11/2004 14:10	1973.0	
3/11/2004 14:11	2017.9	
3/11/2004 14:12	2052.8	
3/11/2004 14:13	2082.7	
3/11/2004 14:14	2097.6	
3/11/2004 14:15	2102.6	
3/11/2004 14:16	2107.6	<<Start Run 1

3/11/2004 14:17	2107.6	
3/11/2004 14:18	2107.6	
3/11/2004 14:19	2127.5	
3/11/2004 14:20	2102.6	
3/11/2004 14:21	2112.5	
3/11/2004 14:22	2112.5	
3/11/2004 14:23	2112.5	
3/11/2004 14:24	2092.6	
3/11/2004 14:25	2097.6	
3/11/2004 14:26	2092.6	
3/11/2004 14:27	2087.6	
3/11/2004 14:28	2082.7	
3/11/2004 14:29	2082.7	
3/11/2004 14:30	2082.7	
3/11/2004 14:31	2097.6	
3/11/2004 14:32	2057.7	
3/11/2004 14:33	2067.7	
3/11/2004 14:34	2077.7	
3/11/2004 14:35	2072.7	
3/11/2004 14:36	2072.7	
3/11/2004 14:37	2087.6	
3/11/2004 14:38	2082.7	
3/11/2004 14:39	2087.6	
3/11/2004 14:40	2072.7	
3/11/2004 14:41	2077.7	
3/11/2004 14:42	2082.7	
		<<On Standby "Broken chain"
3/11/2004 15:18	2012.9	
3/11/2004 15:19	2027.8	
3/11/2004 15:20	2022.9	
3/11/2004 15:21	2022.9	
3/11/2004 15:22	2037.8	
3/11/2004 15:23	2047.8	
3/11/2004 15:24	2047.8	
3/11/2004 15:25	2037.8	
3/11/2004 15:26	2037.8	
3/11/2004 15:27	2052.8	
3/11/2004 15:28	2042.8	
3/11/2004 15:29	2047.8	
3/11/2004 15:30	2037.8	
3/11/2004 15:31	2042.8	
3/11/2004 15:32	2047.8	
3/11/2004 15:33	2047.8	
3/11/2004 15:34	2037.8	
3/11/2004 15:35	2052.8	
3/11/2004 15:36	2057.7	
3/11/2004 15:37	2057.7	
3/11/2004 15:38	2047.8	
3/11/2004 15:39	2072.7	
3/11/2004 15:40	2077.7	
3/11/2004 15:41	2072.7	
3/11/2004 15:42	2067.7	

3/11/2004 15:43	2077.7			
3/11/2004 15:44	2072.7			
3/11/2004 15:45	2067.7			
3/11/2004 15:46	2052.8			
3/11/2004 15:47	2062.7			
3/11/2004 15:48	2057.7			
3/11/2004 15:49	2052.8			
3/11/2004 15:50	2057.7			
3/11/2004 15:51	2067.7			
3/11/2004 15:52	2077.7	<<End Run 1		
3/11/2004 15:53	637.7			
3/11/2004 15:54	10.0			
3/11/2004 15:55	0.0	<<Zero air		
3/11/2004 15:56	5.0		THC	
3/11/2004 15:57	1634.2		2.49	<average
3/11/2004 15:58	2974.5	Mid-gas 3010 ppm Propane		
3/11/2004 15:59	2974.5	2974.5		<average
3/11/2004 16:00	672.6			
3/11/2004 16:01	10.0			
3/11/2004 16:02	5.0			
3/11/2004 16:03	5.0			
3/11/2004 16:04	5.0			
3/11/2004 16:05	5.0			
3/11/2004 16:06	5.0			

AVERAGE
THC
2068.6

RUN 1	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC	2068.6	3.7	3010.0	2947.1	2111.6

Nailite Corp.
Miami, Florida

Painting Line No. 2 Fume Capture Efficiency

TimeStamp	THC	
3/11/2004 17:30	1664.1	
3/11/2004 17:31	1843.5	
3/11/2004 17:32	1928.2	
3/11/2004 17:33	1988.0	
3/11/2004 17:34	2012.9	<<Start Run 2
3/11/2004 17:35	2032.8	
3/11/2004 17:36	2032.8	
3/11/2004 17:37	2047.8	
3/11/2004 17:38	2072.7	
3/11/2004 17:39	2072.7	
3/11/2004 17:40	2057.7	
3/11/2004 17:41	2057.7	
3/11/2004 17:42	2072.7	
3/11/2004 17:43	2102.6	
3/11/2004 17:44	2082.7	
3/11/2004 17:45	2102.6	
3/11/2004 17:46	2102.6	
3/11/2004 17:47	2107.6	
3/11/2004 17:48	2082.7	
3/11/2004 17:49	2102.6	
3/11/2004 17:50	2122.5	
3/11/2004 17:51	2132.5	
3/11/2004 17:52	2112.5	
3/11/2004 17:53	2112.5	
3/11/2004 17:54	2117.5	
3/11/2004 17:55	2122.5	
3/11/2004 17:56	2107.6	
3/11/2004 17:57	2132.5	
3/11/2004 17:58	2127.5	
3/11/2004 17:59	2117.5	
3/11/2004 18:00	2112.5	
3/11/2004 18:01	2112.5	
3/11/2004 18:02	2117.5	
3/11/2004 18:03	2122.5	
3/11/2004 18:04	2112.5	
3/11/2004 18:05	2107.6	
3/11/2004 18:06	2117.5	
3/11/2004 18:07	2122.5	
3/11/2004 18:08	2107.6	
3/11/2004 18:09	2102.6	
3/11/2004 18:10	2107.6	
3/11/2004 18:11	2107.6	
3/11/2004 18:12	2097.6	
3/11/2004 18:13	2092.6	
3/11/2004 18:14	2102.6	

3/11/2004 18:15	2107.6
3/11/2004 18:16	2102.6
3/11/2004 18:17	2097.6
3/11/2004 18:18	2102.6
3/11/2004 18:19	2117.5
3/11/2004 18:20	2107.6
3/11/2004 18:21	2107.6
3/11/2004 18:22	2122.5
3/11/2004 18:23	2117.5
3/11/2004 18:24	2127.5
3/11/2004 18:25	2107.6
3/11/2004 18:26	2117.5
3/11/2004 18:27	2132.5
3/11/2004 18:28	2122.5
3/11/2004 18:29	2102.6
3/11/2004 18:30	2117.5
3/11/2004 18:31	2122.5
3/11/2004 18:32	2122.5
3/11/2004 18:33	2112.5
3/11/2004 18:34	2122.5
3/11/2004 18:35	1370.2
3/11/2004 18:36	19.9
3/11/2004 18:37	10.0
3/11/2004 18:38	5.0
3/11/2004 18:39	5.0
3/11/2004 18:40	533.1
3/11/2004 18:41	1031.4
3/11/2004 18:42	1046.3
3/11/2004 18:43	1046.3
3/11/2004 18:44	1689.0
3/11/2004 18:45	2974.5
3/11/2004 18:46	2979.5
3/11/2004 18:47	5550.4
3/11/2004 18:48	8455.2
3/11/2004 18:49	8385.4
3/11/2004 18:50	8405.3
3/11/2004 18:51	4723.3
3/11/2004 18:52	14.9

<<End Run 2

AVERAGE
THC
2091.2

<<Zero air		
	THC	
	4.98	<average

Low-gas 1020 ppm Propane		
1046.3		<average

Mid-gas 3010 ppm Propane		
2977.0		<average

High-gas 8504 ppm Propane		
8395.4		<average

RUN 2	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC	2091.2	3.7	3010.0	2975.7	2114.1

Nailite Corp.
Miami, Florida

Painting Line No. 2 Fume Capture Efficiency

TimeStamp	THC	
3/12/2004 8:17	2849.9	<<Start Run 3
3/12/2004 8:18	2830.0	
3/12/2004 8:19	2830.0	
3/12/2004 8:20	2840.0	
3/12/2004 8:21	2859.9	
3/12/2004 8:22	2859.9	
3/12/2004 8:23	2879.8	
3/12/2004 8:24	2854.9	
3/12/2004 8:25	2840.0	
3/12/2004 8:26	2889.8	
3/12/2004 8:27	2899.8	
3/12/2004 8:28	2869.9	
3/12/2004 8:29	2889.8	
3/12/2004 8:30	2884.8	
3/12/2004 8:31	2864.9	
3/12/2004 8:32	2874.9	
3/12/2004 8:33	2889.8	
3/12/2004 8:34	2884.8	
3/12/2004 8:35	2884.8	
3/12/2004 8:36	2879.8	
3/12/2004 8:37	2894.8	
3/12/2004 8:38	2884.8	
3/12/2004 8:39	2874.9	
3/12/2004 8:40	2854.9	
3/12/2004 8:41	2879.8	
3/12/2004 8:42	2899.8	
3/12/2004 8:43	2904.7	
3/12/2004 8:44	2889.8	
3/12/2004 8:45	2879.8	
3/12/2004 8:46	2889.8	
3/12/2004 8:47	2889.8	
3/12/2004 8:48	2889.8	
3/12/2004 8:49	2884.8	
3/12/2004 8:50	2899.8	
3/12/2004 8:51	2914.7	
3/12/2004 8:52	2909.7	
3/12/2004 8:53	2889.8	
3/12/2004 8:54	2894.8	
3/12/2004 8:55	2919.7	
3/12/2004 8:56	2924.7	
3/12/2004 8:57	2954.6	
3/12/2004 8:58	2979.5	
3/12/2004 8:59	2974.5	
3/12/2004 9:00	2949.6	
3/12/2004 9:01	2924.7	

Initial Calibrations from Run Sheet

Gas Value	Actual
Zero	0.00
1020	1066
3010	2984
8504	8514

3/12/2004 9:02	2934.6				
3/12/2004 9:03	2929.7				
3/12/2004 9:04	2919.7				
3/12/2004 9:05	2904.7				
3/12/2004 9:06	2924.7				
3/12/2004 9:07	2924.7				
3/12/2004 9:08	2919.7				
3/12/2004 9:09	2899.8				
3/12/2004 9:10	2909.7				
3/12/2004 9:11	2924.7				
3/12/2004 9:12	2934.6				
3/12/2004 9:13	2914.7				
3/12/2004 9:14	2894.8				
3/12/2004 9:15	2904.7				
3/12/2004 9:16	2919.7				
3/12/2004 9:17	2919.7				
3/12/2004 9:18	2600.8	<<End Run 3		AVERAGE	
3/12/2004 9:19	2007.9			THC	
3/12/2004 9:20	1195.8			2891.8	
3/12/2004 9:21	677.6				
3/12/2004 9:22	24.9				
3/12/2004 9:23	5.0	<<Zero air			
3/12/2004 9:24	0.0		THC		
3/12/2004 9:25	573.0		2.49	<average	
3/12/2004 9:26	1031.4	Low-gas 1020 ppm Propane			
3/12/2004 9:27	1031.4	1031.36		<average	
3/12/2004 9:28	1699.0				
3/12/2004 9:29	2974.5				
3/12/2004 9:30	2974.5	Mid-gas 3010 ppm Propane			
3/12/2004 9:31	2974.5	2974.5		<average	
3/12/2004 9:32	5675.0				
3/12/2004 9:33	8524.9	High-gas 8504 ppm Propane			
3/12/2004 9:34	8465.1	8495.0		<average	
3/12/2004 9:35	7169.7				
3/12/2004 9:36	901.8				
3/12/2004 9:37	1046.3				

RUN 3	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC	2891.8	1.25	3010.0	2979.3	2921.6

Field Data Sheets

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

15,608.7

Traverse Data Sheet and Cyclonic Flow Check

3/11/04

Plant: Nailite International
Location/Site: Miami, FL

Date: 3/11/04
Stack Unit: No. 2 Line Capture

44" dia.

Pitot Leak Check good

good on 3/12

Stack Cross Section

Pitot Corr. Factor: 0.84

DB: ____ F WB: ____ F DP: ____ F

V.P. at DP: ____ "Hg Fract. D.A.: ____

Weather: Scatt,

Ambient Temp. F 76 Barometric Pressure: 30.38 "Hg

Wind Direction: NE Wind Speed: 10-12

30.40

Point Number		Distance From Stack Wall	Cyclonic Check Null Angle Horizontal	Cyclonic Check Null Angle Verticle	Time: Run #1 Stack Pressure: -1.7 Traverse No. 1 △ P	Traverse No. 1 Temp. F	Time: Run #2 Stack Pressure: -1.7 Traverse No. 2 △ P	Traverse No. 2 Temp. F	Time: Run #3 Stack Pressure: -1.5 Traverse No. 3 △ P	Traverse No. 3 Temp. F	Time: Stack Pressure: Traverse No. 4 △ P	Traverse No. 4 Temp. F
1	1				0.18	91	0.20	86	0.17	88		
2	2				0.22	91	0.21	88	0.21	89		
3	3				0.25	91	0.23	89	0.21	89		
4	4				0.25	91	0.21	90	0.22	89		
5	5				0.23	90	0.20	90	0.21	89		
6	6				0.15	90	0.20	90	0.16	88		
7	7				0.19	86	0.17	87	0.19	86		
8	8				0.22	88	0.21	88	0.20	87		
9	9				0.24	89	0.23	89	0.22	88		
10	10				0.25	89	0.22	90	0.20	88		
11	11				0.23	89	0.20	89	0.17	86		
12	12				~~0.01~~ 0.16	89	0.16	88	0.19	88		
1	13											
2	14											
3	15											
4	16				O_2 =	19.0	% O_2 =	19.0	O_2 =	18%		
5	17											
6	18				CO_2 =	0.0	% CO_2 =	0.0	CO_2 =	0.0		
7	19											
8	20				T_{SW}	107	T_{SW} =	100	T_{SW}	69		
9	21											
10	22											
11	23											
12	24				15940	dscfm	15574	dscfm	15,312			

2111.6 ppm
236.64 lb/hr

2114.1
230.89
~~231.84 lb/hr~~

8921.6 ppm
313.71 lb/hr

Nailite International
No. 2 Line (capture)
3/11/04
0-10,000 ppm

14:16	Start Run # 1
14:42	Broken chain on line, run stopped.
15:18	Run # 1 Resumed
15:52	End Run # 1
15:53	Zero air on
15:55	Zero air = 9.97
15:57	3010 prop on
15:58	3010 prop = 2969 2111.6
17:34	Start Run #2
18:34	End Run #2
18:35	Zero Air on
18:37	Zero air = 14.95
18:39	1020 prop on
18:41	1020 prop = 10[illegible]4
18:44	3010 prop on
18:45	3010 prop = 2969.5
18:47	8504 prop on
18:48	8504 prop = ~~8619~~ 8370 sample pressure fluctuation
3/12/04	
07:29	Zero air on
07:30	Zero air = 0
07:33	8504 prop. ON
07:35	START RECORDING
07:35	8504 = 8514 ppm
07:37	3010 prop on
07:38	3010 prop = 2984
07:39	1020 prop on
07:41	1020 prop = 10166
07:58	Start Run #3
08:19	
09:19	End Run # 3

Loss of power to datalogger 1st 19 minutes of Run + initial calibrations lost. Ran extra 20 minutes.

09:21 Zero air on
09:23 Zero air = 9.97
09:25 1020 prop on
09:26 1020 prop = 1031
09:28 3010 prop on
09:30 3010 prop = 2974.5
09:32 8504 prop on
09:33 8504 prop = 8524

Plant Operating Logs

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

2004 Capture Effeciency Testing

Thursday **3/11/2004 Trial 1**
Paint Line 2

Booth #	1	Booth #	2
Nailite Coating Name*	2H Parchment	Nailite Coating Name*	2H Parchment
Nailite Color Number	I35-0144	Nailite Color Number	I35-0144
Manufacturer	Strathmore	Manufacturer	Strathmore
Begin Trial Time	2:05	Begin Trial Time	2:05
End Trial Time	3:05	End Trial Time	3:05
Begin Trial Volume (Reduced Paint-gal)	78	Begin Trial Volume (Reduced Paint-gal)	72
End Trial Volume (Reduced Paint-gal)	56	End Trial Volume (Reduced Paint-gal)	51
Volume of Reduced Paint Used-gal	22	Volume of Reduced Paint Used-gal	21
Cut Ratio (expressed as % solvent)	25	Cut Ratio (expressed as % paint)	25
Cut Ratio (expressed as % paint)	75	Cut Ratio (expressed as % paint)	75
% Toluene used as % of total reducer	100	% Toluene used as % of total reducer	100
% Hisol used as % of total reducer	0	% Hisol used as % of total reducer	0
% Acetone used as % of total reducer	0	% Acetone used as % of total reducer	0
Volume of Paint used (nonreduced)	16.5	Volume of Paint used (nonreduced)	15.75
Volume of Reducer-Toluene	5.5	Volume of Reducer Used-Toluene	5.25
Volume of Reducer-Hisol Used	0	Volume of Reducer-Hisol Used	0
Volume of Reducer-Acetone	0	Volume of Reducer-Acetone	0

*See attached MSDS for coating information, VOC composition etc.

Gallons of paint used**	32.25
Gallons of toluene used	10.75
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

% volume solids in paint	37.83
% volume VOC in paint	62.17
Gallons VOC in paint	20.05
comp of paint-% Tol	100
comp of paint-% Hisol	0
comp of paint-% Acetone	0
Total Tol in mixture used (Gallons)	30.80
Total Hisol In Mix used (Gallons)	0.00
Total Acetone in mix used (Gallons)	0.00
Est capture w/o Adj	74.00
Est capture w/ Adj of 15 % reclaim	93

Koogler's carbon count	208.8
given:	
s.g. Toluene	0.866
s.g. Hisol	
s.g. Acetone	0.791
s.g. Xylene	0.864
s.g. Benzene	0.879
water =62.43 lbs/ ft**3	

(propane carbon count 236.04)

DENSITY
7.23
6.6
7.21
7.34

Material Mass Balance

Stream A Paint	
Paint weight In	337.0125
Solvent Weight (in paint)	145.4475
Paint Weight	191.565
Stream A Solvent	
Toluene weight in	77.7225
Hisol weight in	0
Acetone weight in	0
Stream A -Totalized values	
Total Mass Paint	191.565
Total Mass Solvent	223.17
Wt % solvent	53.81
Stream B -Pounds of Toluene	
	208.8
Stream C -Noncaptured VOC	
	????
Stream D-Reclaimed Paint	
Gallons of overspray captured	0
Pounds of reclaimed overspray	0.00
Pounds of reclaimed solvent	0.00
Noncaptured VOC (Stream C)	14.37
% Capture	93.6

2004 Capture Effeciency Testing

Thursday **3/11/2004 Trial 2**
Paint Line 2

Booth #	1	Booth #	2
Nailite Coating Name*	2H Parchment	Nailite Coating Name*	2H Parchment
Nailite Color Number	I35-0144	Nailite Color Number	I35-0144
Manufacturer	Strathmore	Manufacturer	Strathmore
Begin Trial Time	5:30	Begin Trial Time	5:30
End Trial Time	6:30	End Trial Time	6:30
Begin Trial Volume (Reduced Paint-gal)	42	Begin Trial Volume (Reduced Paint-gal)	41
End Trial Volume (Reduced Paint-gal)	21	End Trial Volume (Reduced Paint-gal)	20
Volume of Reduced Paint Used-gal	21	Volume of Reduced Paint Used-gal	21
Cut Ratio (expressed as % solvent)	25	Cut Ratio (expressed as % solvent)	25
Cut Ratio (expressed as % paint)	75	Cut Ratio (expressed as % paint)	75
% Toluene used as % of total reducer	100	% Toluene used as % of total reducer	100
% Hisol used as % of total reducer	0	% Hisol used as % of total reducer	0
% Acetone used as % of total reducer	0	% Acetone used as % of total reducer	0
Volume of Paint used (nonreduced)	15.75	Volume of Paint used (nonreduced)	15.75
Volume of Reducer-Toluene	5.25	Volume of Reducer Used-Toluene	5.25
Volume of Reducer-Hisol Used	0	Volume of Reducer-Hisol Used	0
Volume of Reducer-Acetone	0	Volume of Reducer-Acetone	0

*See attached MSDS for coating information, VOC composition etc.

Gallons of paint used**	31.5
Gallons of toluene used	10.5
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

% volume solids in paint	37.83
% volume VOC in paint	62.17
Gallons VOC in paint	19.58
comp of paint-% Tol	100
comp of paint-% Hisol	0
comp of paint-% Acetone	0
Total Tol in mixture used (Gallons)	30.08
Total Hisol in Mix used (Gallons)	0.00
Total Acetone in mix used (Gallons)	0.00
Est capture w/o Adj	79.00
Est capture w/ Adj of 15 % reclaim	93

Koogler's carbon count	204.32	(230.89 lbs as propane)
given:		**DENSITY**
s.g. Toluene	0.866	7.23
s.g. Hisol		
s.g. Acetone	0.791	6.6
s.g. Xylene	0.864	7.21
s.g. Benzene	0.879	7.34
water =62.43 lbs/ ft**3		

Material Mass Balance	
Stream A Paint	
Paint weight In	329.175
Solvent Weight (in paint)	142.065
Paint Weight	187.11
Stream A Solvent	
Toluene weight in	75.915
Hisol weight in	0
Acetone weight in	0
Stream A -Totalized values	
Total Mass Paint	187.11
Total Mass Solvent	217.98
Wt % solvent	53.81
Stream B -Pounds of Toluene	
	204.32
Stream C -Noncaptured VOC	
????	
Stream D-Reclaimed Paint	
Gallons of overspray captured	0
Pounds of reclaimed overspray	0.00
Pounds of reclaimed solvent	0.00
Noncaptured VOC (Stream C)	13.66
% Capture	93.7

2004 Capture Effeciency Testing

Friday **3/12/2004 Trial 3**
Paint Line 2

Booth #	1	Booth #	2
Nailite Coating Name*	Adobe Clay	Nailite Coating Name*	Adobe Clay
Nailite Color Number	I35-0144	Nailite Color Number	I35-0144
Manufacturer	Kelglo	Manufacturer	Kelglo
Begin Trial Time	8:00	Begin Trial Time	8:00
End Trial Time	9:00	End Trial Time	9:00
Begin Trial Volume (Reduced Paint-gal)	48	Begin Trial Volume (Reduced Paint-gal)	49
End Trial Volume (Reduced Paint-gal)	17	End Trial Volume (Reduced Paint-gal)	20
Volume of Reduced Paint Used-gal	31	Volume of Reduced Paint Used-gal	29
Cut Ratio (expressed as % solvent)	15	Cut Ratio (expressed as % solvent)	15
Cut Ratio (expressed as % paint)	85	Cut Ratio (expressed as % paint)	85
% Toluene used as % of total reducer	100	% Toluene used as % of total reducer	100
% Hisol used as % of total reducer	0	% Hisol used as % of total reducer	0
% Acetone used as % of total reducer	0	% Acetone used as % of total reducer	0
Volume of Paint used (nonreduced)	26.35	Volume of Paint used (nonreduced)	24.65
Volume of Reducer-Toluene	4.65	Volume of Reducer Used-Toluene	4.35
Volume of Reducer-Hisol Used	0	Volume of Reducer-Hisol Used	0
Volume of Reducer-Acetone	0	Volume of Reducer-Acetone	0

*See attached MSDS for coating information, VOC composition etc.

Gallons of paint used**	51
Gallons of toluene used	9
Gallons of hisol used	0
Gallons of acetone used	0

3
63

** refer to MSDS for solvent composition of paint

% volume solids in paint	31.54
% volume VOC in paint	68.46
Gallons VOC in paint	34.91
comp of paint-% Tol	100
comp of paint-% Hisol	0
comp of paint-% Acetone	0
Total Tol in mixture used (Gallons)	43.91
Total Hisol in Mix used (Gallons)	0.00
Total Acetone in mix used (Gallons)	0.00
Est capture w/o Adj	79.00
Est capture w/ Adj of 15 % reclaim	93

Koogler's carbon count	277.6	(Koogler carbon count 313.71)
given:		**DENSITY**
s.g. Toluene	0.866	7.23
s.g. Hisol		
s.g. Acetone	0.791	6.6
s.g. Xylene	0.864	7.21
s.g. Benzene	0.879	7.34
water =62.43 lbs/ ft**3		

Material Mass Balance

Stream A Paint	
Paint weight In	532.95
Solvent Weight (in paint)	293.0045907
Paint Weight	~~239.0454093~~ 252.40
Stream A Solvent	
Toluene weight in	65.07 ✓
Hisol weight in	0
Acetone weight in	0
Stream A -Totalized values	
Total Mass Paint	239.9
Total Mass Solvent	~~358.07~~ 317.50
Wt % solvent	59.88
Stream B -Pounds of Toluene	
	277.6
Stream C -Noncaptured VOC	
	????
Stream D-Reclaimed Paint	
Gallons of overspray captured	8.40
Pounds of reclaimed overspray	76.23
Pounds of reclaimed solvent	10.67
Noncaptured VOC (Stream C)	80.47
% Capture	77.5

RTO Destruction Efficiency Tests

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

Calculations

Gas Flow Inlet

Company: Nailite International
Source: Destruction Efficiency (Inlet)
Run 1

Location: Miami, FL
Date: 12-Mar-04

pts-> 12

Sqrt.Dp= 0.6549

T(s)= 90.33

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.44	91
2	0.45	91
3	0.47	91
4	0.45	91
5	0.44	90
6	0.32	91
7	0.36	90
8	0.48	89
9	0.53	90
10	0.46	90
11	0.41	90
12	0.36	90
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-2.1	in H2O
%O2 =	19	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	3086.1	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: Destruction Efficiency (Inlet) | Date: 12-Mar-04
Run 1

vs =	37.55	FT/SEC		As = 10.5592	ft^2
Q =	23789	acfm -	not corrected		
Q(stnd) =	22611	dscfm -	both temperature and moisture corrected		
Q(moist)=	23567	dcfm -	only moisture corrected		
Q(temp) =	23072	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! | Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! | Bws @sat = 0.047012 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	489.3186	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: Destruction Efficiency (Inlet)
Run 2

Location: Miami, FL
Date: 12-Mar-04

pts-> 12
Sqrt.Dp= 0.6593

T(s)= 92.42

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.46	92
2	0.47	93
3	0.47	93
4	0.46	93
5	0.44	93
6	0.31	91
7	0.39	92
8	0.49	92
9	0.53	92
10	0.45	93
11	0.38	93
12	0.39	92
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-0.5	in H2O
%O2 =	19.2	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	3466.7	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International Location: Miami, FL
Source: Destruction Efficiency (Inlet) Date: 12-Mar-04
Run 2

vs =	37.79	FT/SEC		As = 10.5592	ft^2
Q =	23945	acfm -	not corrected		
Q(stnd) =	22761	dscfm -	both temperature and moisture corrected		
Q(moist)=	23814	dcfm -	only moisture corrected		
Q(temp) =	23226	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! Bws @sat = 0.04985 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	553.3281	lb/hr as Propane	

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: Destruction Efficiency (Inlet)
Run 3

Location: Miami, FL
Date: 12-Mar-04

pts-> 12
Sqrt.Dp= 0.6375

T(s)= 92.33

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.37	89
2	0.46	92
3	0.52	92
4	0.46	92
5	0.37	92
6	0.3	91
7	0.39	94
8	0.45	94
9	0.43	93
10	0.43	93
11	0.44	93
12	0.29	93
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-2.1	in H2O
%O2 =	19	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	44	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	3943.4	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: Destruction Efficiency (Inlet) | Date: 12-Mar-04
Run 3

vs =	36.62	FT/SEC	As =	10.5592	ft^2
Q =	23200	acfm -	not corrected		
Q(stnd) =	21971	dscfm -	both temperature and moisture corrected		
Q(moist)=	22984	dcfm -	only moisture corrected		
Q(temp) =	22420	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! | Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! | Bws @sat = 0.050044 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	607.5638	lb/hr	as Propane

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Gas Flow Outlet

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

Company: Nailite International
Source: Destruction Efficiency (Outlet)
Run 1

Location: Miami, FL
Date: 03/12/04

pts-> 12

Sqrt.Dp= 0.8562

T(s)= 193.33

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.57	272
2	0.58	184
3	0.55	168
4	0.74	160
5	0.77	165
6	0.88	166
7	0.25	164
8	0.3	170
9	0.34	179
10	1.35	217
11	1.75	230
12	1.5	245
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-0.5	in H2O
%O2 =	16.5	%
%CO2 =	0.5	%
%Moist =	2.00	%
Stack Dia=	42	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	23.9	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International Location: Miami, FL
Source: Destruction Efficiency (Outlet) Date: 12-Mar-04
Run 1

vs =	53.40	FT/SEC	As =	9.6211	ft^2
Q =	30826	acfm -	not corrected		
Q(stnd) =	24776	dscfm -	both temperature and moisture corrected		
Q(moist)=	30657	dcfm -	only moisture corrected		
Q(temp) =	25282	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! Bws @sat = 0.667617 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	4.1524	lb/hr as Propane	

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: Destruction Efficiency (Outlet)
Run 2

Location: Miami, FL
Date: 12-Mar-04

pts-> 12

Sqrt.Dp= 0.8727

T(s)= 220.75

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.42	332
2	0.44	276
3	0.49	175
4	1	174
5	1.2	177
6	1.15	183
7	0.73	306
8	0.56	258
9	0.44	212
10	0.82	182
11	1.15	184
12	1.1	190
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-1.5	in H2O
%O2 =	16	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	42	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	34.2	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: Destruction Efficiency (Outlet) Run 2 | Date: 12-Mar-04

vs =	55.72	FT/SEC		As = 9.6211	ft^2
Q =	32166	acfm -	not corrected		
Q(stnd) =	24752	dscfm -	both temperature and moisture corrected		
Q(moist)=	31912	dcfm -	only moisture corrected		
Q(temp) =	25257	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! | Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! | Bws @sat = 1 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	5.9361	lb/hr as Propane	

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

Company: Nailite International
Source: Destruction Efficiency (Outlet)
Run 3

Location: Miami, FL
Date: 12-Mar-04

pts-> 12

Sqrt.Dp= 0.8511

T(s)= 260.58

Filename:
QuickFLOW
[Alt-C]
to clear input
range

Data Point	Stack Velocity Head	Stack Gas Temp.
1	0.65	321
2	0.71	344
3	0.46	240
4	0.78	202
5	1	190
6	1	182
7	0.32	300
8	0.41	308
9	0.47	339
10	1.1	271
11	1.15	225
12	0.98	205
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0

Pb =	30.4	in Hg
Ps =	-0.5	in H2O
%O2 =	16.5	%
%CO2 =	0	%
%Moist =	2.00	%
Stack Dia=	42	in
or		
Stack L =		in
Stack W =		in
PPM CO =		ppm
PPM NOx =		ppm
PPM SO2 =		ppm
PPM THC =	20.4	ppm
Vm =		ft3
dH =		in H2O
Tm =		F
Y =		
Vlc =		ml

Company: Nailite International | Location: Miami, FL
Source: Destruction Efficiency (Outlet) Run 3 | Date: 12-Mar-04

vs =	55.82	FT/SEC	As =	9.6211	ft^2
Q =	32225	acfm -	not corrected		
Q(stnd) =	23483	dscfm -	both temperature and moisture corrected		
Q(moist)=	32048	dcfm -	only moisture corrected		
Q(temp) =	23962	scfm -	only temperature corrected		

48.17232

Moisture

Vm(Std) = #VALUE! | Bws = #VALUE! | Lower Bws
Vw(Std) = #VALUE! | Bws @sat = 1 | Value used

Percent Moist = 2.00

Emission Rates:

CO =	#VALUE!	lb/hr	
NOx =	#VALUE!	lb/hr	as NO2
SO2 =	#VALUE!	lb/hr	
THC =	3.3593	lb/hr as Propane	

EQUATIONS :

As = (PI*(Stack Dia/12)^2)/4 --- Round Stacks
or
As = (Stack L/12)*(Stack W/12) --- Square Stacks

Md = (.44*%CO2)+(.32*%O2)+(.28*(100-(%CO2+%O2)))
Ms = (Md*(1-%Moist))+(18*%Moist)
P(stack) = Pb+(Ps/13.6)
vs = (85.49)*(0.85)*(Sqrt.Dp)*(Sqrt[(T(s)+460)/(Ms*P(stack))])
Q = vs * As * 60
Q(stnd) = Q*(1-%Moist)*(528/(Ts+460))*(P(stack)/29.92)
Vm (Stnd) = 17.6471 * Vm * Y * ((Pb+(dH/13.6))/(Tm+460))
Vw (Stnd) = 0.0471 * Vlc
Bws = (Vw(Stnd) / (Vm(Stnd)+ Vw(Stnd))
Bws @ Sat = Vap. Pressure of H2O @ Dew Point Temp/Ps
CO (lb/hr) = ((PPM CO)*Q(stnd)*28.01*60)/(385*10^6)
NOx (lb/hr) = ((PPM NOx)*Q(stnd)*46.006*60)/(385*10^6)
SO2 (lb/hr) = ((PPM SO2)*Q(stnd)*64.0648*60)/(385*10^6)
THC (lb/hr) = ((PPM THC)*Q(temp)*44.0965*60)/(385*10^6)

THC Monitoring Data

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

EPA Protocol Gas Analyzer Calibration Data
THC Concentration Instrument Range Setting (0 - 100 ppm as Propane)
March 12, 2004

Calibration Gas	Conc. (ppmv)	Run No.	Date/Time	Response through Train System Loop (ppmv)	Drift (% of Range)	Accuracy Diff. from Actual (% of Range)
Zero	0.0	R1-Pre	3/12/2004 9:07	-0.38		-0.38
Zero	0.0	R1-Post	3/12/2004 11:51	-0.38	0.00	-0.38
Propane	24.7	R1-Pre	3/12/2004 9:21	24.4		-0.30
Propane	24.7	R1-Post	3/12/2004 11:56	23.6	-0.75	-1.05
Propane	49.1	R1-Pre	3/12/2004 9:18	48.4		-0.68
Propane	101.6	R1-Pre	3/12/2004 9:13	101.0		-0.62
Zero	0.0	R2-Pre	3/12/2004 11:51	-0.38		-0.38
Zero	0.0	R2-Post	3/12/2004 13:31	-0.38	0.00	-0.38
Propane	24.7	R2-Pre	3/12/2004 11:56	23.6		-1.05
Propane	24.7	R2-Post	3/12/2004 13:36	23.6	0.00	-1.05
Zero	0.0	R3-Pre	3/12/2004 13:31	-0.38		-0.38
Zero	0.0	R3-Post	3/12/2004 15:37	-0.38	0.00	-0.38
Propane	24.7	R3-Pre	3/12/2004 13:36	23.6		-1.05
Propane	24.7	R3-Post	3/12/2004 15:42	23.6	0.00	-1.05
Zero	0.0	R1-Pre*	3/12/2004 9:07	-0.38		-0.38
Zero	0.0	R3-Post	3/12/2004 15:37	-0.38	0.00	-0.38
Propane	24.7	R1-Pre*	3/12/2004 9:21	24.4		-0.30
Propane	24.7	R3-Post	3/12/2004 15:42	23.6	-0.75	-1.05
Propane	49.1	R1-Pre*	3/12/2004 9:18	48.4		-0.68
Propane	49.1	R3-Post	3/12/2004 15:46	48.4	0.00	-0.68
Propane	101.6	R1-Pre*	3/12/2004 9:13	101.0		-0.62
Propane	101.6	R3-Post	3/12/2004 15:50	101.2	0.19	-0.44

Range Setting (0 - 100 ppm as Propane)

Cal. Gas ppm	% of Range
24.7	24.70
49.1	49.10
101.6	101.60

EPA Protocol Gas Analyzer Calibration Data THC Concentration Instrument Range Setting (0 - 10,000 ppm as Propane) March 12, 2004						
Calibration Gas	Conc. (ppmv)	Run No.	Date/Time	Response through Train System Loop (ppmv)	Drift (% of Range)	Accuracy Diff. from Actual (% of Range)
Zero	0.0	R1-Pre	3/12/2004 9:23	2.49		0.02
Zero	0.0	R1-Post	3/12/2004 11:59	-2.49	-0.05	-0.02
Propane	1020	R1-Pre	3/12/2004 9:27	1031		0.11
Propane	3010	R1-Post	3/12/2004 9:30	2975		-0.35
Propane	3010	R1-Pre	3/12/2004 12:03	3004	0.30	-0.06
Propane	8504	R1-Pre	3/12/2004 9:34	8495		-0.09
Zero	0.0	R2-Pre	3/12/2004 11:59	-2.49		-0.02
Zero	0.0	R2-Post	3/12/2004 13:22	2.49	0.05	0.02
Propane	3010	R2-Pre	3/12/2004 12:03	3004		-0.06
Propane	3010	R2-Post	3/12/2004 13:26	2975	-0.30	-0.35
Zero	0.0	R3-Pre	3/12/2004 13:22	2.49		0.02
Zero	0.0	R3-Post	3/12/2004 15:22	2.49	0.00	0.02
Propane	3010	R3-Pre	3/12/2004 13:26	2975		-0.35
Propane	3010	R3-Post	3/12/2004 15:29	3032	0.57	0.22
Zero	0.0	R1-Pre*	3/12/2004 9:23	2.49		0.02
Zero	0.0	R3-Post	3/12/2004 15:22	2.49	0.00	0.02
Propane	1020	R1-Pre*	3/12/2004 9:27	1031		0.11
Propane	1020	R3-Post	3/12/2004 15:25	1056	0.25	0.36
Propane	3010	R1-Pre*	3/12/2004 9:30	2975		-0.35
Propane	3010	R3-Post	3/12/2004 15:29	3032	0.57	0.22
Propane	8504	R1-Pre*	3/12/2004 9:34	8495		-0.09
Propane	8504	R3-Post	3/12/2004 15:32	8510	0.15	0.06

Range Setting (0 - 10,000 ppm as Propane)

Cal. Gas ppm	% of Range
1020	10.20
3010	30.10
8504	85.04

Nailite Corp.
Miami, Florida

Painting Lines No. 1 and No. 2 RTO Destruction Efficiency

TimeStamp	Outlet ppm CH4	Outlet ppm CH 8	Inlet ppm THC
3/12/2004 9:00	1.8	1.9	2949.6
3/12/2004 9:01	1.8	1.9	2924.7
3/12/2004 9:02	1.8	1.9	2934.6
3/12/2004 9:03	1.0	1.9	2929.7
3/12/2004 9:04	-0.3	0.8	2919.7
3/12/2004 9:05	-0.3	0.0	2904.7
3/12/2004 9:06	-0.3	-0.4	2924.7
3/12/2004 9:07	0.0	-0.4	2924.7
3/12/2004 9:08	9.8	28.9	2919.7
3/12/2004 9:09	9.8	98.7	2899.8
3/12/2004 9:10	9.8	98.7	2909.7
3/12/2004 9:11	10.5	98.7	2924.7
3/12/2004 9:12	10.8	101.0	2934.6
3/12/2004 9:13	10.8	101.0	2914.7
3/12/2004 9:14	7.8	101.0	2894.8
3/12/2004 9:15	0.3	72.8	2904.7
3/12/2004 9:16	-0.3	48.8	2919.7
3/12/2004 9:17	-0.3	48.4	2919.7
3/12/2004 9:18	-0.3	48.4	2600.8
3/12/2004 9:19	-0.3	45.0	2007.9
3/12/2004 9:20	-0.3	24.4	1195.8
3/12/2004 9:21	-0.3	24.4	677.6
3/12/2004 9:22	-0.3	23.6	24.9
3/12/2004 9:23	-0.3	4.9	5.0
3/12/2004 9:24	-0.3	1.5	0.0
3/12/2004 9:25	-0.3	1.1	573.0
3/12/2004 9:26	-0.3	1.1	1031.4
3/12/2004 9:27	-0.3	0.8	1031.4
3/12/2004 9:28	-0.5	0.8	1699.0
3/12/2004 9:29	-0.5	0.8	2974.5
3/12/2004 9:30	-0.5	0.4	2974.5
3/12/2004 9:31	-0.5	0.4	2974.5
3/12/2004 9:32	-0.5	0.4	5675.0
3/12/2004 9:33	-0.5	1.1	8524.9
3/12/2004 9:34	-0.5	1.9	8465.1
3/12/2004 9:35	-0.5	1.1	7169.7
3/12/2004 9:36	-0.5	9.8	901.8
3/12/2004 9:37	-0.5	5.6	1046.3
3/12/2004 10:40	4.8	1.9	2017.9
3/12/2004 10:41	1.5	2.3	2396.5
3/12/2004 10:42	-0.3	4.9	2840.0
3/12/2004 10:43	-0.5	1.1	3044.3
3/12/2004 10:44	-0.5	0.4	3143.9
3/12/2004 10:45	-0.5	0.4	3188.7

<<Zero air OUTLET		
Methane	NMHC	
-0.13	-0.38	<average

<<101.6 Prop. OUTLET		
Methane	NMHC	
10.8	101.0	<average

<< 49.1 Prop. OUTLET		
Methane	NMHC	
-0.3	48.4	<average

<<24.7 Prop. OUTLET		
Methane	NMHC	
-0.3	24.4	<average

<<Zero air INLET		
	NMHC	
	2.49	<average

<<1020 Prop. INLET		
	THC	
	1031.4	<average

<<3010 Prop. INLET		
	THC	
	2974.5	<average

<<8504 Prop. INLET		
	THC	
	8495.0	<average

3/12/2004 10:46	-0.5	5.3	3208.7	<<Start Run 1
3/12/2004 10:47	-0.5	5.6	3233.6	
3/12/2004 10:48	0.0	4.5	3248.5	
3/12/2004 10:49	2.0	259.8	3243.6	
3/12/2004 10:50	-0.3	390.8	3238.6	
3/12/2004 10:51	-0.3	4.9	3253.5	
3/12/2004 10:52	-0.3	2.6	3263.5	
3/12/2004 10:53	-0.3	3.0	3208.7	
3/12/2004 10:54	-0.3	18.4	2730.4	
3/12/2004 10:55	-0.3	5.3	2511.1	
3/12/2004 10:56	-0.3	3.8	2436.4	
3/12/2004 10:57	-0.3	3.0	2436.4	
3/12/2004 10:58	-0.3	5.6	2376.6	
3/12/2004 10:59	-0.3	4.5	2406.5	
3/12/2004 11:00	-0.3	2.3	2501.2	
3/12/2004 11:01	-0.3	1.9	2516.1	
3/12/2004 11:02	-0.3	2.3	2466.3	
3/12/2004 11:03	-0.3	4.5	2700.5	
3/12/2004 11:04	-0.3	2.6	3119.0	
3/12/2004 11:05	-0.3	7.1	3124.0	
3/12/2004 11:06	-0.3	162.9	3153.9	
3/12/2004 11:07	-0.3	15.4	3153.9	
3/12/2004 11:08	-0.3	2.3	3208.7	
3/12/2004 11:09	-0.3	1.5	3183.8	
3/12/2004 11:10	-0.3	10.5	3168.8	
3/12/2004 11:11	-0.3	10.5	3238.6	
3/12/2004 11:12	-0.3	5.6	3298.4	
3/12/2004 11:13	-0.3	4.5	3358.1	
3/12/2004 11:14	-0.3	4.9	3408.0	
3/12/2004 11:15	-0.3	6.8	3398.0	
3/12/2004 11:16	-0.3	2.6	3383.1	
3/12/2004 11:17	-0.3	1.5	3363.1	
3/12/2004 11:18	-0.3	39.8	3338.2	
3/12/2004 11:19	-0.3	9.8	3323.3	
3/12/2004 11:20	-0.3	4.5	3333.2	
3/12/2004 11:21	-0.3	3.4	3313.3	
3/12/2004 11:22	-0.3	51.8	3293.4	
3/12/2004 11:23	-0.3	42.0	3308.3	
3/12/2004 11:24	-0.3	3.8	3338.2	
3/12/2004 11:25	-0.3	2.3	3328.3	
3/12/2004 11:26	-0.3	4.9	3303.3	
3/12/2004 11:27	-0.3	13.5	3298.4	
3/12/2004 11:28	-0.3	6.8	3283.4	
3/12/2004 11:29	-0.3	5.3	3293.4	
3/12/2004 11:30	-0.3	4.9	3288.4	
3/12/2004 11:31	-0.3	7.1	3293.4	
3/12/2004 11:32	-0.3	4.1	3318.3	
3/12/2004 11:33	0.5	2.3	3323.3	
3/12/2004 11:34	1.8	84.8	3293.4	
3/12/2004 11:35	-0.3	77.7	3278.4	
3/12/2004 11:36	-0.3	7.1	3213.7	
3/12/2004 11:37	-0.3	4.5	3138.9	

3/12/2004 11:38	-0.3	12.8	3009.4			
3/12/2004 11:39	-0.3	42.8	2944.6			
3/12/2004 11:40	-0.3	3.8	2904.7			
3/12/2004 11:41	-0.3	2.3	2889.8			
3/12/2004 11:42	-0.3	1.9	2825.0			
3/12/2004 11:43	-0.3	10.5	2790.2			
3/12/2004 11:44	-0.3	7.9	2795.1			
3/12/2004 11:45	-0.3	5.3	2795.1			
3/12/2004 11:46	-0.3	4.5	2700.5			
3/12/2004 11:47	-0.3	5.3	1933.2	<<End Run 1		
3/12/2004 11:48	-0.3	5.3	1175.9			
3/12/2004 11:49	-0.3	2.3	832.1			
3/12/2004 11:50	-0.3	-0.4	652.7			
3/12/2004 11:51	-0.3	-0.4	508.2			
3/12/2004 11:52	-0.3	-0.4	433.5			
3/12/2004 11:53	-0.3	0.4	408.6			
3/12/2004 11:54	-0.3	21.0	348.8			
3/12/2004 11:55	-0.3	23.6	303.9			
3/12/2004 11:56	-0.3	23.6	274.0			
3/12/2004 11:57	-0.5	23.6	0.0			
3/12/2004 11:58	-0.5	11.6	-5.0			
3/12/2004 11:59	-0.5	0.4	1205.7			
3/12/2004 12:00	-0.5	0.4	3004.4			
3/12/2004 12:01	-0.3	0.4	3004.4			
3/12/2004 12:02	1.0	3.4	3004.4			
3/12/2004 12:03	0.0	22.9	1430.0			
3/12/2004 12:04	-0.5	0.4	179.4			
3/12/2004 12:05	-0.5	-0.4	269.1			

AVERAGE	
NMHC	THC
23.3	3065.0

<<Zero air OUTLET		
	NMHC	
	-0.38	<average

<<24.7 Prop. OUTLET		
	NMHC	
	23.6	<average
<<Zero air INLET		
	THC	
	-2.5	<average
<<3010 Prop. INLET		
	THC	
	3004.4	<average

RUN 1	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC (Inlet)	3065.0	0.00	3010.0	2989.4	3086.1
NMHC (Outlet)	23.3	-0.19	24.7	24.0	23.9

Nailite Corp.
Miami, Florida

Painting Lines No. 1 and No. 2 RTO Destruction Efficiency

	Outlet		Inlet	
TimeStamp	ppm CH4	ppm CH 8	ppm THC	
3/12/2004 12:15	-0.5	-0.4	2536.0	
3/12/2004 12:16	-0.5	3.8	2680.5	
3/12/2004 12:17	-0.5	2.3	2840.0	
3/12/2004 12:18	0.8	2.3	2884.8	<<Start Run 2
3/12/2004 12:19	1.3	95.0	2899.8	
3/12/2004 12:20	-0.5	53.7	2969.5	
3/12/2004 12:21	-0.5	3.8	3009.4	
3/12/2004 12:22	-0.5	1.5	3019.3	
3/12/2004 12:23	-0.5	7.1	3109.0	
3/12/2004 12:24	-0.5	15.4	3163.8	
3/12/2004 12:25	-0.5	4.1	3278.4	
3/12/2004 12:26	-0.5	2.6	3368.1	
3/12/2004 12:27	-0.5	2.6	3408.0	
3/12/2004 12:28	-0.5	9.0	3437.9	
3/12/2004 12:29	-0.5	3.8	3462.8	
3/12/2004 12:30	-0.5	2.3	3497.7	
3/12/2004 12:31	-0.5	1.5	3452.8	
3/12/2004 12:32	-0.5	5.3	3492.7	
3/12/2004 12:33	-0.5	6.4	3507.6	
3/12/2004 12:34	-0.5	4.5	3512.6	
3/12/2004 12:35	0.0	174.9	3492.7	
3/12/2004 12:36	-0.5	442.9	3507.6	
3/12/2004 12:37	-0.5	5.3	3512.6	
3/12/2004 12:38	-0.5	2.6	3532.5	
3/12/2004 12:39	-0.5	1.9	3512.6	
3/12/2004 12:40	-0.5	16.5	3512.6	
3/12/2004 12:41	-0.5	7.1	3482.7	
3/12/2004 12:42	-0.5	4.5	3517.6	
3/12/2004 12:43	-0.5	3.8	3487.7	
3/12/2004 12:44	-0.5	6.4	3532.5	
3/12/2004 12:45	-0.3	6.0	3532.5	
3/12/2004 12:46	-0.3	2.3	3547.5	
3/12/2004 12:47	-0.5	1.5	3532.5	
3/12/2004 12:48	-0.5	2.6	3527.6	
3/12/2004 12:49	-0.5	10.1	3532.5	
3/12/2004 12:50	-0.3	7.9	3542.5	
3/12/2004 12:51	-0.5	6.4	3537.5	
3/12/2004 12:52	-0.3	158.0	3532.5	
3/12/2004 12:53	-0.5	39.8	3557.4	
3/12/2004 12:54	-0.5	3.4	3567.4	
3/12/2004 12:55	-0.5	2.3	3567.4	
3/12/2004 12:56	-0.5	10.5	3547.5	
3/12/2004 12:57	-0.5	14.6	3557.4	
3/12/2004 12:58	-0.5	9.0	3572.4	
3/12/2004 12:59	-0.5	7.5	3577.4	

3/12/2004 13:00	-0.5	6.8	3552.5		
3/12/2004 13:01	-0.5	7.5	3542.5		
3/12/2004 13:02	-0.5	2.6	3587.3		
3/12/2004 13:03	1.3	1.9	3582.4		
3/12/2004 13:04	1.3	573.2	3582.4		
3/12/2004 13:05	-0.5	164.8	3587.3		
3/12/2004 13:06	-0.5	7.5	3587.3		
3/12/2004 13:07	-0.5	5.6	3597.3		
3/12/2004 13:08	-0.5	27.8	3577.4		
3/12/2004 13:09	-0.5	33.4	3592.3		
3/12/2004 13:10	-0.5	3.8	3612.3		
3/12/2004 13:11	-0.5	2.6	3597.3		
3/12/2004 13:12	-0.5	2.6	3577.4		
3/12/2004 13:13	-0.5	10.1	3582.4		
3/12/2004 13:14	-0.5	4.1	3582.4		
3/12/2004 13:15	-0.5	2.6	3582.4		
3/12/2004 13:16	-0.3	1.9	3567.4		
3/12/2004 13:17	-0.3	5.3	3567.4		
3/12/2004 13:18	-0.3	4.1	3562.4		
3/12/2004 13:19	-0.3	2.3	1649.2	<<End Run 2	
3/12/2004 13:20	-0.5	116.0	24.9		
3/12/2004 13:21	-0.5	167.8	5.0		
3/12/2004 13:22	-0.3	3.8	0.0		
3/12/2004 13:23	-0.5	1.9	891.9		
3/12/2004 13:24	-0.3	1.5	2974.5		
3/12/2004 13:25	-0.3	5.6	2974.5		
3/12/2004 13:26	-0.3	1.1	2531.1		
3/12/2004 13:27	-0.3	0.4	383.6		
3/12/2004 13:28	-0.3	5.3	343.8		
3/12/2004 13:29	-0.3	1.5	313.9		
3/12/2004 13:30	-0.3	-0.4	289.0		
3/12/2004 13:31	-0.3	-0.4	269.1		
3/12/2004 13:32	-0.3	-0.4	244.1		
3/12/2004 13:33	-0.3	7.1	229.2		
3/12/2004 13:34	-0.3	23.6	214.2		
3/12/2004 13:35	-0.3	23.6	219.2		
3/12/2004 13:36	-0.3	23.6	244.1		
3/12/2004 13:37	-0.3	23.6	214.2		
3/12/2004 13:38	-0.3	2.6	189.3		

AVERAGE	
NMHC	THC
32.9	3443.0

<<Zero air INLET		
	NMHC	
	2.49	<average

<<3010 Prop. INLET		
	NMHC	
	2974.5	<average

<<Zero air OUTLET		
	NMHC	
	-0.38	<average

<<24.7 Prop. OUTLET		
	NMHC	
	23.6	<average

RUN 2	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC (Inlet)	3443.0	0.00	3010.0	2989.4	3466.7
NMHC (Outlet)	32.9	-0.38	24.7	23.6	34.2

Nailite Corp.
Miami, Florida

Painting Lines No. 1 and No. 2 RTO Destruction Efficiency

	Outlet		Inlet	
TimeStamp	ppm CH4	ppm CH 8	ppm THC	
3/12/2004 14:15	-0.3	0.8	3044.3	
3/12/2004 14:16	-0.3	0.4	3368.1	
3/12/2004 14:17	-0.3	3.8	3522.6	
3/12/2004 14:18	-0.3	5.3	3627.2	<<Start Run 3
3/12/2004 14:19	-0.3	3.0	3692.0	
3/12/2004 14:20	-0.3	2.3	3692.0	
3/12/2004 14:21	-0.3	2.3	3731.8	
3/12/2004 14:22	-0.3	4.1	3751.8	
3/12/2004 14:23	-0.3	1.9	3811.5	
3/12/2004 14:24	-0.3	1.1	3856.4	
3/12/2004 14:25	-0.3	37.2	3876.3	
3/12/2004 14:26	-0.3	12.4	3896.2	
3/12/2004 14:27	-0.3	3.0	3901.2	
3/12/2004 14:28	-0.3	1.9	3886.3	
3/12/2004 14:29	-0.3	7.1	3891.3	
3/12/2004 14:30	-0.3	9.0	3896.2	
3/12/2004 14:31	-0.3	3.0	3916.2	
3/12/2004 14:32	-0.3	1.9	3911.2	
3/12/2004 14:33	-0.3	1.9	3881.3	
3/12/2004 14:34	-0.3	7.1	3921.2	
3/12/2004 14:35	-0.3	4.1	3931.1	
3/12/2004 14:36	1.5	2.6	3916.2	
3/12/2004 14:37	1.3	138.1	3916.2	
3/12/2004 14:38	-0.3	46.5	3931.1	
3/12/2004 14:39	-0.3	4.5	3946.1	
3/12/2004 14:40	-0.3	2.6	3946.1	
3/12/2004 14:41	-0.3	14.6	3946.1	
3/12/2004 14:42	-0.3	21.0	3976.0	
3/12/2004 14:43	-0.3	6.0	4020.8	
3/12/2004 14:44	-0.3	4.5	4015.8	
3/12/2004 14:45	-0.3	4.1	4035.8	
3/12/2004 14:46	-0.3	11.6	4045.7	
3/12/2004 14:47	-0.3	3.4	4060.7	
3/12/2004 14:48	-0.3	1.9	4070.6	
3/12/2004 14:49	-0.3	1.1	4065.7	
3/12/2004 14:50	-0.3	4.9	4050.7	
3/12/2004 14:51	-0.3	4.5	4075.6	
3/12/2004 14:52	0.0	2.6	4060.7	
3/12/2004 14:53	0.8	244.7	4020.8	
3/12/2004 14:54	-0.3	374.6	4070.6	
3/12/2004 14:55	-0.3	6.4	4080.6	
3/12/2004 14:56	-0.3	3.0	4085.6	
3/12/2004 14:57	-0.3	3.0	4040.7	
3/12/2004 14:58	-0.3	19.9	4060.7	
3/12/2004 14:59	-0.3	4.1	4035.8	

3/12/2004 15:00	-0.3	2.3	4000.9	
3/12/2004 15:01	-0.3	1.9	3990.9	
3/12/2004 15:02	-0.3	7.5	3981.0	
3/12/2004 15:03	-0.3	6.0	3956.0	
3/12/2004 15:04	-0.3	2.6	3981.0	
3/12/2004 15:05	-0.3	1.9	3931.1	
3/12/2004 15:06	-0.3	2.6	3946.1	
3/12/2004 15:07	-0.3	4.5	3971.0	
3/12/2004 15:08	-0.3	2.6	3971.0	
3/12/2004 15:09	-0.3	3.4	3946.1	
3/12/2004 15:10	-0.3	61.2	3971.0	
3/12/2004 15:11	-0.3	8.3	4000.9	
3/12/2004 15:12	-0.3	3.0	4005.9	
3/12/2004 15:13	-0.3	2.3	3976.0	
3/12/2004 15:14	-0.3	5.3	4005.9	
3/12/2004 15:15	-0.3	4.5	4030.8	
3/12/2004 15:16	-0.3	2.3	3990.9	
3/12/2004 15:17	-0.3	15.4	3985.9	
3/12/2004 15:18	-0.3	29.7	4020.8	
3/12/2004 15:19	-0.3	3.8	2680.5	<<End Run 3
3/12/2004 15:20	1.0	24.8	24.9	
3/12/2004 15:21	0.3	273.6	0.0	
3/12/2004 15:22	-0.3	8.3	5.0	
3/12/2004 15:23	-0.3	2.3	632.8	
3/12/2004 15:24	0.5	1.1	1056.3	
3/12/2004 15:25	1.8	3.8	1056.3	
3/12/2004 15:26	1.8	3.0	1589.4	
3/12/2004 15:27	1.8	3.4	3029.3	
3/12/2004 15:28	1.8	4.9	3034.3	
3/12/2004 15:29	1.8	4.9	3462.8	
3/12/2004 15:30	1.8	6.0	8495.0	
3/12/2004 15:31	1.8	8.3	8524.9	
3/12/2004 15:32	1.8	1.9	5445.8	
3/12/2004 15:33	0.5	0.4	5.0	
3/12/2004 15:34	-0.3	24.4	-5.0	
3/12/2004 15:35	-0.3	4.1	-14.9	
3/12/2004 15:36	-0.3	-0.4	-14.9	
3/12/2004 15:37	-0.3	-0.4	19.9	
3/12/2004 15:38	-0.3	-0.4	24.9	
3/12/2004 15:39	-0.3	10.9	24.9	
3/12/2004 15:40	-0.3	23.6	-44.8	
3/12/2004 15:41	-0.3	23.6	5.0	
3/12/2004 15:42	-0.3	23.6	5.0	
3/12/2004 15:43	-0.3	25.9	5.0	
3/12/2004 15:44	-0.3	47.7	5.0	
3/12/2004 15:45	-0.3	48.4	5.0	
3/12/2004 15:46	-0.3	48.4	5.0	
3/12/2004 15:47	4.5	48.4	5.0	
3/12/2004 15:48	10.8	84.8	5.0	
3/12/2004 15:49	10.8	101.0	5.0	
3/12/2004 15:50	10.8	101.4	5.0	
3/12/2004 15:51	10.5	101.4	5.0	

AVERAGE	
NMHC	THC
19.5	3933.7

<<Zero air INLET		
	THC	
	2.49	

<<1020 Prop. INLET		
	THC	
	1056.3	<average

<<3010 Prop. INLET		
	THC	
	3031.8	<average

<<8504 Prop. INLET		
	THC	
	8510.0	<average

<<Zero air OUTLET		
Methane	NMHC	
-0.3	-0.38	<average

<<24.7 Prop. OUTLET		
	NMHC	
	23.6	<average

<< 49.1 Prop. OUTLET		
Methane	NMHC	
-0.3	48.4	<average

<<101.6 Prop. OUTLET		
Methane	NMHC	
10.8	101.2	<average

3/12/2004 15:52	6.8	86.7	5.0
3/12/2004 15:53	2.8	46.5	5.0

RUN 3	ANALYZER RESPONSE TO STACK GAS ppmv	ZERO BIAS ppmv	ACTUAL CAL.GAS VALUE ppmv	ANALYZER RESPONSE TO CAL. GAS ppmv	CORRECTED STACK GAS CONC. ppmv
THC (Inlet)	3933.7	1.25	3010.0	3003.2	3943.1
NMHC (Outlet)	19.5	-0.38	24.7	23.6	20.4

Field Data Sheets

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

INLET - Destruction

RAG-1 3/12/04

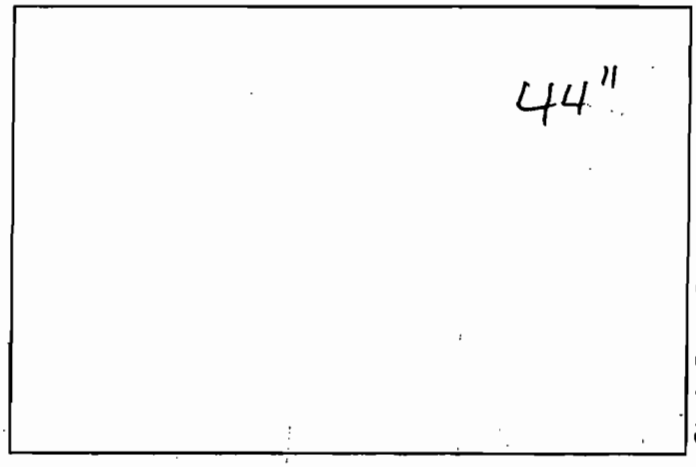
Traverse Data Sheet and Cyclonic Flow Check

Plant: Nailite International

Location/Site: Miami, FL

Date: 3/12/04

Stack Unit: RTO INLET



Pitot Corr. Factor: 0.84

DB: ____ F WB: ____ F DP: ____ F

V.P. at DP: ____ "Hg Fract. D.A.: ____

Weather: Scatt

Ambient Temp. F ____ Barometric Pressure: 30.4 "Hg

Wind Direction: E Wind Speed: 8-10

Point Number		Distance From Stack Wall	Cyclonic Check Null Angle Horizontal	Cyclonic Check Null Angle Verticle	Run #1 Time: / Stack Pressure: -2.1 / Traverse No. 1 △ P	Run #1 Temp. F	Run #2 Time: / Stack Pressure: -2.1 / Traverse No. 2 △ P	Run #2 Temp. F	Run #3 Time: / Stack Pressure: -2.1 / Traverse No. 3 △ P	Run #3 Temp. F	Run #4 Time: / Stack Pressure: / Traverse No. 4 △ P	Run #4 Temp. F
1	1				6.44	91 ~~91~~	0.46	92	0.37	89		
2	2				0.45	91	0.47	93	0.46	92		
3	3				0.47	91	0.47	93	0.52	92		
4	4				0.45	91	0.46	93	0.46	92		
5	5				0.44	90	0.44	93	0.37	92		
6	6				0.32	91	0.31	91	0.30	91		
7	7				0.36	90	~~0.39~~ 0.42	92	0.39	94		
8	8				0.48	89	0.49	92	0.45	94		
9	9				0.53	90	0.53	93	0.43	93		
10	10				0.46	90	0.45	93	0.43	93		
11	11				0.41	90	0.38	94	0.44	93		
12	12				0.36	90	0.39	92	0.29	93		
1	13											
2	14											
3	15											
4	16				O_2	19.0	O_2 =	19.2		19.0		
5	17											
6	18				CO_2	0.0		0.0		0.0		
7	19											
8	20				T_{SW}	68° F		69		69		
9	21											
10	22											
11	23											
12	24											

3086.1

489.32 lb/hr

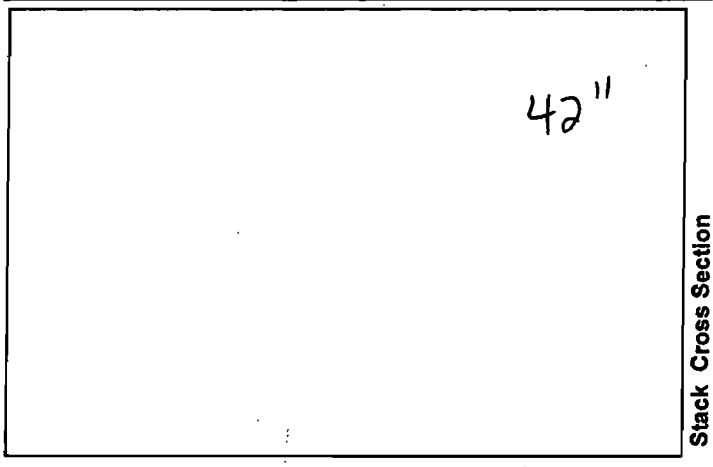
Outlet - Destruction

PAG-1
3/12/04

Traverse Data Sheet and Cyclonic Flow Check

Plant: Nailite International
Location/Site: Miami

Date: 3/12/04
Stack Unit: RTO OUTLET



Pitot Corr. Factor: 0.84

DB: ____F **WB:** ____F **DP:** ____F

V.P. at DP: ____"Hg **Fract. D.A.:** ____

Weather: Scatt.

Ambient Temp. F ____ **Barometric Pressure:** 30.4 "Hg

Wind Direction: E **Wind Speed:** 8-10

Run #1 Run #2 Run #3

Point Number		Distance From Stack Wall	Cyclonic Check Null Angle Horizontal	Cyclonic Check Null Angle Verticle	Run #1 Time: / Stack Pressure: -0.50 / Traverse No. 1 △ P	Run #1 Traverse No. 1 Temp. F	Run #2 Time: / Stack Pressure: -0.50 / Traverse No. 2 △ P	Run #2 Traverse No. 2 Temp. F	Run #3 Time: / Stack Pressure: -0.5 / Traverse No. 3 △ P	Run #3 Traverse No. 3 Temp. F	Traverse No. 4 Stack Pressure: △ P	Traverse No. 4 Temp. F
1	1				0.57	272	0.42	332	0.65	321		
2	2				0.58	184	0.44	276	0.71	344		
3	3				0.55	168	0.49	175	0.46	240		
4	4				0.74	160	1.0	174	0.78	202		
5	5				0.77	165	1.2	177	1.0	190		
6	6				0.88	166	1.15	183	1.0	182		
7	7				0.25	164	0.73	306	0.32	300		
8	8				0.30	170	0.56	258	0.41	308		
9	9				0.34	179	0.44	212	0.47	339		
10	10				1.35	217	0.82	182	1.1	271		
11	11				1.75	230	1.15	184	1.15	235		
12	12				1.5	245	1.1	190	0.98	205		
1	13											
2	14											
3	15											
4	16				O_2 =	16.5	=	16.0	O_2 =	16.5		
5	17											
6	18				CO_2	0.5	=	0.0	CO_2 =	0.0		
7	19											
8	20				T_{SW}	~~102~~ 92		95		95		
9	21											
10	22											
11	23											
12	24											

23.9 ppm

4,15

Nailite Internation
Destruction efficien
3/12/04

09:03 ~~09:02~~ Zero air on outlet
09:05 Zero air = -0.25 CH4 / -0.375 NMHC
09:07 101.6 prop / 11.09 CH4 on
09:12 101.6 prop = 100.4 / 11.09 CH4 = 10.8
09:14 49.1 prop on
09:16 49.1 prop = 49.17
09:18 24.7 prop on
09:20 24.7 prop = 24.78
09:21 Zero air on inlet
09:23 Zero air = 9.97
09:25 1020 prop on
09:26 1020 prop = 1031
09:28 3010 prop on
09:30 3010 prop = 2974.5
09:32 8504 prop on
09:33 8504 prop = ~~8503~~ 8524
10:46 Start Run #1
11:46 End Run #1
11:47 Zero air on outlet
11:56 Zero air = -0.351 (-0.375) NMHC
11:52 24.7 prop on
11:55 24.7 prop = 23.6
11:56 Zero air on inlet
11:58 Zero air = 0
~~12:~~ 11:59 3010 ~~3004~~ on
12:01 3010 prop = 3004
12:18 Start Run #2
13:18 End Run #2
13:19 Zero air on inlet
13:21 Zero air = 9.96
13:23 3010 prop on
13:24 3010 prop = 2969.5
13:27 Zero air on outlet
13:28 NMHC = 0
13:32 24.7 prop on
13:34 24.7 prop = 23.6
14:18 Start Run #3
15:19 End Run #3
15:20 Zero air on inlet
15:21 Zero air = 9.96 & 4.98
15:23 1020 prop on
15:24 1020 prop = 1051.3
15:26 3010 prop on
15:27 3010 prop = 3029.3
15:29 8504 prop on
15:30 8504 prop = 8524
15:33 Zero air on outlet
15:36 Zer air = -6.375
15:38 24.7 prop on
15:41 24.7 prop = 23.6
15:42 49.1 prop on
15:44 49.1 prop = -47.7 to 48.4
15:47 101.6 prop on
15:49 101.6 prop = 100.6

Plant Operating Logs

R1

2004 Destruction Effeciency Testing

Friday **3/12/2004**

Paint Line 1

Booth #	1	2	3	3	3
Nailite Coating Name*	2H Masonry White	2H Masonry White	2H Special Gray	n/a	2H Black
Nailite Color Number	I35-0145	I35-0145	E35-0145		B35-0091
Manufacturer	Strathmore	Strathmore	Strathmore	n/a	Strathmore
Begin Trial Time	9:30	9:30	9:30	9:30	9:30
End Trial Time	10:30	10:30	10:30	10:30	10:30
Begin Trial Volume (Reduced Paint-gal)	48	46	42		48
End Trial Volume (Reduced Paint-gal)	39	35	37		45
Volume of Reduced Paint Used-gal	9	11	5		3
Cut Ratio (expressed as % solvent)	25	25	72		90
Cut Ratio (expressed as % paint)	75	75	28		10
% Toluene used as % of total reducer	100	100	50		50
% Hisol used as % of total reducer	0	0	50		50
% Acetone used as % of total reducer	0	0	0		0
Volume of Paint used (nonreduced)	6.75	8.25	1.4		0.3
Volume of Reducer-Toluene	2.25	2.75	1.8		1.35
Volume of Reducer-Hisol Used	0	0	1.8		1.35
Volume of Reducer-Acetone	0	0	0		0

*See attached MSDS for coating information, VOC composition etc.

Gallons of Booth 1 paint used**	6.75
Gallons of Booth 2 paint used**	8.25
Gallons of Dark Gray used**	1.4
Gallons of Dark Red used**	0
Gallons of Black used**	0.3
Gallons of toluene used	8.15
Gallons of hisol used	3.15
Gallons of acetone used	0

Paint Line 2

Booth #	1	2
Nailite Coating Name*	2H Adobe Clay	2H Adobe Clay
Nailite Color Number	8262	8262
Manufacturer	Kelglo	Kelglo
Begin Trial Time	9:30	9:30
End Trial Time	10:30	10:30
Begin Trial Volume (Reduced Paint-gal)	48	49
End Trial Volume (Reduced Paint-gal)	17	20
Volume of Reduced Paint Used-gal	31	29
Cut Ratio (expressed as % solvent)	15	15
Cut Ratio (expressed as % paint)	85	85
% Toluene used as % of total reducer	100	100
% Hisol used as % of total reducer	0	0
% Acetone used as % of total reducer	0	0
Volume of Paint used (nonreduced)	26.35	24.65
Volume of Reducer-Toluene	4.65	4.35
Volume of Reducer-Hisol Used	0	0
Volume of Reducer-Acetone	0	0

Gallons of paint used**	51
Gallons of toluene used	9
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

R2

2004 Destruction Effeciency Testing

Friday **3/12/2004**

Paint Line 1

Booth #	1	2	3	3	3
Nailite Coating Name*	2H Masonry White	2H Masonry White	2H Special Gray	Dk Red	2H Black
Nailite Color Number	I35-0145	I35-0145	E35-0145	n/a	B35-0091
Manufacturer	Strathmore	Strathmore	Strathmore	Strathmore	Strathmore
Begin Trial Time	10:45	10:45	10:45	10:45	10:45
End Trial Time	11:45	11:45	11:45	11:45	11:45
Begin Trial Volume (Reduced Paint-gal)	36	32	34		44
End Trial Volume (Reduced Paint-gal)	20	15	26		40
Volume of Reduced Paint Used-gal	16	17	8		4
Cut Ratio (expressed as % solvent)	25	25	72		90
Cut Ratio (expressed as % paint)	75	75	28		10
% Toluene used as % of total reducer	100	100	50		50
% Hisol used as % of total reducer	0	0	50		50
% Acetone used as % of total reducer	0	0	0		0
Volume of Paint used (nonreduced)	12	12.75	2.24		0.4
Volume of Reducer-Toluene	4	4.25	2.88		1.8
Volume of Reducer-Hisol Used	0	0	2.88		1.8
Volume of Reducer-Acetone	0	0	0		0

*See attached MSDS for coating information, VOC composition etc.

Gallons of Booth 1 paint used**	12
Gallons of Booth 2 paint used**	12.75
Gallons of Dark Gray used**	2.24
Gallons of Dark Red used**	0
Gallons of Black used**	0.4
Gallons of toluene used	12.93
Gallons of hisol used	4.68
Gallons of acetone used	0

Paint Line 2

Booth #	1	2
Nailite Coating Name*	2H Adobe Clay	2H Adobe Clay
Nailite Color Number	8262	8262
Manufacturer	Kelglo	Kelglo
Begin Trial Time	10:45	10:45
End Trial Time	11:45	11:45
Begin Trial Volume (Reduced Paint-gal)	45	45
End Trial Volume (Reduced Paint-gal)	19	20
Volume of Reduced Paint Used-gal	26	25
Cut Ratio (expressed as % solvent)	15	15
Cut Ratio (expressed as % paint)	85	85
% Toluene used as % of total reducer	100	100
% Hisol used as % of total reducer	0	0
% Acetone used as % of total reducer	0	0
Volume of Paint used (nonreduced)	22.1	21.25
Volume of Reducer-Toluene	3.9	3.75
Volume of Reducer-Hisol Used	0	0
Volume of Reducer-Acetone	0	0

Gallons of paint used**	43.35
Gallons of toluene used	7.65
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

R3

2004 Destruction Effeciency Testing

Friday **3/12/2004**

Paint Line 1

Booth #	1	2	3	3	3
Nailite Coating Name*	2H Masonry White	2H Masonry White	2H Special Gray	Dk Red	2H Black
Nailite Color Number	I35-0145	I35-0145	E35-0145	n/a	B35-0091
Manufacturer	Strathmore	Strathmore	Strathmore	Strathmore	Strathmore
Begin Trial Time	12:45	12:45	12:45	n/a	12:45
End Trial Time	1:45	1:45	1:45	n/a	1:45
Begin Trial Volume (Reduced Paint-gal)	57	55.5	51		41
End Trial Volume (Reduced Paint-gal)	38	33	47		33
Volume of Reduced Paint Used-gal	19	22.5	4		8
Cut Ratio (expressed as % solvent)	35	35	72		90
Cut Ratio (expressed as % paint)	65	65	28		10
% Toluene used as % of total reducer	100	100	50		50
% Hisol used as % of total reducer	0	0	50		50
% Acetone used as % of total reducer	0	0	0		0
Volume of Paint used (nonreduced)	12.35	14.63	1.12		0.8
Volume of Reducer-Toluene	6.65	7.87	1.44		3.6
Volume of Reducer-Hisol Used	0	0	1.44		3.6
Volume of Reducer-Acetone	0	0	0		0

*See attached MSDS for coating information, VOC composition etc.

Gallons of Booth 1 paint used**	12.35
Gallons of Booth 2 paint used**	14.63
Gallons of Dark Gray used**	1.12
Gallons of Dark Red used**	0
Gallons of Black used**	0.8
Gallons of toluene used	19.56
Gallons of hisol used	5.04
Gallons of acetone used	0

Paint Line 2

Booth #	1	2
Nailite Coating Name*	2H Adobe Clay	2H Adobe Clay
Nailite Color Number	8262	8262
Manufacturer	Kelglo	Kelglo
Begin Trial Time	12:45	12:45
End Trial Time	1:45	1:45
Begin Trial Volume (Reduced Paint-gal)	42	43
End Trial Volume (Reduced Paint-gal)	17	19
Volume of Reduced Paint Used-gal	25	24
Cut Ratio (expressed as % solvent)	15	15
Cut Ratio (expressed as % paint)	85	85
% Toluene used as % of total reducer	100	100
% Hisol used as % of total reducer	0	0
% Acetone used as % of total reducer	0	0
Volume of Paint used (nonreduced)	21.25	20.4
Volume of Reducer-Toluene	3.75	3.6
Volume of Reducer-Hisol Used	0	0
Volume of Reducer-Acetone	0	0

Gallons of paint used**	41.65
Gallons of toluene used	7.35
Gallons of hisol used	0
Gallons of acetone used	0

** refer to MSDS for solvent composition of paint

Visible Emissions Observations

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

Calculations

KOOGLER AND ASSOCIATES, ENVIRONMENTAL SERVICES
SUMMARY OF 30 MINUTE VISIBLE EMISSIONS

PLANT : Nailite
SOURCE: RTO outlet, Paintlines 1+2
DATE : March 12, 2004
TIME START: 11:10
TIME FINISH: 11:40

SECONDS	0	15	30	45
MINUTES	OPACITY (%)			
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0

AVERAGE OPACITY: 0.0 %
MAXIMUM OPACITY: 0 %

KOOGLER AND ASSOCIATES, ENVIRONMENTAL SERVICES
SUMMARY OF 30 MINUTE VISIBLE EMISSIONS

PLANT : Nailite
SOURCE: RTO outlet, Paintlines 1+2
DATE : March 12, 2004
TIME START: 11:10
TIME FINISH: 11:40

SECONDS	0	15	30	45
MINUTES	OPACITY (%)			
	SIX-MINUTE ROLLING AVERAGES OF VISIBLE EMISSIONS			
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	0.0
7	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0

HIGHEST SIX-MINUTE ROLLING AVERAGE: 0.0

KOOGLER AND ASSOCIATES, ENVIRONMENTAL SERVICES
SUMMARY OF 30 MINUTE VISIBLE EMISSIONS

PLANT : Nailite
SOURCE: RTO outlet, Paintlines 1+2
DATE : March 12, 2004
TIME START: 12:45
TIME FINISH: 13:15

SECONDS	0	15	30	45
MINUTES	OPACITY (%)			
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0

AVERAGE OPACITY: 0.0 %
MAXIMUM OPACITY: 0 %

KOOGLER AND ASSOCIATES, ENVIRONMENTAL SERVICES
SUMMARY OF 30 MINUTE VISIBLE EMISSIONS

PLANT : Nailite
SOURCE: RTO outlet, Paintlines 1+2
DATE : March 12, 2004
TIME START: 12:45
TIME FINISH: 13:15

SECONDS	0	15	30	45
MINUTES	OPACITY (%)			
	SIX-MINUTE ROLLING AVERAGES OF VISIBLE EMISSIONS			
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	0.0
7	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0

HIGHEST SIX-MINUTE ROLLING AVERAGE: 0.0

Field Data Sheets

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

CONTINUED ON VEO FORM NUMBER: 1 of 2

Visible Emission Observation Form

SOURCE NAME	Nailite International
ADDRESS	1111 NW 165th St.
	Dade County
CITY	Miami
STATE	FL
ZIP	
PHONE	
SOURCE ID NUMBER	
PROCESS EQUIPMENT	No. 1 + 2 Paint Lines
OPERATING MODE	
CONTROL EQUIPMENT	RTO
OPERATING MODE	
DESCRIBE EMISSION POINT START	Grey Stack
DESCRIBE EMISSION POINT STOP	Same
HEIGHT ABOVE GROUND LEVEL START	30'
HEIGHT ABOVE GROUND LEVEL STOP	30'
HEIGHT RELATIVE TO OBSERVER START	± 30'
HEIGHT RELATIVE TO OBSERVER STOP	± 30'
DISTANCE FROM OBSERVER START	120'
DISTANCE FROM OBSERVER STOP	120'
DIRECTION FROM OBSERVER START	358°N
DIRECTION FROM OBSERVER STOP	358°N
DESCRIBE EMISSIONS START	Thermal
DESCRIBE EMISSIONS STOP	Thermal
EMISSION COLOR START	None
EMISSION COLOR STOP	none
PLUME TYPE: CONTINUOUS / FUGITIVE ☐ / INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	Stack outlet
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED STOP	Same
DESCRIBE BACKGROUND START	Blue/white SKY
DESCRIBE BACKGROUND STOP	Same SKY
BACKGROUND COLOR START	Blue/white
BACKGROUND COLOR STOP	Same
SKY CONDITIONS START	Scattered
SKY CONDITIONS STOP	Scatt.
WIND SPEED START	5-8
WIND SPEED STOP	5-8
WIND DIRECTION START	East
WIND DIRECTION STOP	East
AMBIENT TEMP. START	82
AMBIENT TEMP. STOP	83
WET BULB TEMP.	62
RH percent	30%

OBSERVATION DATE: 3/12/04 | START TIME: 1140 | END TIME: 11:40

SEC / MIN	0	15	30	45	COMMENTS
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
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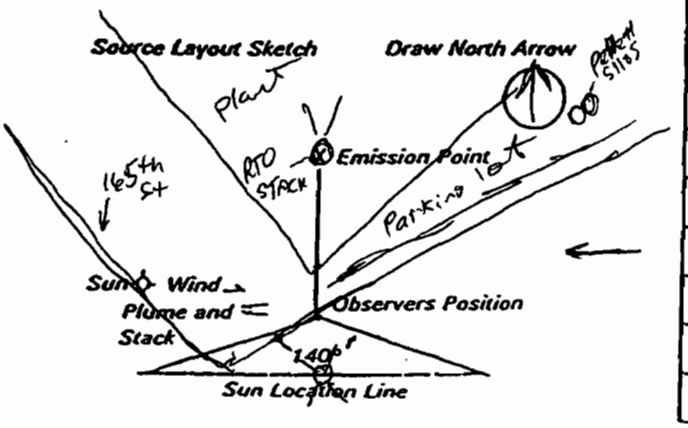


COMMENTS: Concurrent w/ Run # 1

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE
DATE

OBSERVER'S NAME (PRINT): Glen A. Haven
OBSERVER'S SIGNATURE: Glen A. Haven
DATE: 3/12/04
ORGANIZATION: K+A
CERTIFIED BY: ETA
DATE: 12/03

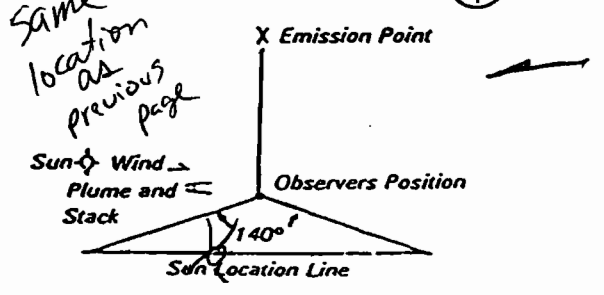
KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

CONTINUED ON VEO FORM NUMBER: 2 of 2

Visible Emission Observation Form

SOURCE NAME	Nailite International
ADDRESS	1111 NW 165th Street
	Dade County
CITY	Miami
STATE	FL
ZIP	
PHONE	
SOURCE ID NUMBER	
PROCESS EQUIPMENT	No. 1 + 2 Paint Lines
OPERATING MODE	
CONTROL EQUIPMENT	RTO
OPERATING MODE	
DESCRIBE EMISSION POINT START	Greystack
DESCRIBE EMISSION POINT STOP	Same
HEIGHT ABOVE GROUND LEVEL START	30'
HEIGHT ABOVE GROUND LEVEL STOP	30'
HEIGHT RELATIVE TO OBSERVER START	±30'
HEIGHT RELATIVE TO OBSERVER STOP	±30'
DISTANCE FROM OBSERVER START	120'
DISTANCE FROM OBSERVER STOP	120'
DIRECTION FROM OBSERVER START	358°N
DIRECTION FROM OBSERVER STOP	358°N
DESCRIBE EMISSIONS	THERMAL
START	clear/none
STOP	clear/none
EMISSION COLOR START	None
EMISSION COLOR STOP	None
PLUME TYPE: CONTINUOUS	☒
FUGITIVE	☐
INTERMITTENT	☐
WATER DROPLETS PRESENT: NO	☒
WATER DROPLETS PRESENT: YES	☐
IF WATER DROPLET PLUME: ATTACHED	☐
IF WATER DROPLET PLUME: DETACHED	☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	Stack outlet
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED STOP	Same
DESCRIBE BACKGROUND START	Sky
DESCRIBE BACKGROUND STOP	Sky
BACKGROUND COLOR START	Blue/wh
BACKGROUND COLOR STOP	Same
SKY CONDITIONS START	Scatt
SKY CONDITIONS STOP	Scatt.
WIND SPEED START	8-10
WIND SPEED STOP	8-10
WIND DIRECTION START	East
WIND DIRECTION STOP	East
AMBIENT TEMP. START	78
AMBIENT TEMP. STOP	78
WET BULB TEMP.	65
RH percent	49%

Source Layout Sketch — **Draw North Arrow**



SEC / MIN	0	15	30	45	COMMENTS
OBSERVATION DATE	12-45			START TIME 12:45	END TIME 13:15
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
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30	0	0	0	0	

COMMENTS: Concurrent w/Run #2

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE
DATE

OBSERVER'S NAME (PRINT): Glen A. Haven
OBSERVER'S SIGNATURE: Glen A. Haven
DATE: 3/12/04
ORGANIZATION: K+A
CERTIFIED BY: ETA
DATE: 12/03

Observer Certification

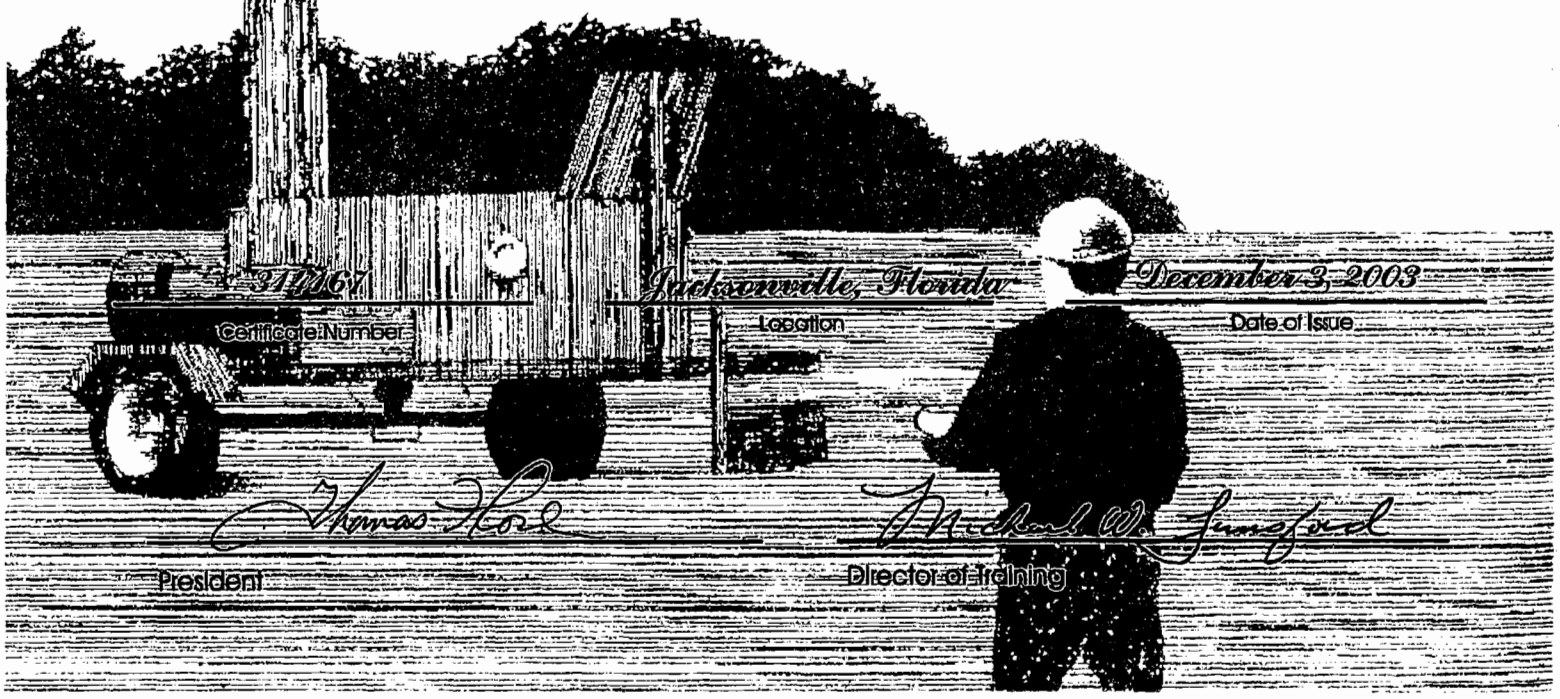
KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Glen Haven

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.



31767
Certificate Number

Jacksonville, Florida
Location

December 3, 2003
Date of Issue

Thomas Hoke
President

Richard W. Crawford
Director of Training

Typical MSDS For Coatings

MATERIAL SAFETY DATA SHEET

Hazard Rating: Least --> Greatest 0 --> 4

HMIS CODES
Health 2
Flammability 3
Reactivity 0
Personal Protection J

Manufacturer:
KEL-GLO CORP.
54 NE 73RD STREET
MIAMI, FL 33138 U.S.A.
Phone: 305-751-5641

EMERGENCY TELEPHONE: 800-424-9300

SECTION I: PRODUCT IDENTIFICATION

Product Code: 8262
Product Class:
Product Name: PNTADC2H ADOBE CLAY
Chemical Name: TOLUENE
CAS Number: 108-88-3

SECTION IIA: HAZARDOUS INGREDIENTS

Ingredient	CAS Number	% by Wt. (To Nearest .01%)	% by Vol.	LEL	Vapor Press.
1. TOLUOL	108-88-3	55.00	68.46	1.2	22.00

NA = Not Applicable; NE = Not Established

SECTION IIB: OCCUPATIONAL EXPOSURE LIMITS

	OSHA PEL's		ACGIH TLV's			
Ingr. #	OSHA ppm	OSHA mg/m3	TWA ppm	TWA mg/m3	STEL ppm	STEL mg/m3
1.	100	NE	50	NE	150	NE

NA = Not Applicable; NE = Not Established

SECTION III: PHYSICAL DATA

Boiling Range (degrees F): 232.00 - 232.00 Pounds per Gallon: 9.04
Vapor Density: HEAVIER THAN AIR Evaporation Rate: SLOWER THAN ETHER
Solubility in Water: NO

Volatiles (%)	by Weight	by Volume
Total	55.00	68.46
Exempt VOC	.00	.00
Non-exempt	55.00	68.46

VOC wt/gal: 4.97 lbs non-exempt solvent per adjusted gallon
Appearance:

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flammability Classification:
OSHA: DOT: 3
Flash Point: 45.00 (Method: Tcc)

Extinguishing Media: REGULAR FOAM, CARBON DIOXIDE, DRY CHEMICAL

Unusual Fire and Explosion Hazards
VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR MAY BE MOVED BY VENTILATION AND IGNITED BY PILOT LIGHTS, OTHER FLAMES, SPARKS, HEATERS, SMOKING, ELECTRIC MOTORS, STATIC DISCHARGE, OR OTHER IGNITION SOURCE AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT. NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

Special Firefighting Procedures
WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT. WEAR A SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED

IN THE POSITIVE PRESSURE DEMAND MODE WITH APPROPRIATE TURN OUT GEAR AND CHEMICAL RESISTANT PERSONAL PROTECTIVE EQUIPMENT.

SECTION V: HEALTH HAZARD DATA

Effects of Overexposure

IF WORKPLACE EXPOSURE LIMIT OF PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALOS PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. ENGINEERING OR ADMINSITRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

Medical Conditions Prone to Aggravation by Exposure

EYE

CAN CAUSE EYE IRRITATION. SYMPTOMS INCLUDE STINGING, TEARING, REDNESS, AND SWELLING OF EYES.

SKIN

MAY CAUSE MILD SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY THE SKIN. SYMPTOMS MAY INCLUDE REDNESS, BURNING DRYING AND CRACKING OF SKIN, AND SKIN BURNS. PASSAGE OF THIS MATERIAL INTO THE BODY THROUGH THE SKIN IS POSSIBLE, BUT IT IS UNLIKELY THAT THIS WOULD RESULT IN HARMFUL EFFECTS DURING SAFE HANDLING AND USE.

SWALLOWING

SWALLOWING SMALL AMOUNTS OF THIS MATERIAL DURING NORMAL HANDLING IS NOT LIKELY TO CAUSE HARMFUL EFFECTS. SWALLOWING LARGE AMOUNTS MAY BE HARMFUL. THIS MATERIAL CAN GET INTO THE LUNGS DURING SWALLOWING OR VOMITING. THIS RESULTS IN LUNG INFLAMMATION AND OTHER LUNG INJURY.

INHALATION

BREATHING OF VAPOR OR MIST IS POSSIBLE. BREATHING SMALL AMOUNTS OF THIS MATERIAL DURING NORMAL HANDLING IS NOT LIKELY TO CAUSE HARMFUL EFFECTS. BREATHING LARGE AMOUNTS MAY BE HARMFUL. SYMPTOMS USUALLY OCCUR AT AIR CONCENTRATION HIGHER THAN THE RECOMMENDED EXPOSURE LIMITS.

SYMPTOMS OF EXPOSURE

SIGNS AND SYMPTOMS OF EXPOSURE TO THIS MATERIAL THROUGH BREATHING, SWALLOWING, AND OR PASSAGE OF THE MATERIAL THROUGH THE SKIN MAY INCLUDE: METALLIC TASTE, STOMACH OR INTESTINAL UPSET (NAUSEA, VOMITING, DIARRHEA), IRRITATION (NOSE, THROAT, AIRWAYS), CENTRAL NERVOUS SYSTEM DEPRESSION (DIZZINESS, DROWSINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE, UNCONSCIOUSNESS) AND OTHER CENTRAL NERVOUS SYSTEM EFFECTS, TEMPORARAY CHANGES IN MOOD AND BEHAVIOR, MUSCLE WEAKNESS, LOSS OF COORDINATION, CONFUSION, IRREGULAR HEARTBEAT, COMA, AND DEATH.

Primary Routes of Entry into the Body, and Effects

INHALATION, SKIN ABSORPTION, SKIN CONTACT, EYE CONTACT, INGESTION.

MATERIAL SAFETY DATA SHEET

EMERGENCY FIRST-AID PROCEDURES

EYES

IF SYMPTOMS DEVELOP, IMMEDIATELY MOVE INDIVIDUAL AWAY FROM EXPOSURE AND INTO FRESH AIR. FLUSH EYES GENTLY WITH WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS APART; IMMEDIATE MEDICAL ATTENTION.

SKIN

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH SOAP AND WATER. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION. LAUNDER CLOTHING BEFORE REUSE.

SWALLOWING

SEEK MEDICAL ATTENTION. IF INDIVIDUAL IS DROWSY OR UNCONSCIOUS, DO NOT GIVE ANYTHING BY MOUTH; PLACE INDIVIDUAL ON THE LEFT SIDE WITH THE HEAD DOWN. CONTACT A PHYSICIAN, MEDICAL FACILITY, OR POISON CONTROL CENTER FOR ADVICE ABOUT WHETHER TO INDUCE VOMITING. IF POSSIBLE, DO NOT LEAVE INDIVIDUAL UNATTENDED.

INHALATION

IF SYMPTOMS DEVELOP, IMMEDIATELY MOVE INDIVIDUAL AWAY FROM EXPOSURE AND INTO FRESH AIR. SEEK IMMEDIATE MEDICAL ATTENTION; KEEP PERSON WARM AND QUIET. IF PERSON IS NOT BREATHING, BEGIN ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN.

SECTION VI: REACTIVITY DATA

Stability: STABLE Hazardous Polymerization WILL NOT OCCUR.

Hazardous Decomposition Products
MAY FORM: CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS.

Conditions to Avoid
AVOID CONTACT WITH : STRONG ACIDS, STRONG OXIDIZING AGENTS

Incompatibilities (Materials to Avoid)
AVOID CONTACT WITH : STRONG ACIDS, STRONG OXIDIZING AGENTS

SECTION VII: SPILL OR LEAK PROCEDURES; WASTE DISPOSAL

Steps to be taken if Material is Leaked or Spilled

SMALL SPILL:

ELIMINATE ALL SOURCES OF IGNITION SUCH AS FLARES, FLAMES (INCLUDING PILOT LIGHTS), AND ELECTRICAL SPARKS. ABSORB LIQUID ON VERMICULITE, FLOOR ABSORBENT OR OTHER ABSORBENT MATERIAL.

LARGE SPILL:

ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE. PREVENT FORM ENTERING DRAINS, SEWERS, STREAMS OR OTHER BODIES OF WATER. PREVENT FROM SPREADING. IF RUNOFF OCCURS, NOTIFY AUTHORITIES AS REQUIRED. PUMP OR VACUUM TRANSFER SPILLED PRODUCT TO CLEAN CONTAINERS FOR RECOVERY. ABSORB UNRECOVERABLE PRODUCT. TRANSFER CONTAMINATED ABSORBENT, SOIL AND OTHER MATERIALS TO CONTAINERS FOR DISPOSAL. PREVENT RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

Waste Disposal Methods
DESTROY BY INCINERATION IN ACCORDANCE WITH APPLICABLE REGULATIONS. FOR ASSISTANCE WITH YOUR WASTE MANAGEMENT NEEDS- INCLUDING DISPOSAL, RECYCLING AND WASTE STREAM REDUCTION.

SECTION VIII: SAFE HANDLING AND USE INFORMATION

Respiratory Protection
IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER

ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS. ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

Ventilation
PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSE BELOW TLV(S)

Protective Gloves
WEAR RESISTANCE GLOVES, CONSULT YOUR SAFETY EQUIPMENT SUPPLIER

Eye Protection
WEAR CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS

Other Protective Equipment
TO REPEATED OR PROLONGED SKIN CONTACT WEAR IMPERVIOUS CLOTHING

Hygienic Practices
WASH YOUR HANDS AFTER EVEY CONTACT WITH PRODUCT

SECTION IX: SPECIAL PRECAUTIONS

Handling and Storing
CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED. ALL FIVE-GALLON PAILS AND LARGER METAL CONTAINERS, INCLUDING TANK CARS AND TANK TRUCKS, SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED. HYDROCARBON SOLVENTS ARE BASICALLY NON-CONDUCTORS OF ELECTRICITY AND CAN BECOME ELECTROSTATICALLY CHARGED DURING MIXING, FILTERING OR PUMPING AT HIGH FLOW RATES. IF THIS CHARGE REACHES A SUFFICIENTLY HIGH LEVEL, SPARKS CAN FORM THAT MAY IGNITE THE VAPORS OF FLAMMABLE LIQUIDS. WARNING. SUDDEN RELEASE OF HOT ORGANIC CHEMICAL VAPORS OR SUDDEN INGRESS OF AIR INTO VACUUM EQUIPMENT, MAY RESULT IN IGNITIONS WITHOUT THE PRESENCE OF OBVIOUS IGNITION SOURCES. PUBLISHED "AUTOIGNITION" OR "IGNITION" TEMPERATURE VALUES CANNOT BE TREATED AS SAFE OPERATING TEMPERATURES IN CHEMICAL PROCESSES WITHOUT ANALYSIS OF THE ACTUAL PROCESS SHOULD BE THOROUGHLY EVALUATED TO ESTABLISH AND MAINTAIN SAFE OPERATING CONDITIONS.

Other Precautions
THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

==========

END OF MSDS

==========

MATERIAL SAFETY DATA SHEET

PLASTICEL 2H ALPINE WHITE COATING

PRODUCT NAME: PLASTICEL 2H ALPINE WHITE COATING
PRODUCT CLASS: ACRYLIC COATING — **HMIS CODES:** H F R
PRODUCT CODE: W35-0129

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: STRATHMORE PRODUCTS, INC.
ADDRESS : 1970 WEST FAYETTE STREET
P.O. BOX 151
SYRACUSE, NY 13201
EMERGENCY PHONE DAY: 315-488-5401
NIGHT: FOR HEALTH - POISON CONTROL CENTER : 315/476-4766
FOR SPILLS - CHEMTEL : 1-800/255-3924
DATE OF PREPARATION: 08/09/02
TIME OF PREPARATION: 15:14:27 — **REVISION DATE:** 05/01/02

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		RANGE PERCENT
* TOLUENE ACGIH TLV: 50 PPM OSHA PEL: 200 PPM	108-88-3	38	68	35-45%
+ TITANIUM DIOXIDE ACGIH TLV: 10 MG/M3 OSHA PEL: 15 MG/M3	13463-67-7			
ORPHOUS SILICA ACGIH TLV: 10.0 MG/M3 OSHA PEL: 6.0 MG/M3	61790-53-2			
* XYLENE ACGIH TLV: 100.0 PPM OSHA PEL: 100.0 PPM	1330-20-7	9.5		0-2%
ETHYLBENZENE ACGIH TLV: 100 PPM OSHA PEL: 100 PPM	100-41-4	7.1	68	0-1%

SARA 313 INFORMATION: * Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title I and of 40 CFR 372.

+ Indicates component(s) considered nuisance dust(s) in their dry form.

FOOTNOTE: *N/A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE OF SEC. II: 230°F - 279°F **WEIGHT per GALLON :** 10.72 lb/gl
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER **%SOLIDS BY VOLUME:** 37.79
V.O.C.: 4.51 lb/gl

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY: RED LABEL, FLAMMABLE, LESS THAN 100°F.

FLASH POINT : 46°F **METHOD USED:** SETA FLASH
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL OR CARBON DIOXIDE EXTINGUISHERS.

U UAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQU..MENT AND OPEN FLAME. CLOSED CONTAINERS MAY RUPTURE OR EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY TO HOT SURFACES. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION.

SPECIAL FIREFIGHTING PROCEDURES: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQUIPMENT AND OPEN FLAME. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. PERSONNEL INVOLVED IN A FIRE SHOULD WEAR FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED RESPIRATORY EQUIPMENT. WATER SPRAY MAY BE USED TO COOL UNRUPTURED CLOSED CONTAINERS TO PREVENT PRESSURE BUILDUP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: SEE SECTION II

INHALATION HEALTH RISKS AND SYMPTOMS OF ACUTE EXPOSURE: INHALATION OF VAPORS OR SPRAY MISTS C CAUSE IRRITATION OF THE RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING GAIT CONFUSION, UNCONSCIOUSNESS OR COMA. OVEREXPOSURE TO VAPORS OR SPRAY MISTS CAN CAUSE EYE AND SKIN IRRITATION.

EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: EYE CONTACT WITH LIQUID MAY CAUSE SEVERE IRRITATION.

SKIN CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: BRIEF CONTACT WITH SKIN MAY CAUSE SLIGHT TO MODERATE IRRITATION AND POSSIBLY DRYING OF THE SKIN.

EATED OR PROLONGED SKIN CONTACT MAY CAUSE DRYING AND DEFATTING OF THE SKIN, WHICH MAY LEAD TO DERMATITIS.

ESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: MAY BE HARMFUL IF SWALLOWED. SWALLOWING MAY CAU GASTROINTESTINAL IRRITATION, NAUSEA, DIARRHEA, VOMITING AND POSSIBLY NARCOSIS. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE PNEUMONITIS, WHICH CAN BE FATAL.

CHRONIC HEALTH HAZARDS: REPEATED OR PROLONGED OCCUPATIONAL EXPOSURE TO VAPORS FROM SOLVENT(S) CONTAINED IN THIS PRODUCT MAY AFFECT THE CENTRAL NERVOUS SYSTEM AND CAUSE RESPIRATORY IRRITATION, RESULTING IN POSSIBLE LUNG DAMAGE, AND MAY CAUSE LIVER AND KIDNEY DAMAGE.

NOTE: A CASE EFFECT SHOWED ACTIVE LIVER & KIDNEY DYSFUNCTION AT EXTREMELY HIGH LEVELS OF EXPOSURE TO XYLENE AND TOLUENE.

NOTE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYST DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

CARCINOGENICITY: THIS PRODUCT CONTAINS ETHYLBENZENE, CLASSIFIED BY IARC AS A GROUP 2B CARCINOGEN - POSSIBLY CARCINOGEI TO HUMANS. THERE IS INADEQUATE EVIDENCE IN HUMANS BUT SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF ETHYLBENZENE.

EMERGENCY FIRST AID PROCEDURES: INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE MOUTH-TO-MOUTH RESUSCITATION AND KEEP WARM AND QUIET. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL HELP IMMEDIATELY. SPLASH (EY FLUSH IMMEDIATELY WITH COPIOUS QUANTITIES OF WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN FOR DEFINITIVE MEDICAL TREATMENT. SPL (SKIN): REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED AREA WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN.

IF SWALLOWED, CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY AND GET MEDICAL HELP. DO NOT INDUCE VOMITING UNLESS DIRECTE MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

EDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: EXPOSURE MAY AGGRAVATE PRE-EXISTING SKI AND RESPIRATORY DISORDERS.

SECTION VI - REACTIVITY DATA

BILITY: STABLE

DITIONS TO AVOID: EXCESSIVE HEAT, SPARKS AND OPEN FLAME.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG ALKALINE MATERIALS AND BASES.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: DECOMPOSITION MAY PRODUCE SMOKE, ACRID FUMES, CARBON DIOXIDE AND/OR CARBON MONOXIDE, AND POSSIBLY OTHER TOXIC VAPORS.

DECOMPOSITION MAY ALSO PRODUCE TOXIC ACRYLIC MONOMER.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION (FLAMES, HOT SURFACES AND ELECTRICAL, STATIC OR FRICTION SPARKS). AVOID BREATHING VAPORS. WEAR APPROPRIATE PROTECTIVE EQUIPMENT. VENTILATE AREA. ADD INERT ABSORBENT AND REMOVE TO APPROPRIATE CONTAINER FOR DISPOSAL WITH NON-SPARKING TOOLS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATER AND SOIL.

WASTE DISPOSAL METHOD: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. INCINERATE IN APPROVED FACILITY. DO NOT INCINERATE CLOSED CONTAINERS.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: IF PRODUCT IS APPLIED BY BRUSH, ROLLER COAT, OR DIP IN OUTDOOR OR OPEN AREAS WITH TRICTED VENTILATION, AND WHERE THE TLV'S DO NOT EXCEED THOSE SHOWN IN SECTION II, RESPIRATORY EQUIPMENT MAY NOT BE NECESSARY. TERING, HEADACHES OR DIZZINESS ARE EXPERIENCED WEAR RESPIRATORY PROTECTION (NIOSH TC23 RESPIRATOR OR EQUIVALENT) OR LEAVE AREA IF ODUCT IS APPLIED BY SPRAY APPLICATION, A NIOSH APPROVED MECHANICAL FILTER RESPIRATOR DESIGNED TO REMOVE AIRBORNE PARTICLES OF OVERSPRAY DURING APPLICATION SHOULD BE WORN. IN RESTRICTED VENTILATION AREAS, WHERE THE TLV'S CAN EXCEED THOSE SHOWN IN SECTION II, NIOSH APPROVED RESPIRATOR WITH CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICULATE AND VAPORS SHOULD BE WORN IN CONFINED AREAS, USE A NIOSH APPROVED AIRLINE RESPIRATOR OR HOOD.

VENTILATION: SOLVENT VAPORS ARE HEAVIER THAN AIR AND TEND TO ACCUMULATE AT LOWER LEVELS ALONG THE FLOOR. VAPORS MAY SPREAD LONG DISTANCES AND MAY CAUSE A FLASH FIRE. PREVENT BUILD-UP OF VAPORS. ELIMINATE ANY SOURCE OF IGNITION DURING USE AND UNTIL VAPOR ARE GONE. PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF MOST HAZARDOUS INGREDIENT IN SECTION II BELOW ACCEPTABLE LIMIT, LEL IN SECTION IV BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAM CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES: SOLVENT RESISTANT GLOVES ARE REQUIRED FOR PROLONGED OR REPEATED CONTACT WITH LIQUID.

EYE PROTECTION: IF A SPLASHING HAZARD EXISTS OR IF THERE IS POTENTIAL EYE CONTACT, WEAR SAFETY EYEWEAR SUCH AS CHEMICAL GOGGLES OR FACE SHIELDS TO PREVENT CONTACT OF LIQUID WITH EYES. EYE FLUSHING EQUIPMENT SHOULD BE IMMEDIATELY AVAILABLE.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: WEAR APPROPRIATE PROTECTIVE OUTERWEAR TO PROTECT AGAINST CLOTHING CONTAMINATION AND PROLONGED SKIN CONTACT. WHEN NECESSARY, WEAR CHEMICAL AND/OR SOLVENT RESISTANT BOOTS TO PROTECT FEET AND SHOES FROM CONTAMINATION. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE. DISCARD CONTAMINATED SHOES THAT CANNOT BE THOROUGHLY CLEANED BEFORE REUSE. WASH HANDS BEFORE EATING, SMOKING OR USING RESTROOM.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG F. DO NOT STORE OR USE NEAR HEAT, SPARKS, OR OPEN FLAME. KEEP CONTAINERS TIGHTLY COVERED AND UPRIGHT TO PREVENT LEAKAGE. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS: WARNING - FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. VAPORS MAY CAUSE FLASH FIRE. WH
ING/TRANSFERRING THIS MATERIAL TO ANOTHER CONTAINER OR EQUIPMENT, GROUND ALL CONTAINERS AND EQUIPMENT AS STATIC ELECTRICITY MAY
...TE VAPORS. VAPORS HARMFUL. MAY CAUSE IRRITATION TO EYES, NOSE, THROAT, SKIN AND RESPIRATORY TRACT. PROLONGED OR REPEATED CONTACT OF LIQUID, OR BREATHING OF VAPORS OR MISTS, MAY CAUSE DELAYED AND SERIOUS INJURY. USE ONLY WITH ADEQUATE VENTILATION. AVO
BREATHING VAPORS OR SPRAY MIST. AVOID CONTACT WITH EYES AND SKIN. DO NOT TAKE INTERNALLY. DO NOT SAND, FLAME CUT, BRAZE OR WELD DRY COATING WITHOUT A NIOSH APPROVED RESPIRATOR OR SUFFICIENT VENTILATION. DUST FROM OVERSPRAY OR SANDING THE PAINT FILM IS POTENTIALLY IGNITABLE (EXPLOSIVE) WHEN SUSPENDED IN AIR AND SHOULD BE KEPT AWAY FROM HEAT, SPARKS, FLAME, STATIC ELECTRICITY OR ANY OTHER TYPE OF IGNITION SOURCE. NOTICE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONA MISUSE BY DELIBERATELY CONCENTRTING AND INHALING CONTENTS MAY BE HARMFUL OR FATAL.

SPECIAL PRECAUTIONS: *N/A

MISCELLANEOUS PRECAUTIONS: WARNING - EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR EXPLOS VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS MUST BE OBSERVED UNTIL THE CONTAINER HAS BEEN CLEA OR RECONDITIONED.

========== SECTION X - DISCLAIMER ==========

SARA 313 INFORMATION: *N/A

FOOTNOTE: USER'S RESPONSIBILITY: THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH THE USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED HEREIN IS ACCURATE. HOWEVER, STRATHMORE PRODUCTS, INC., ASSUMES NO LIABIL ...TSOEVER FOR THE ACCURACY, RELIABILITY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. FINAL DETERMINATION OF SUITABILITY ...MATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO ...NTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. ALL MATERIALS MAY PRESENT UNKNOWN HEA AND SAFETY HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS WHICH EXIST.

MATERIAL SAFETY DATA SHEET

PLASTICEL 2H BLACK COATING

PRODUCT NAME: PLASTICEL 2H BLACK COATING
PRODUCT CLASS: ACRYLIC COATING HMIS CODES: H F R
PRODUCT CODE: B35-0091

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: STRATHMORE PRODUCTS, INC.
ADDRESS : 1970 WEST FAYETTE STREET
P.O. BOX 151
SYRACUSE, NY 13201
EMERGENCY PHONE DAY: 315-488-5401
NIGHT: FOR HEALTH - POISON CONTROL CENTER : 315/476-4766
FOR SPILLS - CHEMTEL : 1-800/255-3924
DATE OF PREPARATION: 08/09/02
TIME OF PREPARATION: 15:12:23 REVISION DATE: 07/02/02

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		RANGE PERCENT
* TOLUENE ACGIH TLV: 50 PPM OSHA PEL: 200 PPM	108-88-3	38	68	50-60%
+ AMORPHOUS SILICA ACGIH TLV: 10.0 MG/M3 OSHA PEL: 6.0 MG/M3	61790-53-2			
CARBON BLACK ACGIH TLV: 3.5 MG/M3 OSHA PEL: 3.5 MG/M3	1333-86-4			
* XYLENE ACGIH TLV: 100.0 PPM OSHA PEL: 100.0 PPM	1330-20-7	9.5		1-5%
ETHYLBENZENE ACGIH TLV: 100 PPM OSHA PEL: 100 PPM	100-41-4	7.1	68	0-1%

SARA 313 INFORMATION: * Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

+ Indicates component(s) considered nuisance dust(s) in their dry form.

FOOTNOTE: *N/A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE OF SEC. II: 230°F - 279°F WEIGHT per GALLON : 8.24 lb/gl
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER %SOLIDS BY VOLUME: 33.51
V.O.C.: 4.82 lb/gl

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY: RED LABEL, FLAMMABLE, LESS THAN 100°F.

FLASH POINT : 46°F METHOD USED: SETA FLASH
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL OR CARBON DIOXIDE EXTINGUISHERS.

UNUSUAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL ...IPMENT AND OPEN FLAME. CLOSED CONTAINERS MAY RUPTURE OR EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY TO HOT SURFACES. ...OID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION.

SPECIAL FIREFIGHTING PROCEDURES: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQUIPMENT AND OPEN FLAME. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. PERSONNEL INVOLVED IN A FIRE SHOULD WEAR FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED RESPIRATORY EQUIPMENT. WATER SPRAY MAY BE USED TO COOL UNRUPTURED CLOSED CONTAINERS TO PREVENT PRESSURE BUILDUP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE.

========== SECTION V - HEALTH HAZARD DATA ==========

THRESHOLD LIMIT VALUE: SEE SECTION II

INHALATION HEALTH RISKS AND SYMPTOMS OF ACUTE EXPOSURE: INHALATION OF VAPORS OR SPRAY MISTS CA CAUSE IRRITATION OF THE RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS OR COMA. OVEREXPOSURE TO VAPORS OR SPRAY MISTS CAN CAUSE EYE AND SKIN IRRITATION.

EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: EYE CONTACT WITH LIQUID MAY CAUSE SEVERE IRRITATION.

SKIN CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: BRIEF CONTACT WITH SKIN MAY CAUSE SLIGHT TO MODERATE IRRITATION AND POSSIBLY DRYING OF THE SKIN.

REPEATED OR PROLONGED SKIN CONTACT MAY CAUSE DRYING AND DEFATTING OF THE SKIN, WHICH MAY LEAD TO DERMATITIS.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: MAY BE HARMFUL IF SWALLOWED. SWALLOWING MAY CAUS GASTROINTESTINAL IRRITATION, NAUSEA, DIARRHEA, VOMITING AND POSSIBLY NARCOSIS. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE PNEUMONITIS, WHICH CAN BE FATAL.

CHRONIC HEALTH HAZARDS: REPEATED OR PROLONGED OCCUPATIONAL EXPOSURE TO VAPORS FROM SOLVENT(S) CONTAINED IN THIS PRODUCT MAY AFFECT THE CENTRAL NERVOUS SYSTEM AND CAUSE RESPIRATORY IRRITATION, RESULTING IN POSSIBLE LUNG DAMAGE, AND MAY CAUSE LIVER AND KIDNEY DAMAGE.

NOTE: A CASE EFFECT SHOWED ACTIVE LIVER & KIDNEY DYSFUNCTION AT EXTREMELY HIGH LEVELS OF EXPOSURE TO XYLENE AND TOLUENE.

NOTE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTE DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

CARCINOGENICITY: THIS PRODUCT CONTAINS ETHYLBENZENE, CLASSIFIED BY IARC AS A GROUP 2B CARCINOGEN - POSSIBLY CARCINOGEN TO HUMANS. THERE IS INADEQUATE EVIDENCE IN HUMANS BUT SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF ETHYLBENZENE.

THIS MATERIAL CONTAINS CARBON BLACK. EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE CARBON BLACK PRODUCING INDUSTRIES OF NORTH AMERICA AND WESTERN EUROPE SHOW NO EVIDENCE OF CLINICALLY SIGNIFICANT ADVERSE HEALTH EFFECTS DUE TO OCCUPATIONAL EXPOSURE TO CARBON BLACK. IN ITS MONOGRAM VOLUME 65, ISSUED APRIL 1996, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) REEVALUATED CARBON BLACK AND CONCLUDED THAT "THERE IS INADEQUATE EVIDENCE IN HUMANS FOR THE CARCINOGENICITY OF CARBON BLACK".
CARBON BLACKS SUPPLIED BY OUR DOMESTIC SUPPLIERS CONTAIN LESS THAN 0.1% OF ADSORBED PAH'S (POLYNUCLEAR AROMATIC HYDROCARBONS). IN NON-ADSORBED FORM, SOME PAH'S HAVE BEEN FOUND TO BE CARCINOGENS IN ANIMAL STUDIES. NO CARCINOGENIC EFFECT, HOWEVER, HAS BEEN OBSERVED IN HUMANS DUE TO CARBON BLACK. CHRONIC INFLAMMATION, LUNG FIBROSIS AND LUNG TUMORS HAVE BEEN OBSERVED IN SOME RATS EXPERIMENTALLY EXPOSED, FOR LONG PERIODS OF TIME, TO EXCESSIVE CONCENTRATIONS OF CARBON BLACK AND SEVERAL OTHER INSOLUBLE FINE DU ...TICLES. TUMORS HAVE NOT BEEN OBSERVED IN OTHER ANIMAL SPECIES (i.e., MOUSE AND HAMSTER) UNDER SIMILAR CIRCUMSTANCES AND STUDY ...NDITIONS. MANY RESEARCHERS CONDUCTING RAT INHALATION STUDIES BELIEVE THAT THESE EFFECTS MOST LIKELY RESULT FROM THE MASSIVE ACCUMULATION OF SMALL DUST PARTICLES IN THE LUNG WHICH OVERWHELM THE NATURAL LUNG CLEARANCE MECHANISMS, KNOWN AS "LUNG OVERLOAD" PHENOMENON, RATHER THAN FROM A SPECIFIC CHEMICAL EFFECT OF THE DUST PARTICLES IN THE LUNG.

MANY INHALATION TOXICOLOGISTS BELIEVE THAT THE TUMOR RESPONSE OBSERVED IN THE REFERENCED RAT STUDIES IS SPECIES SPECIFIC AND DOES NO ATE TO HUMAN EXPOSURE. HOWEVER, THE IARC EVALUATION IN MONOGRAPH 65 CONCLUDED THAT "THERE IS SUFFICIENT EVIDENCE IN EXPERIMENTAL ...IMALS FOR THE CARCINOGENICITY OF CARBON BLACK". BASED ON THIS EVALUATION, ALONG WITH THEIR EVALUATION OF INADEQUATE CARCINOGENICITY IN HUMANS, IARC'S OVERALL EVALUATION IS THAT "CARBON BLACK IS POSSIBLY CARCINOGENIC TO HUMANS (GROUP 2B)". CARBON BLACK HAS NOT BEEN LISTED AS A CARCINOGEN BY NTP (NATIONAL TOXICOLOGY PROGRAM) OR OSHA (OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION). NIOSH (THE NATIONAL INSTITUTE OF SAFETY AND HEALTH) CRITERIA DOCUMENT ON CARBON BLACK RECOMMENDS THAT ONLY CARBON BLACKS WITH PAH LEVELS GREATER THAN 0.1% BE CONSIDERED SUSPECT CARCINOGENS.

EMERGENCY FIRST AID PROCEDURES: INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE MOUTH-TO-MOUTH RESUSCITATION AND KEEP WARM AND QUIET. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL HELP IMMEDIATELY. SPLASH (EYES): FLUSH IMMEDIATELY WITH COPIOUS QUANTITIES OF WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN FOR DEFINITIVE MEDICAL TREATMENT. SPLASH (SKIN): REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED AREA WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN.

IF SWALLOWED, CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY AND GET MEDICAL HELP. DO NOT INDUCE VOMITING UNLESS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: EXPOSURE MAY AGGRAVATE PRE-EXISTING SKIN, EYE AND RESPIRATORY DISORDERS.

========== SECTION VI - REACTIVITY DATA ==========

STABILITY: STABLE

CONDITIONS TO AVOID: EXCESSIVE HEAT, SPARKS AND OPEN FLAME.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG ALKALINE MATERIALS AND BASES.

ZARDOUS DECOMPOSITION OR BYPRODUCTS: DECOMPOSITION MAY PRODUCE SMOKE, ACRID FUMES, CARBON DIOXIDE AND/O CARBON MONOXIDE, AND POSSIBLY OTHER TOXIC VAPORS.

DECOMPOSITION MAY ALSO PRODUCE TOXIC ACRYLIC MONOMER.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

========== SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE ==========

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION (FLAMES, HOT SURFACES AND ELECTRICAL, STATIC OR FRICTION SPARKS). AVOID BREATHING VAPORS. WEAR APPROPRIATE PROTECTIVE EQUIPMENT. VENTILATE AREA. ADD INERT ABSORBENT AND REMOVE TO APPROPRIATE CONTAINER FOR DISPOSAL WITH NON-SPARKING TOOLS. KEEP OUT OF SEWERS STORM DRAINS, SURFACE WATER AND SOIL.

WASTE DISPOSAL METHOD: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. INCINERATE IN APPROVED FACILITY. DO NOT INCINERATE CLOSED CONTAINERS.

========== SECTION VIII - CONTROL MEASURES ==========

RESPIRATORY PROTECTION: IF PRODUCT IS APPLIED BY BRUSH, ROLLER COAT, OR DIP IN OUTDOOR OR OPEN AREAS WITH UNRESTRICTED VENTILATION, AND WHERE THE TLV'S DO NOT EXCEED THOSE SHOWN IN SECTION II, RESPIRATORY EQUIPMENT MAY NOT BE NECESSARY. EYE WATERING, HEADACHES OR DIZZINESS ARE EXPERIENCED WEAR RESPIRATORY PROTECTION (NIOSH TC23 RESPIRATOR OR EQUIVALENT) OR LEAVE AI IF PRODUCT IS APPLIED BY SPRAY APPLICATION, A NIOSH APPROVED MECHANICAL FILTER RESPIRATOR DESIGNED TO REMOVE AIRBORNE PARTICLES O OVERSPRAY DURING APPLICATION SHOULD BE WORN. IN RESTRICTED VENTILATION AREAS, WHERE THE TLV'S CAN EXCEED THOSE SHOWN IN SECTION I NIOSH APPROVED RESPIRATOR WITH CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICULATE AND VAPORS SHOULD BE W CONFINED AREAS, USE A NIOSH APPROVED AIRLINE RESPIRATOR OR HOOD.

VENTILATION: SOLVENT VAPORS ARE HEAVIER THAN AIR AND TEND TO ACCUMULATE AT LOWER LEVELS ALONG THE FLOOR. VAPORS MAY SPR LONG DISTANCES AND MAY CAUSE A FLASH FIRE. PREVENT BUILD-UP OF VAPORS. ELIMINATE ANY SOURCE OF IGNITION DURING USE AND UNTIL VA

ARE GONE. PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF MOST HAZARDOUS INGREDIENT IN TION II BELOW ACCEPTABLE LIMIT, LEL IN SECTION IV BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES: SOLVENT RESISTANT GLOVES ARE REQUIRED FOR PROLONGED OR REPEATED CONTACT WITH LIQUID.

EYE PROTECTION: IF A SPLASHING HAZARD EXISTS OR IF THERE IS POTENTIAL EYE CONTACT, WEAR SAFETY EYEWEAR SUCH AS CHEMICAL GOGGLES OR FACE SHIELDS TO PREVENT CONTACT OF LIQUID WITH EYES. EYE FLUSHING EQUIPMENT SHOULD BE IMMEDIATELY AVAILABLE.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: WEAR APPROPRIATE PROTECTIVE OUTERWEAR TO PROTECT AGAINST CLOTHING CONTAMINATION AND PROLONGED SKIN CONTACT. WHEN NECESSARY, WEAR CHEMICAL AND/OR SOLVENT RESISTANT BOOTS TO PROTECT FEET AND SHOES FROM CONTAMINATION. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE. DISCARD CONTAMINATED SHOES THAT CANNOT BE THOROUGHLY CLEANED BEFORE REUSE. WASH HANDS BEFORE EATING, SMOKING OR USING RESTROOM.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG F. DO NOT STORE OR USE NEAR HEAT, SPARKS, OR OPEN FLAME. KEEP CONTAINERS TIGHTLY COVERED AND UPRIGHT TO PREVENT LEAKAGE. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS: WARNING - FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. VAPORS MAY CAUSE FLASH FIRE. WHEN POURING/TRANSFERRING THIS MATERIAL TO ANOTHER CONTAINER OR EQUIPMENT, GROUND ALL CONTAINERS AND EQUIPMENT AS STATIC ELECTRICITY MAY IGNITE VAPORS. VAPORS HARMFUL. MAY CAUSE IRRITATION TO EYES, NOSE, THROAT, SKIN AND RESPIRATORY TRACT. PROLONGED OR REPEATED CONTACT OF LIQUID, OR BREATHING OF VAPORS OR MISTS, MAY CAUSE DELAYED AND SERIOUS INJURY. USE ONLY WITH ADEQUATE VENTILATION. AVOID BREATHING VAPORS OR SPRAY MIST. AVOID CONTACT WITH EYES AND SKIN. DO NOT TAKE INTERNALLY. DO NOT SAND, FLAME CUT, BRAZE OR WELD DRY COATING WITHOUT A NIOSH APPROVED RESPIRATOR OR SUFFICIENT VENTILATION. DUST FROM OVERSPRAY OR SANDING THE PAINT FILM IS POTENTIALLY IGNITABLE (EXPLOSIVE) WHEN SUSPENDED IN AIR AND SHOULD BE KEPT AWAY FROM HEAT, SPARKS, FLAME, STATIC ELECTRICITY OR ANY ER TYPE OF IGNITION SOURCE. NOTICE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRTING AND INHALING CONTENTS MAY BE HARMFUL OR FATAL.

SPECIAL PRECAUTIONS: *N/A

MISCELLANEOUS PRECAUTIONS: WARNING - EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR EXPLOSIV VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS MUST BE OBSERVED UNTIL THE CONTAINER HAS BEEN CLEANE OR RECONDITIONED.

SECTION X - DISCLAIMER

SARA 313 INFORMATION: *N/A

FOOTNOTE: USER'S RESPONSIBILITY: THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH THE USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED HEREIN IS ACCURATE. HOWEVER, STRATHMORE PRODUCTS, INC., ASSUMES NO LIABILI WHATSOEVER FOR THE ACCURACY, RELIABILITY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. FINAL DETERMINATION OF SUITABILITY O ANY MATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. ALL MATERIALS MAY PRESENT UNKNOWN HEAL AND SAFETY HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS WHICH EXIST.

MATERIAL SAFETY DATA SHEET

PLASTICEL 2H MASONRY WHITE COATING

PRODUCT NAME: PLASTICEL 2H MASONRY WHITE COATING
PRODUCT CLASS: ACRYLIC COATING
PRODUCT CODE: I35-0145

HMIS CODES: H F R

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: STRATHMORE PRODUCTS, INC.
ADDRESS : 1970 WEST FAYETTE STREET
P.O. BOX 151
SYRACUSE, NY 13201

EMERGENCY PHONE DAY: 315-488-5401
NIGHT: FOR HEALTH - POISON CONTROL CENTER : 315/476-4766
FOR SPILLS - CHEMTEL : 1-800/255-3924

DATE OF PREPARATION: 08/09/02
TIME OF PREPARATION: 15:16:14 **REVISION DATE:** 05/01/02

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		RANGE PERCENT
* TOLUENE	108-88-3	38	68	35-45%
ACGIH TLV: 50 PPM OSHA PEL: 200 PPM				
+ TITANIUM DIOXIDE	13463-67-7			
ACGIH TLV: 10 MG/M3 OSHA PEL: 15 MG/M3				
+ AMORPHOUS SILICA	61790-53-2			
ACGIH TLV: 10.0 MG/M3 OSHA PEL: 6.0 MG/M3				
XYLENE	1330-20-7	9.5		0-2%
ACGIH TLV: 100.0 PPM OSHA PEL: 100.0 PPM				
ETHYLBENZENE	100-41-4	7.1	68	0-1%
ACGIH TLV: 100 PPM OSHA PEL: 100 PPM				

SARA 313 INFORMATION: * Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

+ Indicates component(s) considered nuisance dust(s) in their dry form.

FOOTNOTE: *N/A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE OF SEC. II: 230°F - 279°F **WEIGHT per GALLON :** 10.37 lb/gl
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER **%SOLIDS BY VOLUME:** 37.01
V.O.C.: 4.57 lb/gl

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY: RED LABEL, FLAMMABLE, LESS THAN 100°F.

FLASH POINT : 46°F METHOD USED: SETA FLASH
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL OR CARBON DIOXIDE EXTINGUISHERS.

UNUSUAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL UIPMENT AND OPEN FLAME. CLOSED CONTAINERS MAY RUPTURE OR EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY TO HOT SURFACES. ID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A ..ALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION.

SPECIAL FIREFIGHTING PROCEDURES: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQUIPMENT AND OPEN FLAME. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. PERSONNEL INVOLVED IN A FIRE SHOULD WEAR FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED RESPIRATORY EQUIPMENT. WATER SPRAY MAY BE USED TO COOL UNRUPTURED CLOSED CONTAINERS TO PREVENT PRESSURE BUILDUP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: SEE SECTION II

INHALATION HEALTH RISKS AND SYMPTOMS OF ACUTE EXPOSURE: INHALATION OF VAPORS OR SPRAY MISTS CA CAUSE IRRITATION OF THE RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS OR COMA. OVEREXPOSURE TO VAPORS OR SPRAY MISTS CAN CAUSE EYE AND SKIN IRRITATION.

EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: EYE CONTACT WITH LIQUID MAY CAUSE SEVERE IRRITATION.

SKIN CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: BRIEF CONTACT WITH SKIN MAY CAUSE SLIGHT TO MODERATE IRRITATION AND POSSIBLY DRYING OF THE SKIN.

REPEATED OR PROLONGED SKIN CONTACT MAY CAUSE DRYING AND DEFATTING OF THE SKIN, WHICH MAY LEAD TO DERMATITIS.

J...GESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: MAY BE HARMFUL IF SWALLOWED. SWALLOWING MAY CAUSE ..OINTESTINAL IRRITATION, NAUSEA, DIARRHEA, VOMITING AND POSSIBLY NARCOSIS. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE P... NITIS, WHICH CAN BE FATAL.

CHRONIC HEALTH HAZARDS: REPEATED OR PROLONGED OCCUPATIONAL EXPOSURE TO VAPORS FROM SOLVENT(S) CONTAINED IN THIS PRODUCT MAY AFFECT THE CENTRAL NERVOUS SYSTEM AND CAUSE RESPIRATORY IRRITATION, RESULTING IN POSSIBLE LUNG DAMAGE, AND MAY CAUSE LIVER AND KIDNEY DAMAGE.

NOTE: A CASE EFFECT SHOWED ACTIVE LIVER & KIDNEY DYSFUNCTION AT EXTREMELY HIGH LEVELS OF EXPOSURE TO XYLENE AND TOLUENE.

NOTE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

CARCINOGENICITY: THIS PRODUCT CONTAINS ETHYLBENZENE, CLASSIFIED BY IARC AS A GROUP 2B CARCINOGEN - POSSIBLY CARCINOGENIC TO HUMANS. THERE IS INADEQUATE EVIDENCE IN HUMANS BUT SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF ETHYLBENZENE.

EMERGENCY FIRST AID PROCEDURES: INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE MOUTH-TO-MOUTH RESUSCITATION AND KEEP WARM AND QUIET. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL HELP IMMEDIATELY. SPLASH (EYES): FLUSH IMMEDIATELY WITH COPIOUS QUANTITIES OF WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN FOR DEFINITIVE MEDICAL TREATMENT. SPLASH (SKIN): REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED AREA WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN.

IF SWALLOWED, CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY AND GET MEDICAL HELP. DO NOT INDUCE VOMITING UNLESS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: EXPOSURE MAY AGGRAVATE PRE-EXISTING SKIN, EYE AND RESPIRATORY DISORDERS.

SECTION VI - REACTIVITY DATA

'BILITY: STABLE

_DITIONS TO AVOID: EXCESSIVE HEAT, SPARKS AND OPEN FLAME.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG ALKALINE MATERIALS AND BASES.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: DECOMPOSITION MAY PRODUCE SMOKE, ACRID FUMES, CARBON DIOXIDE AND/O CARBON MONOXIDE, AND POSSIBLY OTHER TOXIC VAPORS.

DECOMPOSITION MAY ALSO PRODUCE TOXIC ACRYLIC MONOMER.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

========== SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE ==========

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION (FLAMES, HOT SURFACES AND ELECTRICAL, STATIC OR FRICTION SPARKS). AVOID BREATHING VAPORS. WEAR APPROPRIATE PROTECTIVE EQUIPMENT. VENTILATE AREA. ADD INERT ABSORBENT AND REMOVE TO APPROPRIATE CONTAINER FOR DISPOSAL WITH NON-SPARKING TOOLS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATER AND SOIL.

WASTE DISPOSAL METHOD: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. INCINERATE IN APPROVED FACILITY. DO NOT INCINERATE CLOSED CONTAINERS.

========== SECTION VIII - CONTROL MEASURES ==========

RESPIRATORY PROTECTION: IF PRODUCT IS APPLIED BY BRUSH, ROLLER COAT, OR DIP IN OUTDOOR OR OPEN AREAS WITH STRICTED VENTILATION, AND WHERE THE TLV'S DO NOT EXCEED THOSE SHOWN IN SECTION II, RESPIRATORY EQUIPMENT MAY NOT BE NECESSARY. \TERING, HEADACHES OR DIZZINESS ARE EXPERIENCED WEAR RESPIRATORY PROTECTION (NIOSH TC23 RESPIRATOR OR EQUIVALENT) OR LEAVE ARE I_ODUCT IS APPLIED BY SPRAY APPLICATION, A NIOSH APPROVED MECHANICAL FILTER RESPIRATOR DESIGNED TO REMOVE AIRBORNE PARTICLES OF OVERSPRAY DURING APPLICATION SHOULD BE WORN. IN RESTRICTED VENTILATION AREAS, WHERE THE TLV'S CAN EXCEED THOSE SHOWN IN SECTION II, NIOSH APPROVED RESPIRATOR WITH CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICULATE AND VAPORS SHOULD BE WOR IN CONFINED AREAS, USE A NIOSH APPROVED AIRLINE RESPIRATOR OR HOOD.

VENTILATION: SOLVENT VAPORS ARE HEAVIER THAN AIR AND TEND TO ACCUMULATE AT LOWER LEVELS ALONG THE FLOOR. VAPORS MAY SPREA LONG DISTANCES AND MAY CAUSE A FLASH FIRE. PREVENT BUILD-UP OF VAPORS. ELIMINATE ANY SOURCE OF IGNITION DURING USE AND UNTIL VAP ARE GONE. PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF MOST HAZARDOUS INGREDIENT IN SECTION II BELOW ACCEPTABLE LIMIT, LEL IN SECTION IV BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FL CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES: SOLVENT RESISTANT GLOVES ARE REQUIRED FOR PROLONGED OR REPEATED CONTACT WITH LIQUID.

EYE PROTECTION: IF A SPLASHING HAZARD EXISTS OR IF THERE IS POTENTIAL EYE CONTACT, WEAR SAFETY EYEWEAR SUCH AS CHEMICAL GOGGLES OR FACE SHIELDS TO PREVENT CONTACT OF LIQUID WITH EYES. EYE FLUSHING EQUIPMENT SHOULD BE IMMEDIATELY AVAILABLE.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: WEAR APPROPRIATE PROTECTIVE OUTERWEAR TO PROTECT AGAINST CLOTHI CONTAMINATION AND PROLONGED SKIN CONTACT. WHEN NECESSARY, WEAR CHEMICAL AND/OR SOLVENT RESISTANT BOOTS TO PROTECT FEET AND SHOES FROM CONTAMINATION. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE. DISCARD CONTAMINATED SHOES THAT CANNOT BE THOROUGHLY CLEANED BEFORE REUSE. WASH HANDS BEFORE EATING, SMOKING OR USING RESTROOM.

========== SECTION IX - SPECIAL PRECAUTIONS ==========

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG F. DO NOT STORE OR U HEAT, SPARKS, OR OPEN FLAME. KEEP CONTAINERS TIGHTLY COVERED AND UPRIGHT TO PREVENT LEAKAGE. STORE LARGE QUANTITIES IN NGS DESIGNED AND PROTECTED FOR STORAGE OF FLAMMABLE LIQUIDS.

R PRECAUTIONS: WARNING - FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. VAPORS MAY CAUSE FLASH FIRE. WHEN PO...G/TRANSFERRING THIS MATERIAL TO ANOTHER CONTAINER OR EQUIPMENT, GROUND ALL CONTAINERS AND EQUIPMENT AS STATIC ELECTRICITY MAY IGNITE VAPORS. VAPORS HARMFUL. MAY CAUSE IRRITATION TO EYES, NOSE, THROAT, SKIN AND RESPIRATORY TRACT. PROLONGED OR REPEATED CONTACT OF LIQUID, OR BREATHING OF VAPORS OR MISTS, MAY CAUSE DELAYED AND SERIOUS INJURY. USE ONLY WITH ADEQUATE VENTILATION. AVOI BREATHING VAPORS OR SPRAY MIST. AVOID CONTACT WITH EYES AND SKIN. DO NOT TAKE INTERNALLY. DO NOT SAND, FLAME CUT, BRAZE OR WELD DRY COATING WITHOUT A NIOSH APPROVED RESPIRATOR OR SUFFICIENT VENTILATION. DUST FROM OVERSPRAY OR SANDING THE PAINT FILM IS POTENTIALLY IGNITABLE (EXPLOSIVE) WHEN SUSPENDED IN AIR AND SHOULD BE KEPT AWAY FROM HEAT, SPARKS, FLAME, STATIC ELECTRICITY OR ANY OTHER TYPE OF IGNITION SOURCE. NOTICE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRTING AND INHALING CONTENTS MAY BE HARMFUL OR FATAL.

SPECIAL PRECAUTIONS: *N/A

MISCELLANEOUS PRECAUTIONS: WARNING - EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR EXPLOSIV VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS MUST BE OBSERVED UNTIL THE CONTAINER HAS BEEN CLEANE OR RECONDITIONED.

SECTION X - DISCLAIMER

SARA 313 INFORMATION: *N/A

FOOTNOTE: USER'S RESPONSIBILITY: THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH THE USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED HEREIN IS ACCURATE. HOWEVER, STRATHMORE PRODUCTS, INC., ASSUMES NO LIABILI SOEVER FOR THE ACCURACY, RELIABILITY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. FINAL DETERMINATION OF SUITABILITY O ATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. ALL MATERIALS MAY PRESENT UNKNOWN HEAL AND SAFETY HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS WHICH EXIST.

MATERIAL SAFETY DATA SHEET

PLASTICEL 2H PARCHMENT COATING

PRODUCT NAME: PLASTICEL 2H PARCHMENT COATING
PRODUCT CLASS: ACRYLIC COATING
PRODUCT CODE: I35-0144

HMIS CODES: H F R

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: STRATHMORE PRODUCTS, INC.
ADDRESS : 1970 WEST FAYETTE STREET
P.O. BOX 151
SYRACUSE, NY 13201
EMERGENCY PHONE **DAY:** 315-488-5401
NIGHT: FOR HEALTH - POISON CONTROL CENTER : 315/476-4766
FOR SPILLS - CHEMTEL : 1-800/255-3924
DATE OF PREPARATION: 08/09/02
TIME OF PREPARATION: 15:16:32 **REVISION DATE:** 06/20/02

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		RANGE PERCENT
* TOLUENE	108-88-3	38	68	35-45%
ACGIH TLV: 50 PPM OSHA PEL: 200 PPM				
+ TITANIUM DIOXIDE	13463-67-7			
ACGIH TLV: 10 MG/M3 OSHA PEL: 15 MG/M3				
+ AMORPHOUS SILICA	61790-53-2			
ACGIH TLV: 10.0 MG/M3 OSHA PEL: 6.0 MG/M3				
NE	1330-20-7	9.5		0-2%
ACGIH TLV: 100.0 PPM OSHA PEL: 100.0 PPM				
ETHYLBENZENE	100-41-4	7.1	68	0-1%
ACGIH TLV: 100 PPM OSHA PEL: 100 PPM				

SARA 313 INFORMATION: * Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

+ Indicates component(s) considered nuisance dust(s) in their dry form.

FOOTNOTE: *N/A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE OF SEC. II: 230°F - 279°F **WEIGHT per GALLON :** 10.45 lb/gl
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER **%SOLIDS BY VOLUME:** 37.83
V.O.C.: 4.51 lb/gl

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY: RED LABEL, FLAMMABLE, LESS THAN 100°F.

FLASH POINT : 46°F METHOD USED: SETA FLASH
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL OR CARBON DIOXIDE EXTINGUISHERS.

UAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL
IT AND OPEN FLAME. CLOSED CONTAINERS MAY RUPTURE OR EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY TO HOT SURFACES.
VOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A
EALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION.

PECIAL FIREFIGHTING PROCEDURES: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL
QUIPMENT AND OPEN FLAME. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. PERSONNEL INVOLVED IN A
IRE SHOULD WEAR FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED RESPIRATORY EQUIPMENT. WATER SPRAY MAY BE USED TO COOL
NRUPTURED CLOSED CONTAINERS TO PREVENT PRESSURE BUILDUP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF
ATER IS USED, FOG NOZZLES ARE PREFERABLE.

SECTION V - HEALTH HAZARD DATA

HRESHOLD LIMIT VALUE: SEE SECTION II

NHALATION HEALTH RISKS AND SYMPTOMS OF ACUTE EXPOSURE: INHALATION OF VAPORS OR SPRAY MISTS CAN
AUSE IRRITATION OF THE RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING GAIT,
NFUSION, UNCONSCIOUSNESS OR COMA. OVEREXPOSURE TO VAPORS OR SPRAY MISTS CAN CAUSE EYE AND SKIN IRRITATION.

YE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: EYE CONTACT WITH LIQUID MAY CAUSE SEVERE
RRITATION.

KIN CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: BRIEF CONTACT WITH SKIN MAY CAUSE SLIGHT TO
DERATE IRRITATION AND POSSIBLY DRYING OF THE SKIN.

EPEATED OR PROLONGED SKIN CONTACT MAY CAUSE DRYING AND DEFATTING OF THE SKIN, WHICH MAY LEAD TO DERMATITIS.

STION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: MAY BE HARMFUL IF SWALLOWED. SWALLOWING MAY CAUSE
ITESTINAL IRRITATION, NAUSEA, DIARRHEA, VOMITING AND POSSIBLY NARCOSIS. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE
NEUMONITIS, WHICH CAN BE FATAL.

HRONIC HEALTH HAZARDS: REPEATED OR PROLONGED OCCUPATIONAL EXPOSURE TO VAPORS FROM SOLVENT(S) CONTAINED IN THIS
RODUCT MAY AFFECT THE CENTRAL NERVOUS SYSTEM AND CAUSE RESPIRATORY IRRITATION, RESULTING IN POSSIBLE LUNG DAMAGE, AND MAY CAUSE
IVER AND KIDNEY DAMAGE.

OTE: A CASE EFFECT SHOWED ACTIVE LIVER & KIDNEY DYSFUNCTION AT EXTREMELY HIGH LEVELS OF EXPOSURE TO XYLENE AND TOLUENE.

OTE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM
AMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

ARCINOGENICITY: THIS PRODUCT CONTAINS ETHYLBENZENE, CLASSIFIED BY IARC AS A GROUP 2B CARCINOGEN - POSSIBLY CARCINOGENIC
O HUMANS. THERE IS INADEQUATE EVIDENCE IN HUMANS BUT SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF
THYLBENZENE.

MERGENCY FIRST AID PROCEDURES: INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE MOUTH-TO-
OUTH RESUSCITATION AND KEEP WARM AND QUIET. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL HELP IMMEDIATELY. SPLASH (EYES):
LUSH IMMEDIATELY WITH COPIOUS QUANTITIES OF WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN FOR DEFINITIVE MEDICAL TREATMENT. SPLASH
SKIN): REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED AREA WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN.

F SWALLOWED, CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY AND GET MEDICAL HELP. DO NOT INDUCE VOMITING UNLESS DIRECTED BY
EDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

EDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: EXPOSURE MAY AGGRAVATE PRE-EXISTING SKIN,
) RESPIRATORY DISORDERS.

SECTION VI - REACTIVITY DATA

BILITY: STABLE

CONDITIONS TO AVOID: EXCESSIVE HEAT, SPARKS AND OPEN FLAME.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG ALKALINE MATERIALS AND BASES.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: DECOMPOSITION MAY PRODUCE SMOKE, ACRID FUMES, CARBON DIOXIDE AND/O CARBON MONOXIDE, AND POSSIBLY OTHER TOXIC VAPORS.

DECOMPOSITION MAY ALSO PRODUCE TOXIC ACRYLIC MONOMER.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

========== SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE ==========

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION (FLAMES, HOT SURFACES AND ELECTRICAL, STATIC OR FRICTION SPARKS). AVOID BREATHING VAPORS. WEAR APPROPRIATE PROTECTIVE EQUIPMENT. VENTILATE AREA. ADD INERT ABSORBENT AND REMOVE TO APPROPRIATE CONTAINER FOR DISPOSAL WITH NON-SPARKING TOOLS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATER AND SOIL.

WASTE DISPOSAL METHOD: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. INCINERATE IN APPROVED FACILITY. DO NOT INCINERATE CLOSED CONTAINERS.

========== SECTION VIII - CONTROL MEASURES ==========

SPIRATORY PROTECTION: IF PRODUCT IS APPLIED BY BRUSH, ROLLER COAT, OR DIP IN OUTDOOR OR OPEN AREAS WITH STRICTED VENTILATION, AND WHERE THE TLV'S DO NOT EXCEED THOSE SHOWN IN SECTION II, RESPIRATORY EQUIPMENT MAY NOT BE NECESSARY. ATERING, HEADACHES OR DIZZINESS ARE EXPERIENCED WEAR RESPIRATORY PROTECTION (NIOSH TC23 RESPIRATOR OR EQUIVALENT) OR LEAVE AR IF PRODUCT IS APPLIED BY SPRAY APPLICATION, A NIOSH APPROVED MECHANICAL FILTER RESPIRATOR DESIGNED TO REMOVE AIRBORNE PARTICLES OF OVERSPRAY DURING APPLICATION SHOULD BE WORN. IN RESTRICTED VENTILATION AREAS, WHERE THE TLV'S CAN EXCEED THOSE SHOWN IN SECTION II NIOSH APPROVED RESPIRATOR WITH CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICULATE AND VAPORS SHOULD BE WO IN CONFINED AREAS, USE A NIOSH APPROVED AIRLINE RESPIRATOR OR HOOD.

VENTILATION: SOLVENT VAPORS ARE HEAVIER THAN AIR AND TEND TO ACCUMULATE AT LOWER LEVELS ALONG THE FLOOR. VAPORS MAY SPRE LONG DISTANCES AND MAY CAUSE A FLASH FIRE. PREVENT BUILD-UP OF VAPORS. ELIMINATE ANY SOURCE OF IGNITION DURING USE AND UNTIL VAI ARE GONE. PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF MOST HAZARDOUS INGREDIENT II SECTION II BELOW ACCEPTABLE LIMIT, LEL IN SECTION IV BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FI CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES: SOLVENT RESISTANT GLOVES ARE REQUIRED FOR PROLONGED OR REPEATED CONTACT WITH LIQUID.

EYE PROTECTION: IF A SPLASHING HAZARD EXISTS OR IF THERE IS POTENTIAL EYE CONTACT, WEAR SAFETY EYEWEAR SUCH AS CHEMICAL GOGGLES OR FACE SHIELDS TO PREVENT CONTACT OF LIQUID WITH EYES. EYE FLUSHING EQUIPMENT SHOULD BE IMMEDIATELY AVAILABLE.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: WEAR APPROPRIATE PROTECTIVE OUTERWEAR TO PROTECT AGAINST CLOTH CONTAMINATION AND PROLONGED SKIN CONTACT. WHEN NECESSARY, WEAR CHEMICAL AND/OR SOLVENT RESISTANT BOOTS TO PROTECT FEET AND SHOES FROM CONTAMINATION. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE. DISCARD CONTAMINATED SHOES THAT CANNOT BE THOROUGHLY CLEANED BEFORE REUSE. WASH HANDS BEFORE EATING, SMOKING OR USING RESTROOM.

========== SECTION IX - SPECIAL PRECAUTIONS ==========

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG F. DO NOT STORE OR R HEAT, SPARKS, OR OPEN FLAME. KEEP CONTAINERS TIGHTLY COVERED AND UPRIGHT TO PREVENT LEAKAGE. STORE LARGE QUANTITIES IN INGS DESIGNED AND PROTECTED FOR STORAGE OF FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS: WARNING - FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. VAPORS MAY CAUSE FLASH FIRE. WHE RING/TRANSFERRING THIS MATERIAL TO ANOTHER CONTAINER OR EQUIPMENT, GROUND ALL CONTAINERS AND EQUIPMENT AS STATIC ELECTRICITY MAY E VAPORS. VAPORS HARMFUL. MAY CAUSE IRRITATION TO EYES, NOSE, THROAT, SKIN AND RESPIRATORY TRACT. PROLONGED OR REPEATED CT OF LIQUID, OR BREATHING OF VAPORS OR MISTS, MAY CAUSE DELAYED AND SERIOUS INJURY. USE ONLY WITH ADEQUATE VENTILATION. AVOI BREATHING VAPORS OR SPRAY MIST. AVOID CONTACT WITH EYES AND SKIN. DO NOT TAKE INTERNALLY. DO NOT SAND, FLAME CUT, BRAZE OR WELD DRY COATING WITHOUT A NIOSH APPROVED RESPIRATOR OR SUFFICIENT VENTILATION. DUST FROM OVERSPRAY OR SANDING THE PAINT FILM IS POTENTIALLY IGNITABLE (EXPLOSIVE) WHEN SUSPENDED IN AIR AND SHOULD BE KEPT AWAY FROM HEAT, SPARKS, FLAME, STATIC ELECTRICITY OR ANY OTHER TYPE OF IGNITION SOURCE. NOTICE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRTING AND INHALING CONTENTS MAY BE HARMFUL OR FATAL.

SPECIAL PRECAUTIONS: *N/A

MISCELLANEOUS PRECAUTIONS: WARNING - EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS MUST BE OBSERVED UNTIL THE CONTAINER HAS BEEN CLEANED OR RECONDITIONED.

SECTION X - DISCLAIMER

SARA 313 INFORMATION: *N/A

FOOTNOTE: USER'S RESPONSIBILITY: THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH THE USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED HEREIN IS ACCURATE. HOWEVER, STRATHMORE PRODUCTS, INC., ASSUMES NO LIABILITY WHATSOEVER FOR THE ACCURACY, RELIABILITY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. FINAL DETERMINATION OF SUITABILITY OF ANY MATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. ALL MATERIALS MAY PRESENT UNKNOWN HEALTH AND SAFETY HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS WHICH EXIST.

MATERIAL SAFETY DATA SHEET

PLASTICEL 2 H SPECIAL GRAY COATING

PRODUCT NAME: PLASTICEL 2 H SPECIAL GRAY COATING
PRODUCT CLASS: ACRYLIC COATING
PRODUCT CODE: E35-0145

HMIS CODES: H F R

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: STRATHMORE PRODUCTS, INC.
ADDRESS : 1970 WEST FAYETTE STREET
P.O. BOX 151
SYRACUSE, NY 13201

EMERGENCY PHONE DAY: 315-488-5401
NIGHT: FOR HEALTH - POISON CONTROL CENTER : 315/476 4766
FOR SPILLS - CHEMTEL : 1-800/255 3924

DATE OF PREPARATION: 11/01/02
TIME OF PREPARATION: 10:26:03 REVISION DATE: 08/19/02

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		RANGE PERCENT
* TOLUENE ACGIH TLV: 50 PPM OSHA PEL: 200 PPM	108-88-3	38	68	40-50%
• TITANIUM DIOXIDE ACGIH TLV: 10 MG/M3 OSHA PEL: 15 MG/M3	13463-67-7			
• AMORPHOUS SILICA ACGIH TLV: 10.0 MG/M3 OSHA PEL: 6.0 MG/M3	61790-53-2			
• IRON OXIDE (FUME AS FE) ACGIH TLV: 5.0 MG/M3 OSHA PEL: 10.0 MG/M3	51274-00-1			
* XYLENE ACGIH TLV: 100.0 PPM OSHA PEL: 100.0 PPM	1330-20-7	9.5		1-5%
ETHYLBENZENE ACGIH TLV: 100 PPM OSHA PEL: 100 PPM	100-41-4	7.1	68	0-1%
CARBON BLACK ACGIH TLV: 3.5 MG/M3 OSHA PEL: 3.5 MG/M3	1333-86-4			

SARA 313 INFORMATION: * Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

• Indicates component(s) considered nuisance dust(s) in their dry form.

FOOTNOTE: *N/A

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE OF SEC. II: 230°F - 279°F **WEIGHT per GALLON :** 9.48 lb/gl
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER **%SOLIDS BY VOLUME:** 34.57
V.O.C.: 4.74 lb/gl

SECTION IV FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY: RED LABEL, FLAMMABLE, LESS THAN 100°F.

FLASH POINT : 46°F **METHOD USED:** SETA FLASH

FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER: 1.0

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL OR CARBON DIOXIDE EXTINGUISHERS.

UNUSUAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQUIPMENT AND OPEN FLAME. CLOSED CONTAINERS MAY RUPTURE OR EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY TO HOT SURFACES. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION.

SPECIAL FIREFIGHTING PROCEDURES: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, ELECTRICAL EQUIPMENT AND OPEN FLAME. AVOID BREATHING GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS DURING A FIRE. PERSONNEL INVOLVED IN A FIRE SHOULD WEAR FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED RESPIRATORY EQUIPMENT. WATER SPRAY MAY BE USED TO COOL UNRUPTURED CLOSED CONTAINERS TO PREVENT PRESSURE BUILDUP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: SEE SECTION II

INHALATION HEALTH RISKS AND SYMPTOMS OF ACUTE EXPOSURE: INHALATION OF VAPORS OR SPRAY MISTS CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS OR COMA. OVEREXPOSURE TO VAPORS OR SPRAY MISTS CAN CAUSE EYE AND SKIN IRRITATION.

EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: EYE CONTACT WITH LIQUID MAY CAUSE SEVERE IRRITATION.

SKIN CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: BRIEF CONTACT WITH SKIN MAY CAUSE SLIGHT TO MODERATE IRRITATION AND POSSIBLY DRYING OF THE SKIN.

REPEATED OR PROLONGED SKIN CONTACT MAY CAUSE DRYING AND DEFATTING OF THE SKIN, WHICH MAY LEAD TO DERMATITIS.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: MAY BE HARMFUL IF SWALLOWED. SWALLOWING MAY CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, DIARRHEA, VOMITING AND POSSIBLY NARCOSIS. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE PNEUMONITIS, WHICH CAN BE FATAL.

CHRONIC HEALTH HAZARDS: REPEATED OR PROLONGED OCCUPATIONAL EXPOSURE TO VAPORS FROM SOLVENT(S) CONTAINED IN THIS PRODUCT MAY AFFECT THE CENTRAL NERVOUS SYSTEM AND CAUSE RESPIRATORY IRRITATION, RESULTING IN POSSIBLE LUNG DAMAGE, AND MAY CAUSE LIVER AND KIDNEY DAMAGE.

NOTE: A CASE EFFECT SHOWED ACTIVE LIVER & KIDNEY DYSFUNCTION AT EXTREMELY HIGH LEVELS OF EXPOSURE TO XYLENE AND TOLUENE.

NOTE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

CARCINOGENICITY: THIS PRODUCT CONTAINS ETHYLBENZENE, CLASSIFIED BY IARC AS A GROUP 2B CARCINOGEN - POSSIBLY CARCINOGENIC TO HUMANS. THERE IS INADEQUATE EVIDENCE IN HUMANS BUT SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF ETHYLBENZENE.

THIS MATERIAL CONTAINS CARBON BLACK. EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE CARBON BLACK PRODUCING INDUSTRIES OF NORTH AMERICA AND WESTERN EUROPE SHOW NO EVIDENCE OF CLINICALLY SIGNIFICANT ADVERSE HEALTH EFFECTS DUE TO OCCUPATIONAL EXPOSURE TO CARBON BLACK. IN ITS MONOGRAM VOLUME 65, ISSUED APRIL 1996, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) RE-EVALUATED CARBON BLACK AND CONCLUDED THAT "THERE IS INADEQUATE EVIDENCE IN HUMANS FOR THE CARCINOGENICITY OF CARBON BLACK".

CARBON BLACKS SUPPLIED BY OUR DOMESTIC SUPPLIERS CONTAIN LESS THAN 0.1% OF ADSORBED PAH'S (POLYNUCLEAR AROMATIC HYDROCARBONS). IN NON ADSORBED FORM, SOME PAH'S HAVE BEEN FOUND TO BE CARCINOGENS IN ANIMAL STUDIES. NO CARCINOGENIC EFFECTS, HOWEVER, HAVE BEEN OBSERVED IN HUMANS DUE TO CARBON BLACK. CHRONIC INFLAMMATION, LUNG FIBROSIS AND LUNG TUMORS HAVE BEEN OBSERVED IN SOME RATS EXPERIMENTALLY EXPOSED, FOR LONG PERIODS OF TIME, TO EXCESSIVE CONCENTRATIONS OF CARBON BLACK AND SEVERAL OTHER INSOLUBLE DUSTS.

PARTICLES. TUMORS HAVE NOT BEEN OBSERVED IN OTHER ANIMAL SPECIES (i.e., MOUSE AND HAMSTER) UNDER SIMILAR CIRCUMSTANCES AND STUDY CONDITIONS. MANY RESEARCHERS CONDUCTING RAT INHALATION STUDIES BELIEVE THAT THESE EFFECTS MOST LIKELY RESULT FROM THE MASSIVE ACCUMULATION OF SMALL DUST PARTICLES IN THE LUNG WHICH OVERWHELM THE NATURAL LUNG CLEARANCE MECHANISMS, KNOWN AS "LUNG OVERLOAD" PHENOMENON, RATHER THAN FROM A SPECIFIC CHEMICAL EFFECT OF THE DUST PARTICLES IN THE LUNG.
MANY INHALATION TOXICOLOGISTS BELIEVE THAT THE TUMOR RESPONSE OBSERVED IN THE REFERENCED RAT STUDIES IS SPECIES SPECIFIC AND DOES NOT RELATE TO HUMAN EXPOSURE. HOWEVER, THE IARC EVALUATION IN MONOGRAPH 65 CONCLUDED THAT "THERE IS SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF CARBON BLACK". BASED ON THIS EVALUATION, ALONG WITH THEIR EVALUATION OF INADEQUATE CARCINOGENICITY IN HUMANS, IARC'S OVERALL EVALUATION IS THAT "CARBON BLACK IS POSSIBLY CARCINOGENIC TO HUMANS (GROUP 2B)".
CARBON BLACK HAS NOT BEEN LISTED AS A CARCINOGEN BY NTP (NATIONAL TOXICOLOGY PROGRAM) OR OSHA (OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION). NIOSH (THE NATIONAL INSTITUTE OF SAFETY AND HEALTH) CRITERIA DOCUMENT ON CARBON BLACK RECOMMENDS THAT ONLY CARBON BLACKS WITH PAH LEVELS GREATER THAN 0.1% BE CONSIDERED SUSPECT CARCINOGENS.

EMERGENCY FIRST AID PROCEDURES: INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE MOUTH TO MOUTH RESUSCITATION AND KEEP WARM AND QUIET. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL HELP IMMEDIATELY. SPLASH (EYES): FLUSH IMMEDIATELY WITH COPIOUS QUANTITIES OF WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN FOR DEFINITIVE MEDICAL TREATMENT. SPLASH (SKIN): REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED AREA WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN.

IF SWALLOWED, CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY AND GET MEDICAL HELP. DO NOT INDUCE VOMITING UNLESS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: EXPOSURE MAY AGGRAVATE PRE-EXISTING SKIN, EYE AND RESPIRATORY DISORDERS.

SECTION VI - REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID: EXCESSIVE HEAT, SPARKS AND OPEN FLAME.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG ALKALINE MATERIALS AND BASES.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: DECOMPOSITION MAY PRODUCE SMOKE, ACRID FUMES, CARBON DIOXIDE AND/OR CARBON MONOXIDE, AND POSSIBLY OTHER TOXIC VAPORS.

DECOMPOSITION MAY ALSO PRODUCE TOXIC ACRYLIC MONOMER

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION (FLAMES, HOT SURFACES AND ELECTRICAL, STATIC OR FRICTION SPARKS). AVOID BREATHING VAPORS. WEAR APPROPRIATE PROTECTIVE EQUIPMENT. VENTILATE AREA. ADD INERT ABSORBENT AND REMOVE TO APPROPRIATE CONTAINER FOR DISPOSAL WITH NON SPARKING TOOLS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATER AND SOIL.

WASTE DISPOSAL METHOD: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. INCINERATE IN APPROVED FACILITY. DO NOT INCINERATE CLOSED CONTAINERS.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: IF PRODUCT IS APPLIED BY BRUSH, ROLLER COAT, OR DIP IN OUTDOOR OR OPEN AREAS WITH UNRESTRICTED VENTILATION, AND WHERE THE TLV'S DO NOT EXCEED THOSE SHOWN IN SECTION II, RESPIRATORY EQUIPMENT MAY NOT BE NECESSARY. IF WATERING, HEADACHES OR DIZZINESS ARE EXPERIENCED WEAR RESPIRATORY PROTECTION (NIOSH TC23 RESPIRATOR OR EQUIVALENT) OR LEAVE AREA. IF PRODUCT IS APPLIED BY SPRAY APPLICATION, A NIOSH APPROVED MECHANICAL FILTER RESPIRATOR DESIGNED TO REMOVE AIRBORNE PARTICLES OF OVERSPRAY DURING APPLICATION SHOULD BE WORN. IN RESTRICTED VENTILATION AREAS, WHERE THE TLV'S CAN EXCEED THOSE SHOWN IN SECTION II, NIOSH APPROVED RESPIRATOR WITH CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF PARTICULATE AND VAPORS SHOULD BE WORN

IN CONFINED AREAS, USE A NIOSH APPROVED AIRLINE RESPIRATOR OR HOOD.

VENTILATION: SOLVENT VAPORS ARE HEAVIER THAN AIR AND TEND TO ACCUMULATE AT LOWER LEVELS ALONG THE FLOOR. VAPORS MAY SPREAD LONG DISTANCES AND MAY CAUSE A FLASH FIRE. PREVENT BUILD UP OF VAPORS. ELIMINATE ANY SOURCE OF IGNITION DURING USE AND UNTIL VAPORS ARE GONE. PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF MOST HAZARDOUS INGREDIENT IN SECTION II BELOW ACCEPTABLE LIMIT, LEL IN SECTION IV BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES: SOLVENT RESISTANT GLOVES ARE REQUIRED FOR PROLONGED OR REPEATED CONTACT WITH LIQUID.

EYE PROTECTION: IF A SPLASHING HAZARD EXISTS OR IF THERE IS POTENTIAL EYE CONTACT, WEAR SAFETY EYEWEAR SUCH AS CHEMICAL GOGGLES OR FACE SHIELDS TO PREVENT CONTACT OF LIQUID WITH EYES. EYE FLUSHING EQUIPMENT SHOULD BE IMMEDIATELY AVAILABLE.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: WEAR APPROPRIATE PROTECTIVE OUTERWEAR TO PROTECT AGAINST CLOTHING CONTAMINATION AND PROLONGED SKIN CONTACT. WHEN NECESSARY, WEAR CHEMICAL AND/OR SOLVENT RESISTANT BOOTS TO PROTECT FEET AND SHOES FROM CONTAMINATION. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE. DISCARD CONTAMINATED SHOES THAT CANNOT BE THOROUGHLY CLEANED BEFORE REUSE. WASH HANDS BEFORE EATING, SMOKING OR USING RESTROOM.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG F. DO NOT STORE OR USE NEAR HEAT, SPARKS, OR OPEN FLAME. KEEP CONTAINERS TIGHTLY COVERED AND UPRIGHT TO PREVENT LEAKAGE. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS: WARNING - FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. VAPORS MAY CAUSE FLASH FIRE. DURING POURING/TRANSFERRING THIS MATERIAL TO ANOTHER CONTAINER OR EQUIPMENT, GROUND ALL CONTAINERS AND EQUIPMENT AS STATIC ELECTRICITY MAY IGNITE VAPORS. VAPORS HARMFUL. MAY CAUSE IRRITATION TO EYES, NOSE, THROAT, SKIN AND RESPIRATORY TRACT. PROLONGED OR REPEATED CONTACT OF LIQUID, OR BREATHING OF VAPORS OR MISTS, MAY CAUSE DELAYED AND SERIOUS INJURY. USE ONLY WITH ADEQUATE VENTILATION. AVOID BREATHING VAPORS OR SPRAY MIST. AVOID CONTACT WITH EYES AND SKIN. DO NOT TAKE INTERNALLY. DO NOT SAND, FLAME CUT, BRAZE OR WELD DRY COATING WITHOUT A NIOSH APPROVED RESPIRATOR OR SUFFICIENT VENTILATION. DUST FROM OVERSPRAY OR SANDING THE PAINT FILM IS POTENTIALLY IGNITABLE (EXPLOSIVE) WHEN SUSPENDED IN AIR AND SHOULD BE KEPT AWAY FROM HEAT, SPARKS, FLAME, STATIC ELECTRICITY OR ANY OTHER TYPE OF IGNITION SOURCE. NOTICE: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING CONTENTS MAY BE HARMFUL OR FATAL.

SPECIAL PRECAUTIONS: *N/A

MISCELLANEOUS PRECAUTIONS: WARNING - EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR POISONOUS VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS MUST BE OBSERVED UNTIL THE CONTAINER HAS BEEN CLEANED OR RECONDITIONED.

SECTION X - DISCLAIMER

SARA 313 INFORMATION: *N/A

FOOTNOTE: USER'S RESPONSIBILITY. THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH THE USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED HEREIN IS ACCURATE. HOWEVER, STRATHMORE PRODUCTS, INC., ASSUMES NO LIABILITY WHATSOEVER FOR THE ACCURACY, RELIABILITY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. FINAL DETERMINATION OF SUITABILITY OF ANY MATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. ALL MATERIALS MAY PRESENT UNKNOWN HEALTH AND SAFETY HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS WHICH EXIST.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	Toluene
DOCUMENT IDENTIFIER:	03200
APPLICABLE CODES:	0109; 0110; 03200; 10000118; 10000119; 10000120; 10000121; 10001555; 10001556; 10001557; 10003287; 3980; TOLU; TOLUE
SYNONYMS:	Methyl benzene; Toluol; Phenylmethane
CHEMICAL FAMILY NAME:	Aromatic hydrocarbon
NFPA HAZARD RATINGS(H-F-R):	2-3-0
HMIS HAZARD RATINGS(H-F-R):	2-3-0
DISTRIBUTOR:	HCI USA Distribution Companies
IN CASE OF EMERGENCY CALL:	1-800-424-9300
MSDS PREPARED BY:	HCI Technical Resource Center St. Louis, MO 63111 (314) 353-6500

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NUMBERS	Percent
Toluene	000108-88-3	100

Trace impurities and additional material names not listed above may also appear in the Regulatory Information Section (Section 15) towards the end of the MSDS. These materials may be listed for local "Right to Know" compliance and for other reasons.

3. HAZARDOUS IDENTIFICATION

EMERGENCY OVERVIEW:DANGER! Contact with the eyes and skin can cause irritation. Harmful or fatal if swallowed or inhaled. Excessive inhalation may cause central nervous system depression. Pulmonary aspiration hazard- can enter lungs and cause damage.

POTENTIAL HEALTH EFFECTS:

SKIN CONTACT:	Contact with the skin can cause drying, irritation, and dermatitis. This material may defat skin.
SKIN	

ABSORPTION: No data available

EYES: Contact with the eyes can cause moderate to severe irritation, tearing, and eye damage.

INGESTION: Ingestion may cause abdominal pain, nausea, diarrhea, vomiting, and signs of central nervous system depression.
Ingestion may result in death.

INHALATION: Inhalation of low concentrations may cause mild irritation of the eyes, nose, and throat.
Inhalation of high concentrations can cause central nervous system depression including weakness, headache, dizziness, nausea, vomiting, unconsciousness, coma, respiratory failure, and death.

MEDICAL CONDITIONS AGGRAVATED:
Conditions aggravated by exposure include pre-existing eye disorders, skin disorders, respiratory (asthma-like) disorders, kidney disorders, liver disorders, nervous system and/or pulmonary disorders.

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
Components found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT	NTP	IARC	OSHA
Toluene	N	N	N

4. FIRST AID MEASURES

SKIN CONTACT: Remove contaminated clothing and shoes.
Wash exposed areas with soap and water.
Call a physician if irritation persists.

EYE CONTACT: Flush eyes with water for at least 15 minutes.
Call a physician if irritation persists.

INGESTION: Call a physician immediately!
Only induce vomiting if directed by a physician.
If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs.
Keep patient warm.

INHALATION: Remove to fresh air.
If breathing has stopped, give artificial respiration.
Get medical attention.

NOTES TO PHYSICIAN: No data available

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES

FLASH POINT:	40 °F
FLASH POINT:	4.44 °C
FLASH POINT METHOD:	TCC
LOWER FLAMMABILITY LIMIT:	1.2
UPPER FLAMMABILITY LIMIT:	7.1
AUTOIGNITION TEMPERATURE:	896 °F, 479.95 °C
FLAMMABILITY CLASSIFICATION:	IB
EXTING. MEDIA:	Use water spray, carbon dioxide, dry chemical, or foam.
FIRE FIGHTING :	Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor-air mixtures are explosive. Consider evacuation downwind. If possible, move containers from fire area. Apply cooling water to sides of containers ensuring that you stay away from the ends of tanks. Evacuate immediately if tanks are discolored or if rising sound is emitted from tank. For massive fire use unmanned hose holders or monitor nozzles. Water may be ineffective if flow of flammable liquid is not stopped.
PROTECTIVE EQUIPMENT:	Use NIOSH-approved self-contained breathing apparatus and complete protective clothing when fighting chemical fires.
FIRE HAZARDS:	Containers exposed to extreme heat may rupture. This material may produce a floating fire hazard. A static ignition hazard may result from handling and use. Electrically bond and ground all containers and equipment before transfer or use of material. Containers should be grounded.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS:	Eliminate all sources of ignition. Contain spill and ventilate area. Absorb on inert media and containerize for disposal using non-sparking tools.
LARGE SPILLS:	Eliminate all sources of ignition. Contain spill and ventilate area. Permit only trained personnel wearing full protective equipment to enter the spill area. Collect the spill in a waste container or remove with a vacuum truck. Prevent spill from entering natural watercourses.

PROTECTIVE EQUIPMENT\ SPILL-RELEASE INSTRUCTIONS:
Wear complete protective clothing when cleaning up chemical spills. Spills and releases may have to be reported to federal and/or local authorities. See the Regulatory Information section (section 14) regarding reporting requirements.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with skin, eyes, and clothing.
Avoid breathing product vapors and mists.
Do not take internally.
Wash thoroughly after handling this material.
Use this material only with adequate ventilation.

STORAGE : Keep container closed when not in use.
This material should be stored in well ventilated areas.

Keep away from heat, sparks, and open flames.
Do not flame cut, braze, or weld container.
The empty container is hazardous.
Open containers should be grounded.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Use a ventilation system to maintain atmospheric concentrations below published exposure limits. Explosion-proof fans should be used in a mechanical-type ventilation system.

PERSONAL PROTECTIVE EQUIPMENT

SKIN:	Wear protective gloves made of neoprene or rubber.
EYE :	Wear chemical safety goggles.
RESPIRATORY:	If engineering controls do not maintain airborne concentrations below recommended limits, use a NIOSH-approved respirator for organic vapors.
OTHER:	Emergency showers, eye-wash stations, and fire blankets should be accessible. Wear protective clothing.

EXPOSURE GUIDELINES :

INGREDIENT	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL
Toluene	50 (s) PPM	150 PPM	200 PPM	150 PPM

s = skin
N/EST = Not established
See 29 CFR 1910.1000 (D) (2) and ACGIH "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices" booklet (Appendix C) for the determination of exposure limits for mixtures. Consult an industrial hygenist or similar professional to confrim that the calculated exposure limits are approriate.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE	Colorless, clear
ODOR:	Sweet aromatic
SPECIFIC GRAVITY:	0.8669
SOLUBILTY (IN WATER):	<0.1%
BOILING POINT (°F):	231
BOILING POINT (°C):	110.54
FREEZING POINT (°F):	-139
FREEZING POINT (°C):	-94.99
MELTING POINT (°F):	-139
MELTING POINT (°C):	-94.99
PRODUCT pH :	Not available
VAPOR PRESSURE:	22 @ 20C
REFERENCE PRESSURE:	mm Hg
VAPOR DENSITY:	3.2
REFERENCE DENSITY:	Air=1
EVAPORATION RATE:	2.24 (Butyl acetate=1)
VISCOSITY:	Not available
% VOLATILES:	100

10. STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID:	Keep away from heat, sparks, and open flames.
INCOMPATIBILITY:	Halogens, combustible materials, acids, metal salts Strong oxidizers
DECOMPOSITION:	Toxic oxides of carbon Unidentified organic compounds Reactive hydrocarbons

POLYMERIZATION WILL OCCUR: No

11. TOXICOLOGICAL INFORMATION

IRRITATION DATA: 300 ppm eyes-human; 435 mg skin-rabbit mild; 500 mg skin-rabbit moderate; 20 mg/24 hour(s) skin-rabbit moderate; 870 ug

IMMEDIATE EFFECTS:	eyes-rabbit mild; 2 mg/24 hour(s) eyes-rabbit severe; 100 mg/30 second(s) rinsed eyes-rabbit mild; TOXICITY DATA: LD50 oral (rat)-636 mg/kg; LC50 inhalation (rat)-49 gm/m3/4 hours; LD50 intraperitoneal (rat)- 1332 mg/kg; LD50 subcutaneous (mouse)-2250 mg/kg; LD50 oral (mammal)-4 gm/kg; LC50 inhalation (mammal)-30 gm/m3; LDLo: 50 mg/kg oral-human; TCLo: 200 ppm inhalation-human; TCLo: 100 ppm inhalation-man; LD50: 1960 mg/kg intravenous-rat; LD50: 6900 mg/kg unreported-rat; LC50: 400 ppm/24 hour(s) inhalation-mouse; LD50: 59 mg/kg intraperitoneal-mouse; LD50: 2 gm/kg unreported-mouse; LD50: 14100 ul/kg skin-rabbit; LD50: 500 mg/kg intraperitoneal-guinea pig; LDLo: 1750 mg/kg intraperitoneal-mammal; OTHER DATA: Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce ventricular fibrillation. The metabolism of other solvents may be inhibited resulting in a potentiation of toxic effects of those chemicals. Uptake is directly proportional to the amount of body fat. Blood levels may be cumulative when exposure is extended.
CARCINOGENICITY:	CARCINOGENIC STATUS: IARC: Human Inadequate Evidence, Animal Inadequate Evidence, Group 3; ACGIH: A4-Not classifiable as a Human Carcinogen
MUTAGENICITY:	Unscheduled DNA synthesis-Escherichia coli 1 pph; unscheduled DNA synthesis-other microorganisms 1 pph 15 minute(s)-continuous; sex chromosone loss and non disjunction-Drosophila melanogaster oral 1 pph; other mutation test systems-grasshopper inhalation 20 pph 16 hour(s); DNA damage-rat liver 30 umol/L; cytogenetic analysis-rat inhalation 5400 ug/m3 16 week(s)-intermittent; cytogenetic analysis-rat subcutaneous 9600 mg/kg 12 day(s)-intermittent; micronucleus test-mouse oral 200 mg/kg; micronucleus test-mouse intraperitoneal 433 ug/kg 24 hour(s)
EPIDEMIOLOGY:	No data available
TERATOGENICITY:	No data available
REPRODUCTIVITY:	7280 mg/kg oral-rat TDLo 6-19 day(s) pregnant female continuous; 1500 mg/m3 inhalation-rat TCLo/24 hour(s) 1-8 day(s) pregnant female continuous; 1000 mg/m3 inhalation-rat TCLo/24 hour(s) 7-14 day(s) pregnant female continuous; 2000 ppm inhalation-rat TCLo/6 hour(s) 7-17 day(s) pregnant female continuous; 800 mg/m3 inhalation-rat TCLo/6 hour (s) 14-20 day(s) pregnant female continuous; 1200 ppm inhalation-rat TCLo/6 hour(s) 9-12 day(s) pregnant female continuous; 9 gm/kg oral-mouse TDLo 6-15 day(s) pregnant female continuous; 15 gm/kg oral-mouse TDLo 6-15 day(s) pregnant female continuous; 30 gm/kg oral-mouse TDLo 6-15 day(s) pregnant female continuous; 500 mg/m3 inhalation-mouse TCLo/24 hour(s) 6-13 day(s) pregnant female continuous; 1000 ppm inhalation-mouse TCLo/6 hour(s) 2-17 day(s) pregnant female continuous; 400 ppm inhalation-mouse TCLo/7 hour(s) 7-16 day(s) pregnant female continuous; 200 ppm inhalation-mouse TCLo/7 hour(s) 7-16 day(s) pregnant female continuous; 1 gm/m3 inhalation-rabbit TCLo/24 hour(s) 7-20 day(s) pregnant female continuous; 100 ppm inhalation-rabbit TDLo/6 hour(s) 6-18 day(s) pregnant female continuous; 800 mg/m3 inhalation-hamster TCLo/6 hour(s) 6-11 day (s) pregnant female continuous.
NEUROTOXICITY:	No data available

12. ECOLOGICAL INFORMATION

Fish toxicity: 8110 ug/L 96 hour LC50 (mortality) Coho salmon, silver; salmon (oncorhynchus kisutch); Invertebrate toxicity: 6000 ug/L 48 hour EC50; Algal toxicity: 9400 ug/L 8 hour EC50 (growth) green algae (immobilization) Water flea (Daphnia magna); (Selenastrum capricornutum). Fate and Transport: Bioconcentration: 1716 ug/L 6 hour BCF (residue) water flea (Daphnia magna) 1.5 ug/L.

13. DISPOSAL CONSIDERATIONS

RCRA WASTE:	Yes
RCRA ID NUMBER:	D001, U220
VOC CONTENT (lbs/gal):	Not available
Waste Disposal Procedure:	Discharge, treatment, or disposal may be subject to Federal, State, or Local laws. State and Local regulations and restrictions are complex and may differ from Federal disposal regulation. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA Classification and the proper disposal method.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME:	Toluene
D.O.T. HAZARD CLASS:	3 - Flammable and Combustible liquid
DOT ID NUMBER:	UN 1294
DOT PACKING GROUP:	II
DOT RQ (lbs):	1000
CONTRIBUTING CHEMICAL:	(Toluene)
OTHER:	Labels required: Flammable liquid
MARINE POLLUTANT:	No

OTHER REGULATORY INFORMATION
IMDG HAZARD CLASS: 3.2 - Intermediate flashpoint flammable liquids
ICAO HAZARD CLASS: 3.2 Intermed. Fl. Pt. (0-73 F)

15. REGULATORY INFORMATION

FEDERAL REGULATIONS

TSCA (Toxic Substance Control Act): Yes

SECTION 311/312 HAZARD CLASS: Fire hazard, (acute) health hazard, delayed (chronic) health hazard

SARA TITLE III (Superfund Amendments and Reauthorization Act):

INGREDIENTS	CAS NUMBERS	Section 313	Section 302
Toluene	000108-88-3	Y	N

WHMIS CLASSIFICATION (CANADA): Class B, Division 2

FOREIGN INVENTORY: EINECS (European Inventory of Existing Commercial Chemical Substances)
Canadian DSL (Domestic Substances List)

STATE RIGHT TO KNOW

CALIFORNIA PROP 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (Toluene, Benzene)
This product may contain trace amounts of Benzene (CAS# 71-43-2).

MASSACHUSETTS SUBSTANCE LIST: Toluene; Benzene

NEW JERSEY SUBSTANCE LIST: Toluene

PENNSYLVANIA HAZARDOUS SUBSTANCE LIST: Toluene

16. OTHER INFORMATION

CREATION DATE: 01/22/1997
REVISION DATE: 04/18/2001

DISCLAIMER:
The information herein is presented in good faith and is believed to be correct as of the date hereof. However, HCI makes no representation as to the completeness and accuracy thereof. Users must make

their own determination as to the suitability of the product for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature with respect to the product or to the information herein is made hereunder. HCI shall in no event be responsible for any damages of whatsoever nature directly or indirectly resulting from the publication, or use of, or reliance upon the information contained herein.

EXPLANATION OF ABBREVIATIONS:

N/EST = Not Established
N/AP = Not Applicable
N/AV = Not Available

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Aromatic 100
HCI PRODUCT ID NUMBER: 00222
SYNONYMS: None
CHEMICAL FAMILY NAME: Aromatic hydrocarbon
NFPA HAZARD RATINGS(H-F-R) : 1-2-0
HMIS HAZARD RATINGS(H-F-R): 1-2-0
DISTRIBUTOR: HCI USA Distribution Companies
IN CASE OF EMERGENCY CALL: 1-800-424-9300

MSDS PREPARED BY: HCI Technical Resource Center
St. Louis, MO 63111
(314) 353-6500

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NUMBERS	Percent
1,2,4-Trimethylbenzene	000095-63-6	40*
Cumene	000098-82-8	1-2*
Light aromatic solvent naphtha	064742-95-6	100
Xylene	001330-20-7	1-2*

*These ingredients are present in Light aromatic solvent naphtha.
Trace impurities and additional material names not listed above may also appear in the Regulatory Information Section (Section 15) towards the end of the MSDS. These materials may be listed for local "Right to Know" compliance and for other reasons.

3. HAZARDOUS IDENTIFICATION

EMERGENCY OVERVIEW: Warning! Combustible liquid and vapor. Irritant to respiratory tract, skin and eyes. May cause central nervous system depression. Harmful if swallowed. Harmful if inhaled.

POTENTIAL HEALTH EFFECTS:
SKIN CONTACT: Contact with the skin can cause drying, irritation, and dermatitis.
SKIN

ABSORPTION: No data available

EYES: Contact with the eyes may cause irritation, tearing or burns.

INGESTION: Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea. May cause effects similar to inhalation.

INHALATION: Inhalation of high concentrations of mist may cause headache, nausea, and respiratory irritation.
Inhalation may cause dizziness, unconsciousness, or coma.

MEDICAL CONDITIONS AGGRAVATED:
No data available

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
Components found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT	NTP	IARC	OSHA
1,2,4-Trimethylbenzene	N	N	N
Cumene	N	N	N
Light aromatic solvent naphtha	N	N	N
Xylene	N	N	N

4. FIRST AID MEASURES

SKIN CONTACT: Remove contaminated clothing and shoes.
Wash exposed areas with soap and water.
Call a physician if irritation persists.

EYE CONTACT: Flush eyes with water for at least 15 minutes.
Get immediate medical attention.

INGESTION: Call a physician immediately!
Only induce vomiting if directed by a physician.
Do not give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air.
If breathing has stopped, give artificial respiration.
Get medical attention.

NOTES TO PHYSICIAN: No data available

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES

FLASH POINT: 111 °F

FLASH POINT: 43.88 °C

FLASH POINT METHOD: TCC

LOWER FLAMMABILITY LIMIT:	1
UPPER FLAMMABILITY LIMIT:	7
AUTOIGNITION TEMPERATURE:	Not available ^{o}F, Not available ^{o}C
FLAMMABILITY CLASSIFICATION:	II
EXTING. MEDIA:	Use water spray, carbon dioxide, dry chemical, or foam.
FIRE FIGHTING :	Cool fire-exposed containers with water spray.
PROTECTIVE EQUIPMENT:	Use NIOSH-approved self-contained breathing apparatus and complete protective clothing when fighting chemical fires.
FIRE HAZARDS:	This product is a flammable liquid. It can release vapors that form explosive mixtures at temperatures at or above the flashpoint.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS:	Eliminate all sources of ignition. Contain spill and ventilate area. Absorb on inert media and containerize for disposal using non-sparking tools.
LARGE SPILLS:	Eliminate all sources of ignition. Contain spill and ventilate area. Permit only trained personnel wearing full protective equipment to enter the spill area. Collect the spill in a waste container or remove with a vacuum truck. Prevent spill from entering natural watercourses.

PROTECTIVE EQUIPMENT\ SPILL-RELEASE INSTRUCTIONS:
Wear complete protective clothing when cleaning up chemical spills. Spills and releases may have to be reported to federal and/or local authorities. See the Regulatory Information section (section 14) regarding reporting requirements.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with skin, eyes, and clothing.
Avoid breathing product vapors and mists.
Do not take internally.
Wash thoroughly after handling this material.
Use this material only with adequate ventilation.

STORAGE : Keep container closed when not in use.
This material should be stored at moderate temperatures. This material should be stored in well ventilated areas. Keep away from heat, sparks, and open flames. Containers should be grounded. Do not store above 49 C (120 F). Do not flame cut, braze, or weld containers. Store in cool, dry place. The empty container is hazardous.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Use a ventilation system to maintain atmospheric concentrations below published exposure limits. Explosion-proof fans should be used in a mechanical-type ventilation system.

PERSONAL PROTECTIVE EQUIPMENT

SKIN:	Wear protective gloves made of neoprene or rubber.
EYE :	Wear chemical safety goggles.
RESPIRATORY:	If engineering controls do not maintain airborne concentrations below recommended limits, use a NIOSH-approved respirator for organic vapors.
OTHER:	Emergency showers, eye-wash stations, and fire blankets should be accessible. Wear protective clothing.

EXPOSURE GUIDELINES :

INGREDIENT	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL
1,2,4-Trimethylbenzene	25 PPM	N/EST	N/EST	N/EST
Cumene	50 (s) PPM	N/EST	50 (s) PPM	N/EST
Light aromatic solvent naphtha	100 PPM	N/EST	500 PPM	N/EST
Xylene	100 PPM	150 PPM	100 PPM	N/EST

N/EST = Not established
s = skin
See 29 CFR 1910.1000 (D) (2) and ACGIH "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices" booklet (Appendix C) for the determination of exposure limits for mixtures. Consult an industrial hygenist or similar professional to confrim that the calculated exposure limits are approriate.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE	Light-colored
ODOR:	Aromatic hydrocarbon
SPECIFIC GRAVITY:	0.88 @ 60F
SOLUBILTY (IN WATER):	Insoluble
BOILING POINT (°F):	>320
BOILING POINT (°C):	>160

FREEZING POINT (°F):	Not available
FREEZING POINT (°C):	Not available
MELTING POINT (°F):	Not available
MELTING POINT (°C):	Not available
PRODUCT pH :	Not available
VAPOR PRESSURE:	4.8 mmHg @ 100F
VAPOR DENSITY:	4.3
EVAPORATION RATE:	0.1
% VOLATILES:	100

10. STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID:	Keep away from heat, sparks, and open flames.
INCOMPATIBILITY:	Strong oxidizers Bases Acids
DECOMPOSITION:	Toxic oxides of carbon Unidentified organic compounds

POLYMERIZATION WILL OCCUR: no

11. TOXICOLOGICAL INFORMATION

IMMEDIATE EFFECTS:

Irritant to respiratory tract, skin, and eyes. May cause central nervous system depression. Harmful if inhaled or ingested. The following information is based on 100% solutions: 1,2,4-TRIMETHYLBENZENE: TOXICITY DATA: LD5O: 5 gm/kg oral-rat; LC50: 18 gm/m3/4 hours inhalation-rat; XYLENE: IRRITATION DATA: 200 ppm eyes-human; 100 percent skin-rabbit moderate; 500 mg/24 hours skin-rabbit moderate; 87 mg eyes-rabbit mild; 5 mg/24 hours eyes-rabbit severe; TOXICITY DATA: LD50: 4300 mg/kg oral-rat; LC50: 5000 ppm/4 hours inhalation-rat; LD50: 2459 mg/kg intraperitoneal-rat; LD50: 1700 mg/kg subcutaneous-rat; LD50: 1548 mg/kg intraperitoneal-mouse; LD50: >1700 mg/kg skin-rabbit; LD50: 4300 mg/kg oral-mammal; LC50: 30 gm/m3 inhalation-mammal; CUMENE: IRRITATION DATA: 10 mg/24 hours open skin-rabbit mild; 100 mg/24 hours skin-rabbit moderate; 86 mg eyes-rabbit mild; 500 mg/24 hours eyes-rabbit mild; TOXICITY DATA: LD50: 1400 mg/kg oral-rat; LD50: 12750 mg/kg oral-mouse; LC50: 10 gm/m3/7 hours inhalation-mouse; LD50: 12300 ul/kg skin-rabbit; LIGHT AROMATIC SOLVENT NAPHTHA: IRRITATION DATA: 100 ul/24 hours eyes-rabbit mild; TOXICITY DATA: LC50: >3670 ppm/8 hours inhalation-rat (Devoe); LD50: >5 gm/kg oral-rat (Devoe); LD50: 8400 mg/kg oral-rat; LC50: >2150 mg/kg oral-bird

CARCINOGENICITY:	The following is based on 100% solutions: XYLENE: IARC: Human Inadequate Evidence, Animal Inadequate Evidence, Group 3: ACGIH: A4-Not Classifiable as a Human Carcinogen; LIGHT AROMATIC SOLVENT NAPHTHA: ACGIH: A3-Animal Carcinogen (Full-range Naphthas);
MUTAGENICITY:	In vitro, this product was not found to be nutagenic in bacteria and yeast. It was found to be weakly mutagenic in rat liver cells at high concentrations. In vivo, no information.
EPIDEMIOLOGY:	No data available
TERATOGENICITY:	No data available
REPRODUCTIVITY:	The following is based on a 100% solution: XYLENE: TCLo: 250 mg/m3 inhalation-rat 24 hours 7-15 days pregnant female continuous; TCLo: 50 mg/m3 inhalation-rat 6 hours 1-21 days pregnant female continuous; TDLo: 200 ppm inhalation-rat 6 hours 4-20 days pregnant female continuous; TDLo: 20600 ug/kg oral-mouse 6-15 days pregnant female continuous; TDLo: 31 mg/kg oral-mouse 6-15 days pregnant female continuous; TCLo: 4000 ppm inhalation-mouse 6 hours 6-12 days pregnant female continuous; TCLo: 2000 ppm inhalation-mouse 6 hours 6-12 days pregnant female continuous; TCLo: 1 gm/m3 inhalation-mouse 12 hours 6-15 days pregnant female continuous; TCLo: 500 mg/m3 inhalation-rabbit 24 hours 7-20 days pregnant female continuous; TCLo: 1 gm/m3 inhalation-rabbit 24 hours 7-20 days pregnant female continuous; LIGHT AROMATIC SOLVENT NAPHTHA: TCLo: 1500 ppm inhalation-rat 9 weeks male weeks pre pregnancy/9 weeks post pregnancy/16 days continuous; TCLo: 1500 ppm inhalation-mouse/6 hours 6-15 days pregnant female continuous
NEURTOXICITY:	No data available

12. ECOLOGICAL INFORMATION

The following is based on 100% solutions: 1,2,4-TRIMETHYLBENZENE: ECOTOXICITY DATA: FISH TOXICITY: LC50: 7720 ug/L 96 hours (Mortality) Fathead minnow (Pimephales promelas); INVERTEBRATE TOXICITY: LC50: 17000 ug/L 48 hours (Mortality) Dungeness or edible crab (Cancer magister); ENVIRONMENTAL SUMMARY: Toxic to aquatic life. XYLENE: ECOTOXICITY DATA: FISH TOXICITY: LC50: 8200 ug/L 96 hours (Mortality) Rainbow trout, donaldson trout (Oncorhynchus mykiss); INVERTEBRATE TOXICITY: LC50: 190000 ug/L 96 hours (Mortality) Marine bivalve (Katelysia opima); ALGAL TOXICITY: 240 ug/L 17 years (Abundance) Dinoflagellate (Ceratium sp); FATE AND TRANSPORT: BIOCONCENTRATION: BCF: 9.2 ug/L 24 hours (Residue) Rainbow trout, donaldson trout (Oncorhynchus mykiss) 360 ug/L; CUMENE: ECOTOXICITY DATA: FISH TOXICITY: LC50: 5100 ug/L 96 hours (Mortality) Guppy (Poecilia reticulata); INVERTEBRATE TOXICITY: EC100: 100 mg/L 24 hours (Abundance) Water flea (Daphnia magna); ALGAL TOXICITY: EC50: 2600 ug/L 72 hours (Growth) Green algae (Selenastrum capricornutum)

13. DISPOSAL CONSIDERATIONS

RCRA WASTE:	Yes
RCRA ID NUMBER:	D001
VOC CONTENT (lbs/gal):	7.19
Waste Disposal Procedure:	Discharge, treatment, or disposal may be subject to Federal, State, or Local laws. State and Local regulations and restrictions are complex and may differ from Federal disposal regulation. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA Classification and the proper disposal method.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME:	Petroleum distillates, n.o.s. (Aromatic naphtha)
D.O.T. HAZARD CLASS:	3 - Flammable and Combustible liquid
DOT ID NUMBER:	UN 1268
DOT PACKING GROUP:	III
DOT RQ (lbs):	N/AP
OTHER:	Labels required: Flammable liquid , Domestic shipments of this product can be reclassed to a combustible. Shipments of non-bulk containers containing this product are not regulated.
IMDG HAZARD CLASS:	3.3 - High flashpoint flammable liquids
ICAO HAZARD CLASS:	3.3 High Flash Pt. (abv. 73F)

15. REGULATORY INFORMATION

TSCA (Toxic Substance Control Act):	yes
SECTION 311/312 HAZARD CLASS:	Fire hazard, immediate (acute) health hazard
WHMIS CLASSIFICATION	No data available

(CANADA):

FOREIGN INVENTORY: Canadian DSL (Domestic Substances List)
EINECS (European Inventory of Existing Commercial Chemical Substances)

ADDITIONAL REGULATORY INFORMATION

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (Benzene, Toluene)

MASSACHUSETTS SUBSTANCE LIST: Cumene, 1,2,4-Trimethylbenzene, Xylene, Benzene, Toluene

NEW JERSEY SUBSTANCE LIST: Cumene, 1,2,4-Trimethylbenzene, Xylene

PENSYLVANIA HAZARDOUS SUBSTANCE LIST: Cumene, 1,2,4-trimethylbenzene, Xylene

SARA TITLE III (Superfund Amendments and Reauthorization Act):

INGREDIENTS	CAS NUMBERS	Section 313	Section 302
1,2,4-Trimethylbenzene	000095-63-6	Y	N
Cumene	000098-82-8	Y	N
Light aromatic solvent naphtha	064742-95-6	N	N
Xylene	001330-20-7	Y	N

This product may contain trace amounts of Benzene (CAS# 71-43-2).
This product may contain trace amounts of Toluene (CAS# 108-88-3).

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16. OTHER INFORMATION

CREATION DATE: 11/26/1997
REVISION DATE: 09/01/1999

DISCLAIMER:
The information herein is presented in good faith and is believed to be correct as of the date hereof. However, HCl makes no representation as to the completeness and accuracy thereof. Users must make there own determination as to the suitability of the product for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature with respect to the product or to the information herein is made hereunder. HCI shall in no event be responsible for any damages of whatsoever nature directly or indirectly resulting from the publication, or use of, or reliance upon the information contained herein.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity
Product Name: HI SOL 10
Product Code: 3001440
General or Generic ID: AROMATIC HYDROCARBON

Company

Ashland
Ashland Distribution Co. &
Ashland Specialty Chemical Co.
P. O. Box 2219
Columbus, OH 43216
614-790-3333

Emergency Telephone Number:
1-800-ASHLAND (1-800-274-5263)
24 hours everyday

Regulatory Information Number:
1-800-325-3751

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
AROMATIC PETROLEUM DISTILLATES	64742-95-6	98.0-100.0
1,2,4-TRIMETHYLBENZENE	95-63-6	30.0- 42.0
1,3,5-TRIMETHYLBENZENE	108-67-8	7.0- 11.0
DIETHYLBENZENE	25340-17-4	1.0- 5.0
XYLENE	1330-20-7	0.9- 2.1
ISOPROPYLBENZENE	98-82-8	1.0- 2.0

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye
Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

Skin
Can cause skin irritation. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, and drying and cracking of skin, burns and other skin damage. Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

Swallowing
Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

Inhalation
Breathing of vapor or mist is possible. Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms usually occur at air concentrations higher than the recommended exposure limits (See Section 8).

Continued on next page

Inhalation
If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Note to Physicians
Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias. Sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to this material. This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 3 - Swallowing) when deciding whether to induce vomiting. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthma-like conditions), liver, kidney, blood-forming system, immune system, auditory system, eye, Individuals with preexisting heart disorders may be more susceptible to arrhythmias (irregular heartbeats) if exposed to high concentrations of this material.

5. FIRE FIGHTING MEASURES

Flash Point
100.0 - 110.0 F (37.7 - 43.3 C) TCC

Explosive Limit
(for product) Lower 1.0 Upper 7.0 %

Autoignition Temperature
910.0 F (487.7 C)

Hazardous Products of Combustion
May form: carbon dioxide and carbon monoxide, various hydrocarbons.

Fire and Explosion Hazards
Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Extinguishing Media
regular foam, carbon dioxide, dry chemical.

Fire Fighting Instructions
Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

NFPA Rating
Health - 1, Flammability - 2, Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Small Spill
Absorb liquid on vermiculite, floor absorbent, or other absorbent material and transfer to hood.

Continued on next page

Engineering Controls
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines
Component

AROMATIC PETROLEUM DISTILLATES (64742-95-6)
No exposure limits established

1,2,4-TRIMETHYLBENZENE (95-63-6)
No exposure limits established

1,3,5-TRIMETHYLBENZENE (108-67-8)
No exposure limits established

DIETHYLBENZENE (25340-17-4)
No exposure limits established

XYLENE (1330-20-7)
OSHA VPEL 100.000 ppm - TWA
OSHA VPEL 150.000 ppm - STEL
ACGIH TLV 100.000 ppm - TWA
ACGIH TLV 150.000 ppm - STEL

ISOPROPYLBENZENE (98-82-8)
OSHA VPEL 50.000 ppm - TWA (Skin)
ACGIH TLV 50.000 ppm - TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point
(for product) 308.0 - 335.0 F (153.3 - 168.3 C) @ 760 mmHg

Vapor Pressure
(for product) 3.000 mmHg @ 68.00 F

Specific Vapor Density
4.150 @ AIR=1

Specific Gravity
.876 @ 60.00 F

Liquid Density
7.300 lbs/gal @ 60.00 F
.876 kg/l @ 16.00 C

Percent Volatiles
100.0 %

Volatile Organic Compounds (VOC)
100.000 %
876.000 g/l
7.300 lbs/gal

Continued on next page

11. TOXICOLOGICAL INFORMATION

No data

12. ECOLOGICAL INFORMATION

No data

13. DISPOSAL CONSIDERATION

Waste Management Information

Dispose of in accordance with all applicable local, state and federal regulations. For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution Company, IC&S Environmental Services Group at 800-637-7922.

14. TRANSPORT INFORMATION

DOT Information - 49 CFR 172.101

DOT Description:

PETROLEUM DISTILLATES, N.O.S.,COMBUSTIBLE LIQUID,UN1268,III

Container/Mode:

55 GAL DRUM/TRUCK PACKAGE

NOS Component:

NAPHTHA
1,2,4-TRIMETHYLBENZENE

RQ (Reportable Quantity) - 49 CFR 172.101

Product Quantity (lbs)	Component
6667	XYLENES (O-, M-, P- ISOMERS)

15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status

TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4(a)

Component	RQ (lbs)
XYLENES (O-, M-, P- ISOMERS)	100
CUMENE	5000

SARA 302 Components - 40 CFR 355 Appendix A

None

Continued on next page

Ashland Chemical Co.

Date Prepared: 01/05/96
Date Printed: 06/22/96
MSDS No: 0000563-004.001

HI SOL 15

Aromatic Solvent 100

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity
Product Name: HI SOL 15
General or Generic ID: AROMATIC HYDROCARBON

Company
Ashland Chemical Co.
P.O. Box 2219
Columbus, OH 43216
614-790-3333

Emergency Telephone Number:
1-800-ASHLAND (1-800-274-5263)
24 hours everyday

Regulatory Information Number:
1-800-325-3751

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
AROMATIC PETROLEUM DISTILLATES	64742-94-5	100.0
NAPHTHALENE	91-20-3	10.0
TRIMETHYLBENZENES	25551-13-7	0.0- 4.0

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye
Exposure may cause mild eye irritation. Symptoms may include stinging, tearing, and redness.

Skin
Exposure may cause mild skin irritation. Prolonged or repeated exposure may dry the skin. Symptoms may include redness, burning, drying and cracking, and skin burns. Skin absorption is possible, but harmful effects are not expected from this route of exposure under normal conditions of handling and use.

Swallowing
Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful. This material can enter the lungs during swallowing or vomiting and cause lung inflammation and/or damage.

Inhalation
Exposure to vapor or mist is possible. Short-term inhalation toxicity is low. Breathing small amounts during normal handling is not likely to cause harmful effects; breathing large amounts may be harmful. Symptoms are more typically seen at air concentrations exceeding the recommended exposure limits.

Symptoms of Exposure
gastrointestinal irritation (nausea, vomiting, diarrhea), irritation (nose, throat, respiratory tract), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness).

Continued on next page

Target Organ Effects
No data

Developmental Information
No data

Cancer Information
Based on the available information, this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by IARC, NTP or OSHA.

Other Health Effects
No data

Primary Route(s) of Entry
Inhalation, Skin contact, Eye contact.

4. FIRST AID MEASURES

Eyes
If symptoms develop, move individual away from exposure and into fresh air. Flush eyes gently with water while holding eyelids apart. If symptoms persist or there is any visual difficulty, seek medical attention.

Skin
Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse.

Swallowing
Do not induce vomiting. This material is an aspiration hazard. If individual is drowsy or unconscious, place on left side with the head down. Seek medical attention. If possible, do not leave individual unattended.

Inhalation
If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Note to Physicians
No data

5. FIRE FIGHTING MEASURES

Flash Point
142.0 F (61.1 C) TCC

Explosive Limit
(for product) Lower 1.0 % Upper 6.0 %

Autoignition Temperature
No data

Continued on next page

Hazardous Products of Combustion
May form: carbon dioxide and carbon monoxide, various hydrocarbons.

Fire and Explosion Hazards
Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Extinguishing Media
regular foam, water fog, carbon dioxide, dry chemical.

Fire Fighting Instructions
Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

NFPA Rating
Health - 2, Flammability - 2, Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Small Spill
Absorb liquid on vermiculite, floor absorbent or other absorbent material.

Large Spill
Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling
Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. All five gallon pails and larger metal containers including tank cars and tank trucks should be grounded and/or bonded when material is transferred. Hydrocarbon solvents are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering or pumping at high flow rates. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Warning. Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

Continued on next page

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection
Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

Skin Protection
Wear resistant gloves (consult your safety equipment supplier)., To prevent repeated or prolonged skin contact, wear impervious clothing and boots..

Respiratory Protections
If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines
Component

AROMATIC PETROLEUM DISTILLATES (64742-94-5)
No exposure limits established

NAPHTHALENE (91-20-3)
OSHA VPEL 10.000 ppm - TWA
OSHA VPEL 15.000 ppm - STEL
ACGIH TLV 10.000 ppm - TWA
ACGIH TLV 15.000 ppm - STEL

TRIMETHYLBENZENES (25551-13-7)
OSHA VPEL 25.000 ppm - TWA
ACGIH TLV 25.000 ppm - TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point
(for product) 350.0 - 380.0 F (176.6 - 193.3 C) @ 760 mmHg

Vapor Pressure
(for product) 5.000 mmHg @ 100.00 F

Specific Vapor Density
4.000 @ AIR=1

Specific Gravity
.898 @ 60.00 F

Continued on next page

Liquid Density
7.490 lbs/gal @ 60.00 F
.898 kg/l @ 16.00 C

Percent Volatiles
100.0 %

Evaporation Rate
116.00 (ETHYL ETHER)

Appearance
No data

State
LIQUID

Physical Form
NEAT

Color
CLEAR, SAYBOLT COLOR +25

Odor
No data

pH
Not applicable

10. STABILITY AND REACTIVITY

Hazardous Polymerization
Product will not undergo hazardous polymerization.

Hazardous Decomposition
May form: carbon dioxide and carbon monoxide, various hydrocarbons.

Chemical Stability
Stable.

Incompatibility
Avoid contact with: strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

No data

12. ECOLOGICAL INFORMATION

No data

Continued on next page

13. DISPOSAL CONSIDERATION

Waste Management Information

Dispose of in accordance with all applicable local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT Information - 49 CFR 172.101

DOT Description:
NAPHTHA, SOLVENT,COMBUSTIBLE LIQUID,UN1256,III

Container/Mode:
55 GAL DRUM/TRUCK PACKAGE

NOS Component:
None

RQ (Reportable Quantity) - 49 CFR 172.101

Product Quantity (lbs)	Component
1000	

15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status
TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4

Component	RQ (lbs)
NAPHTHALENE	100

SARA 302 Components - 40 CFR 355 Appendix A
None

Section 311/312 Hazard Class - 40 CFR 370.2
Immediate( ) Delayed( ) Fire(X) Reactive( ) Sudden Release of Pressure( )

SARA 313 Components - 40 CFR 372.65

Section 313 Component(s)	CAS Number	Max %
NAPHTHALENE	91-20-3	10.00

International Regulations

Inventory Status
DSL (CANADA) The intentional ingredients of this product are listed.
EINECS (EUROPE) The intentional ingredients of this product are listed.
TCCL (KOREA) The intentional ingredients of this product are listed.

Continued on next page

State and Local Regulations

California Proposition 65

The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986: This product contains the following substance(s) known to the state of California to cause reproductive harm.
TOLUENE

New Jersey RTK Label Information

NAPHTHALENE	91-20-3
TRIMETHYL BENZENE	25551-13-7

Pennsylvania RTK Label Information

NAPHTHALENE	91-20-3
BENZENE, TRIMETHYL-	25551-13-7

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

Calibration Gas Certifications

Airgas

Airgas South
5837 West 5th Street
Jacksonville, FL 32254
(904) 786-2663 Fax: (904) 693-91
www.airgas.com

CERTIFICATE OF PURE GAS BATCH ANALYSIS

PURE GAS PRODUCT: Air

Date: June 25, 2003 Reference Number: 55-03127-1

Customer Name: Airgas South
Address: Gainesville, FL

Purchase Order #:

Grade of Product: Zero

Cylinder Number (Analyzed Cylinder)	Impurity	Specification	Actual Level
SG834427	Oxygen	20-22	21.4 %
	THC	1.0	<0.1 ppm
	Water	3.0	0.1 ppm

Cylinders in Batch:

SG587320	SG36680A	SG970466	907619	SG57970A
SG16925A	SG167530	SG468002	492636	SG836464
SG558096	SG54592A	SG9140636A	578850	SG510802
421344	SG49276A	SG771371	SG33350A	924020
SG97046663A	SG427641	SG569110	SG85059	CLH192
SG9704719A	SG687000	1422480Y	SG4144574	SG1000513
SG9704645A	SG52497A	SG834427	SG423763	SG16370A
SG9106352A	SG54813A	TWC626134	WIS289276	SG280629
SG9140522A	SG16111A	TWC626125	SG571453	

Delivery Ticket #:

E Edward Henderson
Approval Signature

Airgas

Airgas Specialty Gases
5480 Hamilton Blvd.
Theodore, AL 36582

P.O. Box 190969
Mobile, AL 36619
(251) 653-2500 Fax: (251) 653-2530
http://www.airgas.com

Certificate of Analysis: E.P.A. Protocol Gas Mixture

Cylinder No :	CC153624	Order No.	110600824
Cylinder Pressure:	2000 PSIG	Expiration Date:	6/16/06
Certification Date	6/16/03	Laboratory:	ASG-MOBILE
Part Number:	E03NI99E15A2067		

Reference Standard Information:

Type	Component	Cyl. Number	Concentration
NTRM 0005201	PROPANE	SG9168891	50.5 ppm
NTRM 52474	CARBON MONOXIDE	SG9153982	973.6 ppm

Instrumentation:

Instrument/Model/Serial No.	Analytical Principle
SIEMENS FIDAMAT 5E-P, K4-391	FID
SIEMENS ULTRAMAT 5E/J9-661	NDIR

Analytical Methodology does not require correction for analytical interferences.

Certified Concentrations:

Component	Concentration	Accuracy	Procedure
PROPANE	24.70 ppm	+/-1%	G1
CARBON MONOXIDE	499.0 ppm	+/-1%	G1
NITROGEN	BALANCE		

Analytical Results:

1st Component: PROPANE

1st Analysis Date: 6/9/03

R	50.50	S	24.70	Z	0.00	Conc	24.70 ppm
S	24.70	Z	0.00	R	50.50	Conc	24.70 ppm
Z	0.00	R	50.50	S	24.70	Conc	24.70 ppm
						AVG:	24.70 ppm

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http://www.airgas.com

2nd Component: CARBON MONOXIDE

1st Analysis Date:	6/9/03						
R	973.6	S	499.2	Z	0.0	Conc	499.2 ppm
S	499.2	Z	0.0	R	973.6	Conc	499.2 ppm
Z	0.0	R	973.6	S	499.2	Conc	499.2 ppm
						AVG:	499.2 ppm

2nd Analysis Date:	6/16/03						
R	973.6	S	498.7	Z	0.0	Conc	498.7 ppm
S	498.7	Z	0.0	R	973.6	Conc	498.7 ppm
Z	0.0	R	973.6	S	498.7	Conc	498.7 ppm
						AVG:	498.7 ppm

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed.

Do not use cylinder below 150 psig.

Carol Stewart
Approved for Release

Airgas
Specialty Gases
5480 Hamilton Blvd.
Theodore, AL 36582
P.O. Box 190969
Mobile, AL 36619
Phone: (334) 653-2500
FAX: (334) 653-2530

Certificate of Analysis: E.P.A. Protocol Gas Mixture

Cylinder No :	CC126340	Order No.	431496
Cylinder Pressure:	2000 PSI	Expiration Date:	2/12/04
Certification Date	2/12/01	Laboratory:	ASG-MOBILE

Reference Standard Information:

Type	Component	Cyl. Number	Concentration
GMIS	CARBON MONOXIDE	CC45624	280.1PPM
NTRM81668	PROPANE	CC47113	96.2PPM

Instrumentation:

Instrument/Model/Serial No.	Analytical Principle
Siemens Ultramat 5E J9-662	NDIR
Siemens Fidamat 5E-P K4-391	FID

Analytical Methodology does not require correction for analytical interferences.

Certified Concentrations:

Component	Concentration	Accuracy	Procedure
CARBON MONOXIDE	89.93 ppm	+/- 1%	G1
PROPANE	49.15 ppm	+/- 1%	G1
NITROGEN	BALANCE		

Analytical Results:

1st Component: CARBON MONOXIDE

1st Analysis Date: 2/5/01

R	280.00	S	89.80	Z	0.00	Conc	89.83 ppm
S	89.80	Z	0.00	R	280.00	Conc	89.83 ppm
Z	0.00	R	280.00	S	89.80	Conc	89.83 ppm
						AVG:	89.83 ppm

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2nd Analysis Date:	2/12/01				
R	280.00	S	90.00	Z	0.00
S	90.00	Z	0.00	R	280.00
Z	0.00	R	280.00	S	90.00

Conc	90.03 ppm
Conc	90.03 ppm
Conc	90.03 ppm
AVG:	90.03 ppm

2nd Component: PROPANE

1st Analysis Date:	2/12/01				
R	96.200	S	49.150	Z	0.000
S	49.150	Z	0.000	R	96.200
Z	0.000	R	96.200	S	49.150

Conc	49.15 ppm
Conc	49.15 ppm
Conc	49.15 ppm
AVG:	49.15 ppm

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed.

Do not use cylinder below 150 psig.

Carol Stewart
Approved for Release

Airgas

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(251) 653-2500 Fax: (251) 653-2530
http://www.airgas.com

Certificate of Analysis: E.P.A. Protocol Gas Mixture

Cylinder No :	CC153848	Order No.	110565092
Cylinder Pressure:	2000 psi	Expiration Date:	1/16/06
Certification Date	1/16/03	Laboratory:	ASG-Mobile

Reference Standard Information:

Type	Component	Cyl. Number	Concentration
GMIS	METHANE	CC151440	99.4 ppm
GMIS	PROPANE	CC156074	50.0ppm

Instrumentation:

Instrument/Model/Serial No.	Analytical Principle
HP GC/5890/3336A52347	FID
HP GC/5890/3336A52347	FID

Analytical Methodology does not require correction for analytical interferences.

Certified Concentrations:

Component	Concentration	Accuracy	Procedure
METHANE	11.09 ppm	+/-1%	G1
PROPANE	101.6 ppm	+/-1%	G2
NITROGEN	Balance		

Analytical Results:

1st Component: METHANE

1st Analysis Date: 1/16/03

R	180684	S	20237	Z	0	Conc	11.13 ppm
S	20110	Z	0	R	180776	Conc	11.06 ppm
Z	0	R	180888	S	20160	Conc	11.08 ppm
						AVG:	11.09 ppm

Airgas

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(251) 653-2500 Fax (251) 653-2530
http://www.airgas.com

2nd Component: PROPANE

1st Analysis Date:		1/16/03					
R	67256	S	136964	Z	0	Conc	101.8 ppm
S	136855	Z	0	R	67422	Conc	101.5 ppm
Z	0	R	67349	S	136829	Conc	101.6 ppm
						AVG:	101.6 ppm

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed.

Do not use cylinder below 150 psig.

Beverly Hart
Approved for Release

For Technical Information Call
1-800-752-1597

AIR PRODUCTS

Air Products and Chemicals, Inc. * 12722 S. Wentworth Avenue, Chicago, IL 60628

ISO CERTIFICATION: 9002

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS STANDARD

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer: W8210-77
KOOGLER ASSOCIATES
4014 NW 13TH ST
GAINESVILLE FL 32609-

Order No: 854060580-02
Batch No: 86190722
PO: QL762 BILLED P698860
Release:

Cylinder No: SG9135731BAL
Bar Code No: DWJ405
Cylinder Pressure*: 2000 psig
Certification Date: 12/31/2001
Expiration Date: 12/31/2004

CERTIFIED CONCENTRATION			REFERENCE STANDARDS			ANALYTICAL INSTRUMENTATION
Component	Requested Concentration	Certified Concentration	Cylinder Number	Standard Type	Standard Concentration	Measurement Principal
PROPANE	1000 PPM	1020±5 PPM	SG9128533BAL	GMIS	1026 PPM	GC-FID

NITROGEN *Balance Gas*

*** STANDARD SHOULD NOT BE USED BELOW 150 PSIG**

EPA PROTOCOL GAS MIXTURE : PROPANE IN NITROGEN
To reorder this mixture please use Mix ID: 26753

Analyst: Richard VanDyke

Approved By: James Laas

Certificates of Analysis are now available at www2.airproducts.com/apdirect

Pub. No: 320-9702

For Technical Information Call
1-800-752-1597

AIR PRODUCTS

Air Products and Chemicals, Inc. * 12722 S. Wentworth Avenue, Chicago, IL 60628

ISO CERTIFICATION: 9002

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS STANDARD

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer: W8210-77
KOOGLER ASSOCIATES
4014 NW 13TH ST
GAINESVILLE FL 32609-

Order No: 854060585-01
Batch No: 86190586
PO: QL762BILLED ON P700114
Release:

Cylinder No: SG9148678BAL
Bar Code No: FJN032
Cylinder Pressure*: 2000 psig
Certification Date: 01/03/2002
Expiration Date: 01/03/2005

CERTIFIED CONCENTRATION			REFERENCE STANDARDS			ANALYTICAL INSTRUMENTATION
Component	Requested Concentration	Certified Concentration	Cylinder Number	Standard Type	Standard Concentration	Measurement Principal
CARBON MONOXIDE	1500 PPM	1540±11 PPM	SG9165836BAL	NTRM	2001 PPM	NON DISPERSIVE INFRARED
PROPANE	3000 PPM	3010±35 PPM	SG9164860BAL	GMIS	4723 PPM	GC-FID

NITROGEN Balance Gas

*** STANDARD SHOULD NOT BE USED BELOW 150 PSIG**

EPA PROTOCOL GAS MIXTURE : 2 COMPONENTS IN NITROGEN
To reorder this mixture please use Mix ID: 61326

Analyst: SUZANNE HAUTER

Approved By: James Laas

Certificates of Analysis are now available at www2.airproducts.com/apdirect

Pub. No. 320-9702

Airgas

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5480 Hamilton Blvd.
Theodore, AL 36582
P.O. Box 190969
Mobile, AL 36619
(251) 653-2500 Fax: (251) 653-2530
http://www.airgas.com

Certificate of Analysis: E.P.A. Protocol Gas Mixture

Cylinder No :	CC160343	Order No.	110581476
Cylinder Pressure:	2000 PSI	Expiration Date:	3/28/06
Certification Date	3/28/03	Laboratory:	ASG-MOBILE
Part Number:	E02AI99E15A0459		

Reference Standard Information:

Type	Component	Cyl. Number	Concentration
GMIS	PROPANE	CC51980	2.028%

Instrumentation:

Instrument/Model/Serial No.	Analytical Principle
HP GC/5890/3310A47855	FID

Analytical Methodology does not require correction for analytical interferences.

Certified Concentrations:

Component	Concentration	Accuracy	Procedure
PROPANE	8,504 PPM	+/-1%	G1
AIR	Balance		

Analytical Results:

1st Component: PROPANE

1st Analysis Date: 3/28/03

R	110813	S	46480	Z	0	Conc	8506
S	46632	Z	0	R	111326	Conc	8495
Z	0	R	110573	S	46398	Conc	8510
						AVG:	8504

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed.

Do not use cylinder below 150 psig.

Approved for Release

Project Participants

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

PROJECT PARTICIPANTS

Koogler & Associates

John B. Koogler, Ph.D., P.E. ..... Project Advisor
Steven Cloutier ..... Technical Manager
Glen Haven ..... Field Test Crew
Eric Thomas ..... Field Test Crew

Nailite International, Inc.

Kevin Martin ..... Senior Engineer

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES