HYDRO SPA

Ocala Spa Manufacturing Facility

AIR CONSTRUCTION PERMIT APPLICATION

May 15, 2003 – RAI Response Package & 40 CFR Part 63 Notification

June 26, 2003

Prepared By:

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
1204 North Wheeler Street
Plant City, Florida 33563

Southern Environmental Sciences, Inc.

1204 North Wheeler Street □ Plant City, Florida 33563-2354 □ (813) 752-5014 □ Fax: (813) 752-2475

June 26, 2003

Mr. Quaid M. Noor
Permit Engineer
FDEP – Division of Air Resource Management
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619

Re: Hydro Spa Ocala Facility
ARMS ID No.: 0830151
May 15, 2003 RAI Letter

Dear Mr. Noor:

Thank you for taking time to meet with us today and discuss our review package and permitting strategy. Enclosed please find four (4) copies of the response package. As discussed the package should stand alone from the previous submittals and incorporates the comments from the RAIs including the requirements of 40 CFR Part WWWW.

Should you have any questions please feel free to contact either myself at 813-752-5014 or Mr. Charles Wiley ay 727-573-9611.

Very truly yours,

SOUTHERN ENVIRONMENTAL
SCIENCES, INC.

Darrel J. Graziani, PE
Permitting Manager

DJG/dg

Southern Environmental Sciences, Inc.

1204 North Wheeler Street □ Plant City, Florida 33563-2354 □ (813) 752-5014 □ Fax: (813) 752-2475

June 26, 2003

Ms. Cindy Phillips, PE
FDEP, Bureau of Air Regulation
MS 5505
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Mr. Doug Neeley
Air, Pesticides, and Toxics Management Division
USEP Region IV
61 Forsyth Street, SW
Atlanta, Georgia 30303-8960

Re: 40 CFR Part 63, Subpart A – Initial Notifications
Hydro Spa Ocala Facility
ARMS ID No.: 0830151

Dear Ms. Phillips and Mr. Neeley:

On behalf of Hydro Spa, I am providing the Initial Notification for the Ocala Facility in accordance with the requirements of 40 CFR 63.9. Please be advised that the facility submitted an application for a state air construction permit to the FDEP's Southwest District Office on February 12, 2003. In reviewing the application, the District Office has issued two RAI letters (March 6, 2003 & May 15, 2003). On April 30, 2003, a response to the first RAI was provided. This notification is part of the package being provided in response to the second RAI Letter and a meeting with the District Office. Four (4) copies of the DEP Form 62-210.900(1) (Effective: 2/11/99) have been provided to the District Office as park of our response package should you need a copy.

In accordance with 40 CFR 63.9 the following additional information is provided:

- Physical Address: Mark III Industrial Park, 5401 44th Avenue, NW, Ocala, Florida 24482 – Marion County.
- Standard: 40 CFR Part 60, Subpart WWWW – National Emissions Standards for Hazardous Air pollutants: Reinforced Plastic Composites Production. The facility is a new source having commenced construction after August 2, 2001. Based on the effective date (April 23, 2003) the source is required to in compliance with the applicable standards upon startup.
- Description: The facility is engaged in the manufacture of Spa Pools using the Open Mold process. The facility has elected to cap emission of total hazardous air pollutants (HAPS) at 98 tons per year through a federally-enforceable permit restriction. Emissions will be controlled in accordance with the requirements of Table 3 and 4 through the use of low HAP content resins (<38.4%), the use of both mechanical (non-atomized) and manual application techniques, and use of non-HAP containing solvents for cleanup activities. The primary source of emissions is the resin application process. Miscellaneous activities include spray foam application, cleanup activities, use of piping primers/glues, wood working activities and the use of water-based stains (Surface Coating). The operation has been assigned Emissions Unit ID No.: 001.
- The facility is a major source under the HAP and Title V Programs based on HAP emissions (Styrene > 10 & 25 TPY) and a minor source under the PSD Program based on VOC emissions (<250 TPY).

Please be advised that the facility has commenced operations and that the District Office has issued a Warning Letter (#WL03-0011AS42SWD) for the construction and operation of the facility without permits. Based on discussions with the District Office, March 11, 2003 is considered the official date that operations commenced.

Based on the final MACT Standard, the facility's operations are in compliance with the applicable emission limits of Table 3 and the applicable Work Practices of Table 4. Hydro Spa was elected to cap emissions below the 100 TPY threshold as allowed by the regulation to avoid the need for add-on controls.

Should you have any questions please feel free to contact either myself at 813-752-5014 or Mr. Charles Wiley ay 727-573-9611.

Very truly yours,

SOUTHERN ENVIRONMENTAL
SCIENCES, INC.

Darrel J. Graziani, PE
Permitting Manager

DJG/dg

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **HYDRO SPA**	
2. Site Name: **HYDRO SPA Ocala**	
3. Facility Identification Number: **0830151** [ ] Unknown	
4. Facility Location: **Former Mark III Conversion Van Property** Street Address or Other Locator: **5401 44th Avenue, NW** City: **Ocala** County: **Marion** Zip Code: **24482**	
5. Relocatable Facility? [ ] Yes [**X**] No	6. Existing Permitted Facility? [ ] Yes [**X**] No

Application Contact

1. Name and Title of Application Contact: **Mr. Charles Wiley, Production Supervisor**
2. Application Contact Mailing Address: Organization/Firm: **HYDRO SPA** Street Address: **13055 49th Street, North** City: **Clearwater** State: **Florida** Zip Code: **33762**
3. Application Contact Telephone Numbers: Telephone: **(727) 573 - 9611** Fax: **(727) 573 - 7758**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Permit Number:	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

[ ] Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number:_____

[ ] Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number:_____

Operation permit number to be revised:_____

[ ] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected:_____

[ ] Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[X] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Charles Wiley, Production Supervisor
2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **HYDRO SPA**
   Street Address: **13055 49th Street, North**
   City: **Clearwater** State: **Florida** Zip Code: **33762**
3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(727) 573 - 9611** Fax: **(727) 573 - 7758**
4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [X], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Charles Wiley — Signature
   6-26-03 — Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **Darrel J. Graziani, PE**
   Registration Number: **44685**
2. Professional Engineer Mailing Address:
   Organization/Firm: **Southern Environmental Sciences, Inc.**
   Street Address: **1204 North Wheeler Street**
   City: **Plant City** State: **Florida** Zip Code: **33563-2354**
3. Professional Engineer Telephone Numbers:
   Telephone: **(813) 752 - 5014** Fax: **(813) 752 - 2475**

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

DARREL JAMES GRAZIANI STATE OF FLORIDA No. 44685 (seal) PROFESSIONAL ENGINEER

Signature

7-29-03
Date

Hydro Spa, 7/23/03 RAI

* Attach any exception to certification statement.

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

6-26-03
Date

Seal

CARREL JAMES BRAZIANI CERTIFICATE No. 44685 STATE OF FLORIDA PROFESSIONAL ENGINEER

*Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
001	Reinforced Plastic Composites Production Facility and Associated Activities	AC1B	$5,000

Application Processing Fee

Check one: [X] Attached - Amount: $**5,000 (Previously Submitted)** [ ] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

   Construction of a Reinforced Plastic Composites Production Facility (40 CFR Part 63, Subpart WWWW) for the manufacture of portable spas. The Ocala facility will be classified as a new facility (Constructed after August 2, 2002) under Subpart WWWW. Total HAP emissions from the facility will be capped through a federally-enforceable permit condition at less than 100 tons per year.

   Total HAP emission from the facility will be controlled in accordance with Table 3 and Table 4 of 40 CFR Part 63, Subpart WWWW.

2. Projected or Actual Date of Commencement of Construction: **March 11, 2003**

3. Projected Date of Completion of Construction: **March 11, 2003**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **384.08** North (km): **3234.56**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): **29/14/10** Longitude (DD/MM/SS): **82/11/34**			
3. Governmental Facility Code: **0**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **30**	6. Facility SIC(s): **3088**
7. Facility Comment (limit to 500 characters): **The facility is located in Marion County which is designated as an attainment for area for ozone, sulfur dioxide, carbon monoxide, and nitrogen dioxide, and unclassifiable for lead and PM-10. The facility is located more than 10 kilometers from the nearest PSD Class I area.**			

Facility Contact

1. Name and Title of Facility Contact: **Charles Wiley, Production Supervisor**
2. Facility Contact Mailing Address: Organization/Firm: **HYDRO SPA** Street Address: **13055 49th Street, North** City: **Clearwater** State: **Florida** Zip Code: **33762**
3. Facility Contact Telephone Numbers: Telephone: **(727) 573 - 9611** Fax: **(727) 573 – 7758**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source?	[ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?	
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?	
5. [ ] Synthetic Minor Source of HAPs?	
6. [ ] One or More Emissions Units Subject to NSPS?	
7. [X] One or More Emission Units Subject to NESHAP?	
8. [ ] Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters): **Minor source under the Preconstruction Review Program based on potential emissions of less than 250 tons per year. (Rule 62-212.400, F.A.C. – PSD Program)** **Major source under Section 112 of the federal Clean Air Act (Hazardous Air Pollutant (HAP) program) based on potential emissions of more than 10 tons of any individual HAP and 25 tons of total HAPS.** **Major source under Title V (Chapter 62-213, F.A.C.) based on the HAP designation and potential emissions of VOC greater than 100 tons.** **New Facility under 40 CFR Part 63, Subpart WWWW.**	

List of Applicable Regulations

Rule 62-4.020, F.A.C	**Rule 62-4.030, F.A.C.**
Rule 62-4.040(1), F.A.C.	**Rule 62-4.050(1), (2), (3), (4)(a)1., (4)(v),F.A.C.**
Rule 62-4.050(5) – (8), F.A.C.	**Rule 62-4.055(1) – (5), F.A.C.**
Rule 62-4.070, F.A.C.	**Rule 62-4.090, F.A.C.**
Rule 62-4.100, F.A.C.	**Rule 62-4.120(1) & (5), F.A.C.**
Rule 62-4.130, F.A.C.	**Rule 62-4.150, F.A.C.**
Rule 62-4.160, F.A.C.	**Rule 62-4.210, F.A.C.**
Rule 62-4.220, F.A.C.	**Rule 62-204.200, F.A.C.**
Rule 62-204.800(2), F.A.C.	
Rule 62-204.800(9)(a), (b)8., (c), (d), & (e), F.A.C.	**Rule 62-204.800(10)(a), (b)58., (c), (d) & (e), F.A.C.**
Rule 62-204.800(13), F.A.C.	**Rule 62-204.800(14), F.A.C.**
Rule 62-204.800(22)(e), F.A.C.	**Rule 62-210.200, F.A.C.**

List of Applicable Regulations

Rule 62-210.300(1), (2), (2)(a), F.A.C.	Rule 62-210.300(3)(a), (a)5, 9, 11, 12, 15, 20, 21, 22, 23, 24, 30. 31, 32, 33 F.A.C.
Rule 62-210.300(3)(b)1., F.A.C.	Rule 62-210.350(1), (3), F.A.C.
Rule 62-210.360(1), F.A.C.	Rule 62-210.370(3)(a) & (c), F.A.C.
Rule 62-210.550, F.A.C.	Rule 62-210.650, F.A.C.
Rule 62-210.700, F.A.C., except (2) & (3)	Rule 62-210.900(1), (5) & (7), F.A.C.
Rule 62-212.300, F.A.C.	Rule 62-212.400(2)(d)1., F.A.C.
Rule 62-213.205(1) & (4), F.A.C.	Rule 62-213.400, F.A.C.
Rule 62-213.410, F.A.C.	Rule 62-213.412, F.A.C., except (3)
Rule 62-213.413(1), (2) & (3) F.A.C.	Rule 62-213.420, F.A.C.
Rule 62-213.430(3), (4) & (6), F.A.C.	Rule 62-213.440, F.A.C.
Rule 62-213.460, F.A.C.	Rule 62-213.900(1) & (7), F.A.C.
Rule 62-296.320(1), (2), (3), (4)(b) & (4)(c), F.A.C.	Rule 62-297.310, F.A.C
Rule 62-297.401(9), F.A.C.	Rule 62-256.200, F.A.C.
Rule 62-256.300, F.A.C.	Rule 21-256.600, F.A.C
Rule 62-256.700(3), (4) & (5), F.A.C.	Rule 62-257.200, F.A.C.
Rule 62-257.301, F.A.C.	Rule 62-257.400, F.A.C.
Rule 62-257.900, F.A.C.	40 CFR 52.21
40 CFR 52.27	40 CFR Part 61, Subpart M
40 CFR Part 63.1	40 CFR Part 63.2
40 CFR Part 63.3	40 CFR Part 63.4
40 CFR Part 63.5, except (d)(2)	40 CFR Part 63.6, except (c)(5), (e)(3), (f)(1), (h), (i), (j)
40 CFR Part 63.9, except (c), (d), (e), (f), (g)	40 CFR Part 63.10, except (b)(2), (c), (d)(3) – (5), (e)
40 CFR Part 63.12	40 CFR Part 63.13
40 CFR Part 63.14	40 CFR Part 63.15
40 CFR Part 63.5785(a)	40 CFR Part 63.5790(a), (b), (c)
40 CFR Part 63.5795(a)(1)	40 CFR Part 63.5796
40 CFR Part 63.5797	40 CFR Part 63.5798
40 CFR Part 63.5799(a)	40 CFR Part 63.5800
40 CFR Part 63.5805(c), (e), (f)	40 CFR Part 63.5810
40 CFR Part 63.5835(a)	40 CFR Part 63.5840

List of Applicable Regulations

40 CFR Part 63.5860(a)	40 CFR Part 63.5895(c), (d)
40 CFR Part 63.5900(a)(2), (a)(3), (a)(4)	40 CFR Part 63.5900(b), (c)
40 CFR Part 63.5905	40 CFR Part 63.5910, except (b)(6), (e), (h)
40 CFR Part 63.5915(a)(1), (c), (d),	40 CFR Part 63.5920
40 CFR Part 63.5925	40 CFR Part 63.5935
40 CFR Part 63, Subpart WWWW – Table 1	40 CFR Part 63, Subpart WWWW – Table 2
40 CFR Part 63, Subpart WWWW – Table 3	40 CFR Part 63, Subpart WWWW – Table 4
40 CFR Part 63, Subpart WWWW – Table 7	40 CFR Part 63, Subpart WWWW – Table 8
40 CFR Part 63, Subpart WWWW – Table 9	40 CFR Part 63, Subpart WWWW – Table 13
40 CFR Part 63, Subpart WWWW – Table 14	40 CFR Part 63, Subpart WWWW – Table 15
40 CFR Part 63, Subpart WWWW – Appendix A	40 CFR Part 68

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
HAPS	A		98	ESCMACT	Avoid Add-on Controls
H163	A				Styrene
VOC	A		245	ESCPSD	Minor – PSD Major – Title V

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [X] Attached, Document ID: FSI-01 [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [X] Attached, Document ID: FSI-02 [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [X] Attached, Document ID: FSI-03 [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [X] Attached, Document ID: FSI-04 [ ] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [X] Attached, Document ID: FSI-05 [ ] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [X] Attached, Document ID: FSI-06 [ ] Not Applicable
7. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities: [ ] Attached, Document ID:_____ [ ] Not Applicable
9. List of Equipment/Activities Regulated under Title VI: [ ] Attached, Document ID:_____ [ ] Equipment/Activities On site but Not Required to be Individually Listed [ ] Not Applicable
10. Alternative Methods of Operation: [ ] Attached, Document ID:_____ [ ] Not Applicable
11. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Identification of Additional Applicable Requirements: [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Risk Management Plan Verification: [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____) [ ] Plan to be submitted to CEPPO (Date required:_____) [ ] Not Applicable
14. Compliance Report and Plan: [ ] Attached, Document ID:_____ [ ] Not Applicable
15. Compliance Certification (Hard-copy Required): [ ] Attached, Document ID:_____ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):

Reinforced Plastic Composites Production Facility and Associated Activities

4. Emissions Unit Identification Number:
ID: **001**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**5/11/03**	**30**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

The initial startup date reflects the day resin was first delivered to the facility.

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Low HAP Content Resins as Specified in Table 3 of 40 CFR Part 63, Subpart WWWW

Work Practices including use of non-HAP solvent cleaners; mechanical, non-atomized applicators; and manual applications as specified in Tables 3 and 4 of Subpart WWWW

The building ventilation system is used to disperse emissions into the atmosphere to avoid and/or minimize odor impacts off site.

2. Control Device or Method Code(s): **102**

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate: **2,253 tons-resin/year**		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment (limit to 200 characters):

The annual throughput rate is based on allowable emissions of 87 lb-HAP/ton-resin and the requested emissions cap of 98 tons per year of HAPs. The maximum resin usage can vary based on HAP content of the resin and HAP emissions from associated activities. Compliance with the emissions cap will be demonstrated through the record keeping and reporting system in accordance with 40 CFR Part 63, Subpart WWWW.

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

Rule 62-4.020, F.A.C	Rule 62-4.030, F.A.C.
Rule 62-4.040(1), F.A.C.	Rule 62-4.050(1), (2), (3), (4)(a)1., (4)(v),F.A.C.
Rule 62-4.050(5) – (8), F.A.C.	Rule 62-4.055(1) – (5), F.A.C.
Rule 62-4.070, F.A.C.	Rule 62-4.090, F.A.C.
Rule 62-4.100, F.A.C.	Rule 62-4.120(1) & (5), F.A.C.
Rule 62-4.130, F.A.C.	Rule 62-4.150, F.A.C.
Rule 62-4.160, F.A.C.	Rule 62-4.210, F.A.C.
Rule 62-4.220, F.A.C.	Rule 62-204.200, F.A.C.
Rule 62-204.800(2), F.A.C.	
Rule 62-204.800(9)(a), (b)8., (c), (d), & (e), F.A.C.	Rule 62-204.800(10)(a), (b)58., (c), (d) & (e), F.A.C.
Rule 62-204.800(13), F.A.C.	Rule 62-204.800(14), F.A.C.
Rule 62-204.800(22)(e), F.A.C.	Rule 62-210.200, F.A.C.
Rule 62-210.300(1), (2), (2)(a), F.A.C.	Rule 62-210.300(3)(a), (a)5, 9, 11, 12, 15, 20, 21, 22, 23, 24, 30. 31, 32, 33 F.A.C.
Rule 62-210.300(3)(b)1., F.A.C.	Rule 62-210.350(1), (3), F.A.C.
Rule 62-210.360(1), F.A.C.	Rule 62-210.370(3)(a) & (c), F.A.C.
Rule 62-210.550, F.A.C.	Rule 62-210.650, F.A.C.
Rule 62-210.700, F.A.C., except (2) & (3)	Rule 62-210.900(1), (5) & (7), F.A.C.
Rule 62-212.300, F.A.C.	Rule 62-212.400(2)(d)1., F.A.C.
Rule 62-213.205(1) & (4), F.A.C.	Rule 62-213.400, F.A.C.
Rule 62-213.410, F.A.C.	Rule 62-213.412, F.A.C., except (3)
Rule 62-213.413(1), (2) & (3) F.A.C.	Rule 62-213.420, F.A.C.
Rule 62-213.430(3), (4) & (6), F.A.C.	Rule 62-213.440, F.A.C.
Rule 62-213.460, F.A.C.	Rule 62-213.900(1) & (7), F.A.C.
Rule 62-296.320(1), (2), (3), (4)(b) & (4)(c), F.A.C.	Rule 62-297.310, F.A.C
Rule 62-297.401(9), F.A.C.	Rule 62-256.200, F.A.C.
Rule 62-256.300, F.A.C.	Rule 21-256.600, F.A.C
Rule 62-256.700(3), (4) & (5), F.A.C.	Rule 62-257.200, F.A.C.
Rule 62-257.301, F.A.C.	Rule 62-257.400, F.A.C.
Rule 62-257.900, F.A.C.	40 CFR 52.21

List of Applicable Regulations

40 CFR 52.27	40 CFR Part 61, Subpart M
40 CFR Part 63.1	40 CFR Part 63.2
40 CFR Part 63.3	40 CFR Part 63.4
40 CFR Part 63.5, except (d)(2)	40 CFR Part 63.6, except (c)(5), (e)(3), (f)(1), (h), (i), (j)
40 CFR Part 63.9, except (c), (d), (e), (f), (g)	40 CFR Part 63.10, except (b)(2), (c), (d)(3) – (5), (e)
40 CFR Part 63.12	40 CFR Part 63.13
40 CFR Part 63.14	40 CFR Part 63.15
40 CFR Part 63.5785(a)	40 CFR Part 63.5790(a), (b), (c)
40 CFR Part 63.5795(a)(1)	40 CFR Part 63.5796
40 CFR Part 63.5797	40 CFR Part 63.5798
40 CFR Part 63.5799(a)	40 CFR Part 63.5800
40 CFR Part 63.5805(c), (e), (f)	40 CFR Part 63.5810
40 CFR Part 63.5835(a)	40 CFR Part 63.5840
40 CFR Part 63.5860(a)	40 CFR Part 63.5895(c), (d)
40 CFR Part 63.5900(a)(2), (a)(3), (a)(4)	40 CFR Part 63.5900(b), (c)
40 CFR Part 63.5905	40 CFR Part 63.5910, except (b)(6), (e), (h)
40 CFR Part 63.5915(a)(1), (c), (d),	40 CFR Part 63.5920
40 CFR Part 63.5925	40 CFR Part 63.5935
40 CFR Part 63, Subpart WWWW – Table 1	40 CFR Part 63, Subpart WWWW – Table 2
40 CFR Part 63, Subpart WWWW – Table 3	40 CFR Part 63, Subpart WWWW – Table 4
40 CFR Part 63, Subpart WWWW – Table 7	40 CFR Part 63, Subpart WWWW – Table 8
40 CFR Part 63, Subpart WWWW – Table 9	40 CFR Part 63, Subpart WWWW – Table 13
40 CFR Part 63, Subpart WWWW – Table 14	40 CFR Part 63, Subpart WWWW – Table 15
40 CFR Part 63, Subpart WWWW – Appendix A	40 CFR Part 68

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **EU001a – EU001f**	2. Emission Point Type Code: **3**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Former Spray Booth Exhaust Stacks (Six Total) Used for Building Ventilation and Resin/Foam/Stain Applications (Segments)**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **001**		
5. Discharge Type Code: **W**	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: **Ambient** °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: **20-25** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **384.08** North (km): **3234.56**		

14. Emission Point Comment (limit to 200 characters):

Estimated Flow Rates & Diameters:

Vent #	Diameter (in.)	Flow (ACFM)
1	24	10,084
2	30	13,630
3	24	10,084
4	24	10,084
5	30	13,630
6	30	13,630

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 6

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Open Molding**		
2. Source Classification Code (SCC):	3. SCC Units: **TONS**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate: **2,253**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Non-CR/HS & Tooling Resins (Table 3, Subpart WWWW) Both Mechanical Non-Atomized and Manual Applications** **The annual rate reported is not a requested maximum cap. It can be referenced in the permit in association with the appropriate resin HAP Contents. Tooling Resins are a small Portion of the total resin usage.**		

Segment Description and Rate: Segment 2 of 6

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Resin Activator**		
2. Source Classification Code (SCC):	3. SCC Units: **Tons**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor: **1.5-2.0%**
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **The resin activator is used at a rate of 1.5 to 2.0 pounds per 100 pounds of resin.**		

Emissions Unit Information Section 1 of 1

Segment Description and Rate: Segment 3 of 6

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Resin Storage**		
2. Source Classification Code (SCC):	3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor: **8,000 gal**
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Bulk Storage (Table 4, Subpart WWWW) Two Bulk Storage Tanks for the Resin (~7,000 gal & ~1,000 gal)**		

Segment Description and Rate: Segment 4 of 6

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Spray Foam Application**		
2. Source Classification Code (SCC):	3. SCC Units: **Tons**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: **250**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Trace amounts of HAP emissions (MDI) are associated with this activity and as such they must be accounted for within the allowable emission caps (87 lb-HAP/ton-Resin & 98 Tons-HAPs/yr)**		

Emissions Unit Information Section 1 of 1

Segment Description and Rate: Segment 5 of 6

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Cleaning Operations**		
2. Source Classification Code (SCC):	3. SCC Units: **Gallons**	
4. Maximum Hourly Rate: **0**	5. Maximum Annual Rate: **6,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Non-HAP, VOC-Containing Solvents (e.g., Isopropanol, ect...) (Table 4, Subpart WWWW)**		

Segment Description and Rate: Segment 6 of 6

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Miscellaneous Materials**		
2. Source Classification Code (SCC):	3. SCC Units: **Tons**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: **10**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **VOC & HAP Containing Materials such as but not limited to Water Based Stains, PVC Pipe Primers/Glues, ect... This is a catch all segment for miscellaneous materials.**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
HAPS	102		EL
H163			NS
VOC			EL

Emissions Unit Information Section 1 of 1

Pollutant Detail Information Page 1 of 2

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **230** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **Mass Balance** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **See Document ID No FSI-06**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **POTENTIAL EMISSION**	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **245 tons per year**	3. Equivalent Allowable Emissions: lb/hour tons/year
3. Method of Compliance (limit to 60 characters): **Recordkeeping System (Same for HAPs under 40 CFR Part 63, Subpart WWWW)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Emissions Unit Information Section 1 **of** 1

Pollutant Detail Information Page 1 **of** 2

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **HAPS**	2. Total Percent Efficiency of Control: **MACT Floor**
3. Potential Emissions: lb/hour **98.0** tons/year	4. Synthetically Limited? [X]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **87 lb-HAPS per ton of Resin** Reference: **40 CFR Part 63, Subpart WWWW**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **See Document ID No FSI-06**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **POTENTIAL EMISSION = ALLOWABLE EMISSIONS** **Based on Open Molding non-CR/HS Resin**	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE/ESCMACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **98.0 Tons per year of HAPS**	3. Equivalent Allowable Emissions: lb/hour tons/year
3. Method of Compliance (limit to 60 characters): **Recordkeeping System Per 40 CFR Part 63, Subpart WWWW**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **The requested cap includes allowable emissions identified in 40 CFR Part 63, Subpart WWWW, Table 3 for Open Molding Operations.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **0 %** Exceptional Conditions: **100 %** Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **General opacity standard (Rule 62-296.320, F.A.C.) applicable facility wide. The exceptional conditions reflect the excess emissions rule.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [X] Attached, Document ID: FSI-03 [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: FSI-06 [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [ ] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [ ] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [ ] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

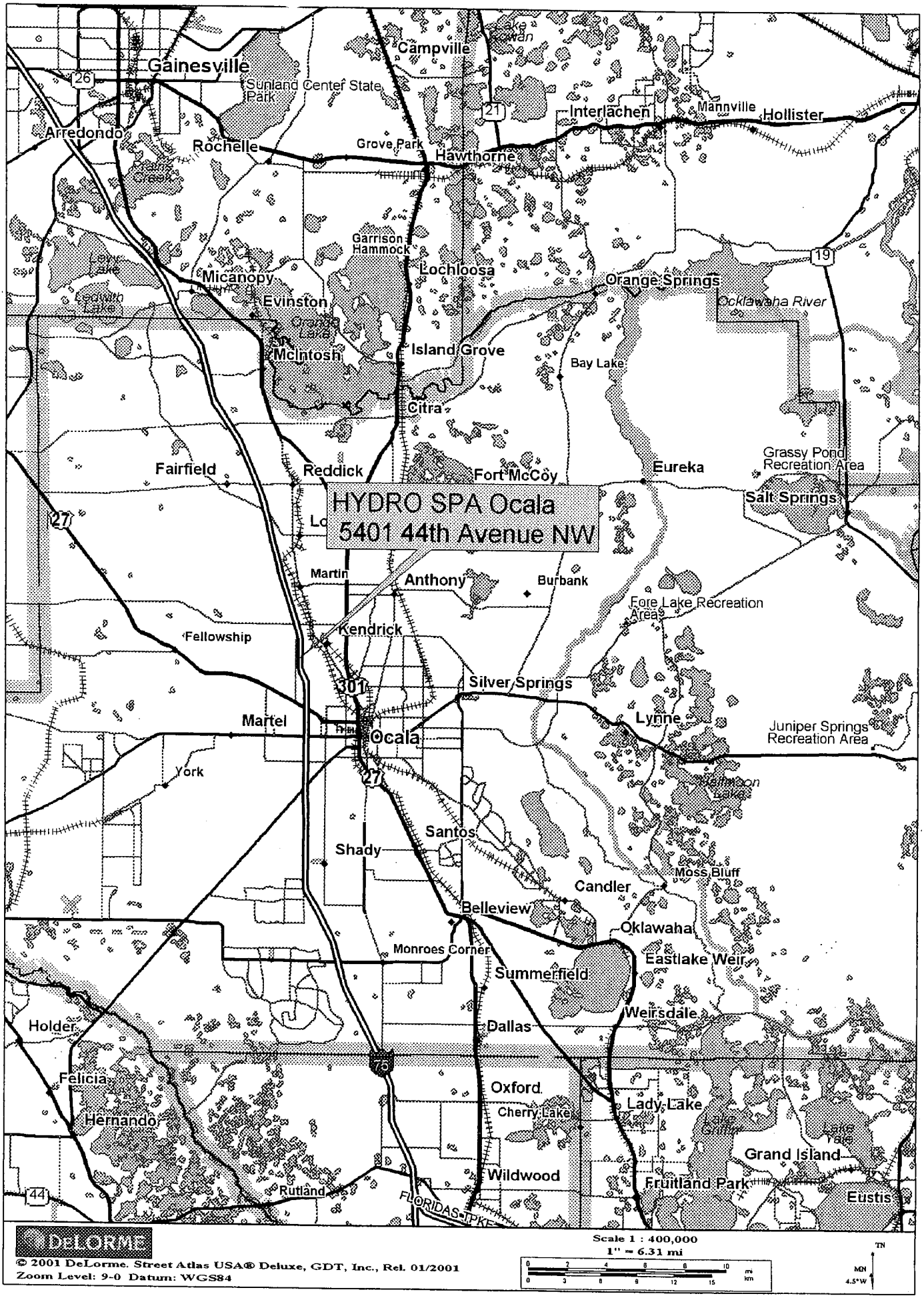
[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[ ] Not Applicable

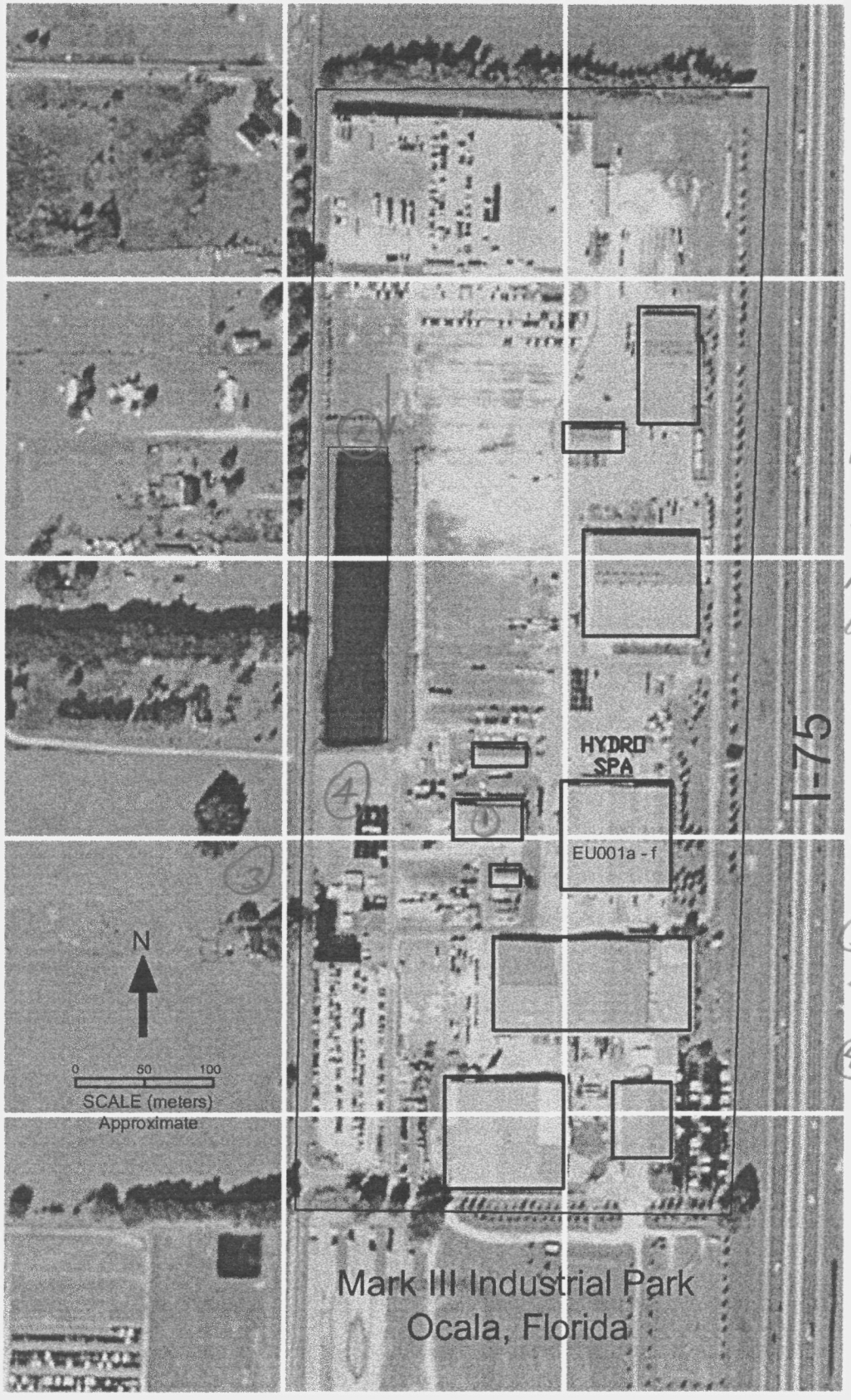
DOCUMENT ID: FSI-01

AREA MAP SHOWING FACILITY LOCATION


HYDRO SPA Ocala
5401 44th Avenue NW
Gainesville
Campville
Sunland Center State Park
Interlachen
Mannville
Hollister
Arredondo
Rochelle
Grove Park
Hawthorne
Garrison Hammock
Lochloosa
Micanopy
Orange Springs
Ocklawaha River
Evinston
McIntosh
Island Grove
Bay Lake
Citra
Fairfield
Reddick
Fort McCoy
Eureka
Grassy Pond Recreation Area
Salt Springs
Martin
Anthony
Burbank
Fore Lake Recreation Area
Fellowship
Kendrick
Silver Springs
Lynne
Juniper Springs Recreation Area
Martel
Ocala
York
Santos
Shady
Moss Bluff
Candler
Belleview
Oklawaha
Monroes Corner
Eastlake Weir
Summerfield
Weirsdale
Holder
Dallas
Felicia
Oxford
Lady Lake
Hernando
Cherry Lake
Grand Island
Wildwood
Fruitland Park
Eustis
Rutland
FLORIDAS TPKE
DeLorme
© 2001 DeLorme. Street Atlas USA® Deluxe, GDT, Inc., Rel. 01/2001
Zoom Level: 9-0 Datum: WGS84
Scale 1 : 400,000
1" = 6.31 mi

DOCUMENT ID: FSI-02

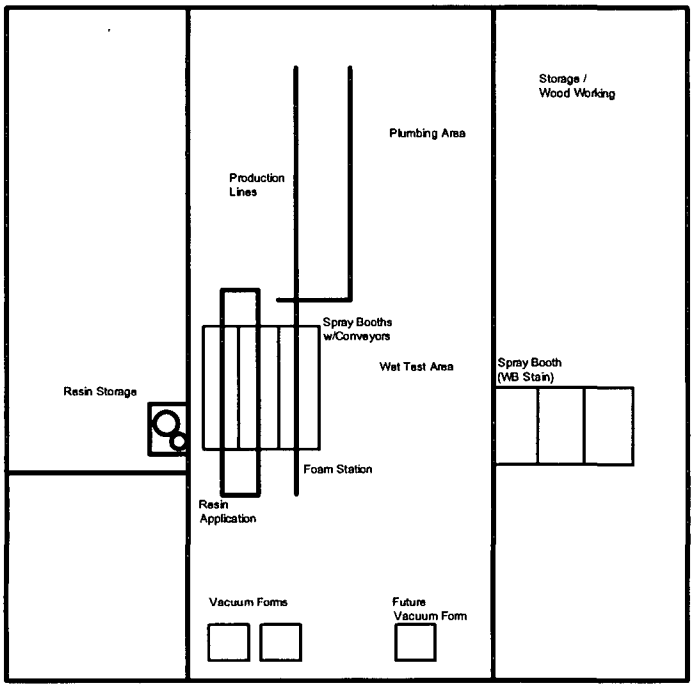
FACILITY PLOT PLAN

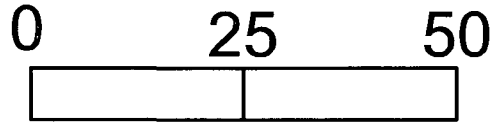


Telecon w/Charlie Miley, 9/18/03
Nearest residence is outside this Industrial Park
JK
② offices
① Also Hydro-Spa
③ uninhabitable residence
④ factory outlet retail store

HYDRO SPA - OCALA FACILITY 5401 44th Ave., NW Ocala, Florida, 24482	SOUTHERN ENVIRONMENTAL SCIENCES, INC. PLANT CITY, FLORIDA 33563 Phone - (813) 752-5014 JUNE 26, 2003

HYDRO SPA





SCALE (meters)
Approximate

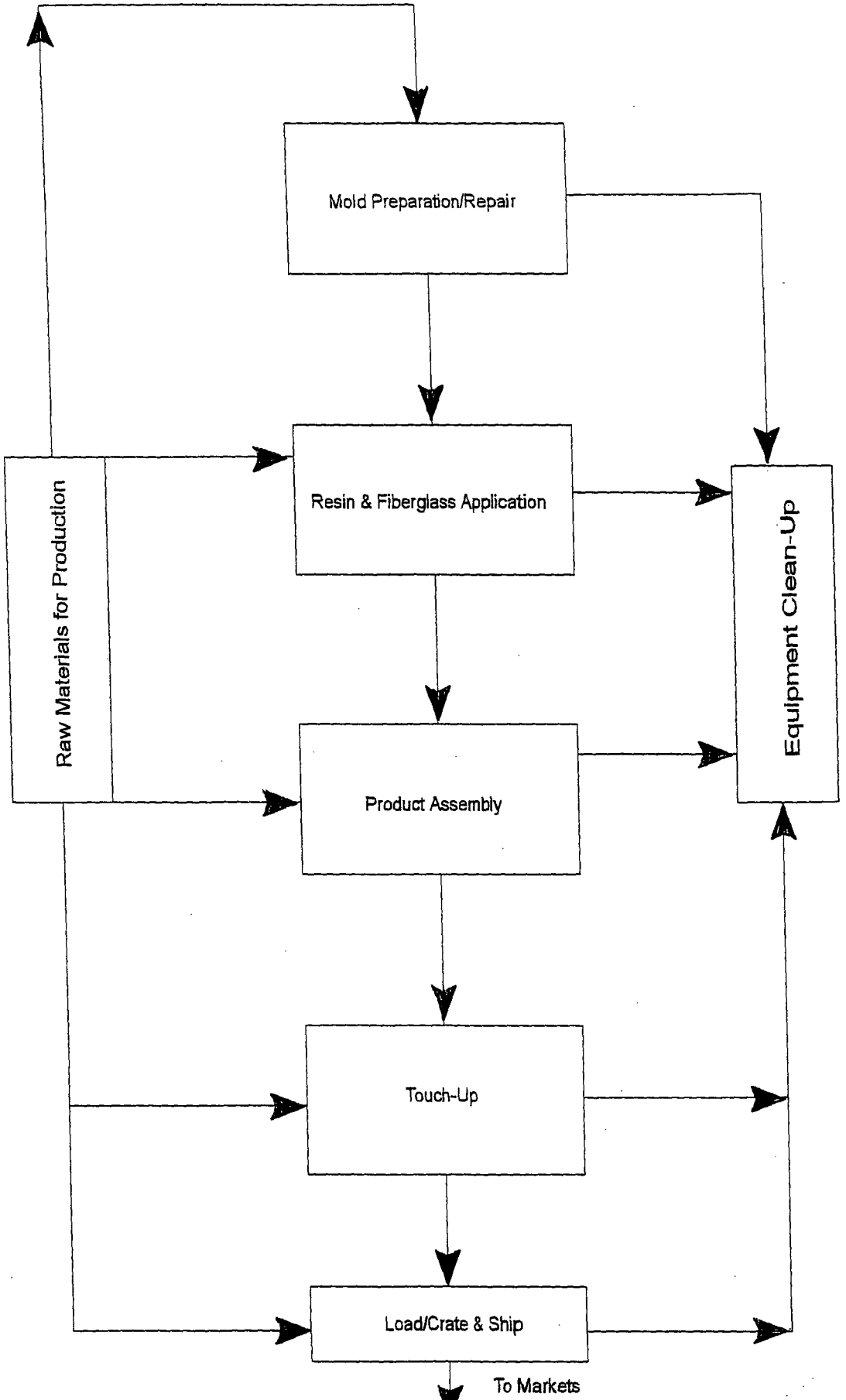
HYDRO SPA - OCALA FACILITY
5401 44th Ave., NW
Ocala, Florida, 24482

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
PLANT CITY, FLORIDA 33563
Phone - (813) 752-5014
JUNE 26, 2003

DOCUMENT ID: FSI-03

PROCESS FLOW DIAGRAM

DOCUMENT ID 3 - HYDRO SPA OCALA FLOW DIAGRAM



DOCUMENT ID: FSI-04

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

FSI-004

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

Unconfined particulate matter emissions from the HYDRO SPA Ocala Facility are expected to be minimum since the operations are contained within a building. Potential emissions associated with the operation and maintenance of the facility include the following activities:

- Solid Waste Materials; and
- Roads & Parking Areas.

Reasonable precautions to prevent and/or control unconfined particulate matter emissions include the following:

- Solid Waste Materials – Proper disposal of wastes (e.g. saw dust, piping cutting...) in a industrial dumpster. Application of water if needed.

- Roads & Parking Areas – Under the control of the Mark III Industrial Park. In areas under the control of HYDRO SPA clean-up of all spills and the application of water on an as needed basis.

DOCUMENT ID: FSI-05

FUGITIVE EMISSIONS IDENTIFICATION

FUGITIVE EMISSIONS

The HYDRO SPA Ocala facility's Reinforced Plastic Composites Production Facility and Associated Activities are enclosed within a building. Fugitive emission points include access doors, bay doors, and windows. The building includes six (6) former paint spray booths. Hydro Spa uses four (4) of the booths as work areas associated the resin application, foam application, and the water based stain application.

The sources of the fugitive emissions include the following:

- Bulk Storage and Handling of Resin (Breathing and Working Losses);
- Resin Application and Curing;
- Foam Application;
- Cleaning Activities (non-HAP Solvents); and
- Minor Spills and/or Leaks.

Control activities include use of the building's existing ventilation system; indoor storage of the bulk resins; use of low styrene content resins; the use of non-atomized mechanical applicators; and the immediate cleanup of all spills and/or leaks. Efforts to control fugitive emissions will also reduce odor impacts.

DOCUMENT ID: FSI-06

SUPPLEMENTAL INFORMATION FOR CONSTRUCTION PERMITS APPLICATION

- Emission Estimates
  - Emission Calculation Sheet
  - Table 1, Subpart WWWW
  - Unified Emission Factors for Open Molding (for comparison)
  - MEKP Emissions Data
  - Section 17.0, Spray Foam – MDI Emission Estimator
- Material Safety Data Sheets
  - Polyester Resin (Document Styrene Contents <38.4% wt)
  - MEKP Activators (Document MEKP & MEK Contents)
  - Non-HAP Cleaning Solvents & Agents
  - Water-Based Wood Stain
  - Spray Foam (Parts A & B)
- Department of Environmental Protection Documents
  - Completed Questionnaire – RPC Production
  - May 15, 2003 Request for Additional Information
  - March 6, 2003 Request for Additional Information

- Exempt Activities:

DOCUMENT ID: FSI-06
Emission Estimates

HYDRO SPA

Ocala Facility

Emission Calculation Sheet

Raw Material Usages

Polyester Resin	2253 ton/yr	
Activator/Catalyst	45 ton/yr	Based on 2% mix rate
Spray Foam	250 ton/yr	
Cleaning Solvents	20 tons/yr	Non-HAP, Assume 100% VOC
Miscellaneous Materials	10.0 tons/yr	(Water Based Solvents, Mold Release Agents)

NESHAP (WWWW) Standards

NESHAP (Allowables)	38.4	%wt HAP in Resin
	87	lb/ton - non CR/HS Resin
	98.00	Tons per year

Emissions Summary

Volatile Organic Compounds	229.8	Tons per Year
Styrene	95.5	Tons per Year
Methyl Ethly Ketone	0.90	Tons per Year
MDI	2.08E-03	Tons per Year
Total HAPs	96.87	Tons per Year
NESHAP (WWWW) Emissions:	86.00	lb-HAPs/Ton of Resin

Emission Calculations

Polyester Resin

Styrene Content	37.5	%wt, Ref: AOC - C668-FFH-20 (Now @ 35.4%)
VOC Content	5	%wt (Non-Styrene), Ref: AOC - C668-FFH-20
Emission Factors	84.75	lb-Styrene/ton-Resin, Table 1, Subpart WWWW
	184.75	lb-VOC/ton-Resin, Mass Balance
Emission Estimates		
Styrene	95.5	Tons per Year
VOC	208.1	Tons per Year
THAP	95.5	Tons per Year

Catalyst

MEK Content:	2	%wt, Ref: Cadox M-30a & M-50A Products
MEKP Content	35	%wt, Ref: Cadox M-50A Product
Emission Factors	40	lb-MEK/ton-catalyst, Mass Balance
	14	lb-MEKP/Ton-catalsyst, Mass Balance assuming 98% Consumption
	54	lb-VOC/ton-Catalyst, Mass Balance (Sum MEK & MEKP)
Emission Estimates		
MEK	0.90	Tons per Year
VOC	1.22	Tons per Year
THAP	0.90	Tons per Year

Foam

MDI Content	45	%wt, Ref: Stepan Mondur MR Light
PMDI Content	55	%wt, Ref: Stepan Mondur MR Light
Emission Factor	8.33E-06	lb/ton, Ref: MDI Emissions Estimator Sortware
Volume of Air	1000	ft^3/yr, based on 2 lb/ft^3 of foam.
Temperature	302.4	K, Process Temperature (~85 F)
MDI Vapor Pressure	1.89E-05	mmHg, Ref: Appendix A, Table 1
MDI Mole. Weight	250.26	lb/lb-mol
Kmdi Adj. Factor	0.5325	
Emissions		
MDI	2.08E-03	Tons per Year

	Adj. Fact.		
%MDI	80 F	85 F	90 F
40	0.46	0.47	0.47
45	0.51	0.53	0.56
50	0.55	0.60	0.65

Cleaning Solvents (non-HAP)

VOC Content	100	%wt, Ref: Delta MSDS
Emission Factor	6.55	lb/gal
Emissions	20	tons per Year

Miscellaneous Materials

VOC Content	5	%wt, Ref: Average Based on MSDS
HAP Content	5	%wt, Ref: Max Based on MSDS
Emission Estimates		
VOC	0.50	tons per Year
HAP	0.50	tons per Year

Resin storage vessels, reservoirs, transfer systems, and collection systems are covered or shielded from the ambient air. Preform injection differs from direct die injection in that the injection chambers are not directly attached to the die.

Prepreg materials means reinforcing fabric received precoated with resin which is usually cured through the addition of heat.

Pultrusion means a continuous process for manufacturing composites that have a uniform cross-sectional shape. The process consists of pulling a fiber-reinforcing material through a resin impregnation chamber or bath and through a shaping die, where the resin is subsequently cured. There are several types of pultrusion equipment, such as open bath, resin injection, and direct die injection equipment.

Repair means application of resin or gel coat to a part to correct a defect, where the resin or gel coat application occurs after the part has gone through all the steps of its typical production process, or the application occurs outside the normal production area. For purposes of this subpart, rerouting a part back through the normal production line, or part of the normal production line, is not considered repair.

Resin transfer molding means a process for manufacturing composites whereby catalyzed resin is transferred or injected into a closed mold in which fiberglass reinforcement has been placed.

Sheet molding compound (SMC) means a ready-to-mold putty-like molding compound that contains resin(s) processed into sheet form. The molding compound is sandwiched between a top and a bottom film. In addition to resin(s), it may also contain catalysts, fillers, chemical thickeners, mold release agents, reinforcements, and other ingredients. Sheet molding compound can be used in compression molding to manufacture reinforced plastic composites products.

Shrinkage controlled resin means a resin that when promoted, catalyzed, and filled according to the resin manufacturer's recommendations demonstrates less than 0.3 percent linear shrinkage when tested according to ASTM D2566.

SMC manufacturing means a process which involves the preparation of SMC.

Tooling gel coat means a gel coat that is used to form the surface layer of molds. Tooling gel coats generally have high heat distortion temperatures, low shrinkage, high barcol hardness, and high dimensional stability.

Tooling resin means a resin that is used to produce molds. Tooling resins generally have high heat distortion temperatures, low shrinkage, high barcol hardness, and high dimensional stability.

Uncontrolled oven organic HAP emissions means those organic HAP emissions emitted from the oven through closed vent systems to the atmosphere and not to a control device. These organic HAP emissions do not include organic HAP emissions that may escape into the workplace through the opening of panels or doors on the ovens or other similar fugitive organic HAP emissions in the workplace.

Uncontrolled wet-out area organic HAP emissions means any or all of the following: Organic HAP emissions from wet-out areas that do not have any capture and control, organic HAP emissions that escape from wet-out area enclosures, and organic HAP emissions from wet-out areas that are captured by an enclosure but are vented to the atmosphere and not to an add-on control device.

Unfilled means that there has been no addition of fillers to a resin or that less than 10 percent of fillers by weight of the total resin plus filler mixture has been added.

Vapor suppressant means an additive, typically a wax, that migrates to the surface of the resin during curing and forms a barrier to seal in the styrene and reduce styrene emissions.

Vapor-suppressed resin means a resin containing a vapor suppressant added for the purpose of reducing styrene emissions during curing.

White and off-white gel coat means a gel coat that contains 10 percent of more titanium dioxide by weight.

TABLE 1 TO SUBPART WWWW OF PART 63—EQUATIONS TO CALCULATE ORGANIC HAP EMISSIONS FACTORS FOR SPECIFIC OPEN MOLDING AND CENTRIFUGAL CASTING PROCESS STREAMS

[As required in §§ 63.5796, 63.5799(a)(1) and (b), and 63.5810(a)(1), to calculate organic HAP emissions factors for specific open molding and centrifugal casting process streams you must use the equations in the following table:]

If your operation type is a new or existing . . .	And you use . . .	With . . .	Use this organic HAP Emissions Factor (EF) Equation for materials with less than 33 percent organic HAP (19 percent organic HAP for nonatomized gel coat) [1 2 3] . . .	Use this organic HAP Emissions Factor (EF) Equation for materials with 33 percent or more organic HAP (19 percent for nonatomized gel coat) [1 2 3] . . .
1. Open molding operation	a. Manual resin application	i. Nonvapor-suppressed resin.	EF = 0.126 × % HAP × 2000.	EF = ((0.286 × %HAP) − 0.0529) × 2000
		ii. Vapor-suppressed resin	EF = 0.126 × % HAP × 2000 × (1 − (0.5 × VSE factor)).	EF = ((0.286 × %HAP) − 0.0529) × 2000 × (1 − (0.5 × VSE factor))
		iii. Vacuum bagging/ closed-mold curing with roll out.	EF = 0.126 × % HAP × 2000 × 0.8.	EF = ((0.286 × %HAP) − 0.0529) × 2000 × 0.8
		iv. Vacuum bagging/ closed-mold curing without roll-out.	EF = (0.126 × % HAP × 2000 × 0.5.	EF = ((0.286 × %HAP) − 0.0529) × 2000 × 0.5
	b. Atomized mechanical resin application.	i. Nonvapor-suppressed resin.	EF = 0.169 × %HAP × 2000.	EF = ((0.714 × %HAP) − 0.18) × 2000
		ii. Vapor-suppressed resin	EF = 0.169 × %HAP × 2000 × (1 − (0.45 × VSE factor)).	EF = ((0.714 × %HAP) − 0.18) × 2000 × (1 − (0.45 × VSE factor))

TABLE 1 TO SUBPART WWWW OF PART 63—EQUATIONS TO CALCULATE ORGANIC HAP EMISSIONS FACTORS FOR SPECIFIC OPEN MOLDING AND CENTRIFUGAL CASTING PROCESS STREAMS—Continued

[As required in §§ 63.5796, 63.5799(a)(1) and (b), and 63.5810(a)(1), to calculate organic HAP emissions factors for specific open molding and centrifugal casting process streams you must use the equations in the following table:]

If your operation type is a new or existing . . .	And you use . . .	With . . .	Use this organic HAP Emissions Factor (EF) Equation for materials with less than 33 percent organic HAP (19 percent organic HAP for nonatomized gel coat) [1 2 3] . . .	Use this organic HAP Emissions Factor (EF) Equation for materials with 33 percent or more organic HAP (19 percent for nonatomized gel coat) [1 2 3] . . .
		iii. Vacuum bagging/closed-mold curing with roll-out.	EF = 0.169 × %HAP × 2000 × 0.85.	EF = ((0.714 × %HAP) − 0.18) × 2000 × 0.85
		iv. Vacuum bagging/closed-mold curing without roll-out.	EF = 0.169 × %HAP × 2000 × 0.55.	EF = ((0.714 × %HAP) − 0.18) × 2000 × 0.55
	c. Nonatomized mechanical resin application.	v. Nonvapor-suppressed resin.	EF = 0.107 × %HAP × 2000.	EF = ((0.157 × %HAP) − 0.0165) × 2000
		vi. Vapor-suppressed resin	EF = 0.107 × %HAP × 2000 × (1 − (0.45 × VSE factor)).	EF = ((0.157 × %HAP) − 0.0165) × 2000 × (1 − (0.45 × VSE factor))
		vii. Closed-mold curing with roll-out.	EF = 0.107 × %HAP × 2000 × 0.85.	EF = ((0.157 × %HAP) − 0.0165) × 2000 × 0.85
		viii. Vacuum bagging/closed-mold curing without roll-out.	EF = 0.107 × %HAP × 2000 × 0.55.	EF = ((0.157 × %HAP) − 0.0165) × 2000 × 0.55
	d. Atomized mechanical resin application with robotic or automated spray control [4].	Nonvapor-suppressed resin.	EF = 0.169 × %HAP × 2000 × 0.77.	EF = 0.77 × ((0.714 × %HAP) − 0.18) × 2000
	e. Filament application [5]	i. Nonvapor-suppressed resin.	EF = 0.184 × %HAP × 2000.	EF = ((0.2746 × %HAP) − 0.0298) × 2000
		ii. Vapor-suppressed resin	EF = 0.12 × %HAP × 2000	EF = ((0.2746 × %HAP) − 0.0298) × 2000 × 0.65
	f. Atomized spray gel coat application.	Nonvapor-suppressed gel coat.	EF = 0.446 × %HAP × 2000.	EF = ((1.03646 × %HAP) − 0.195) × 2000.
	g. Nonatomized spray gel coat application.	Nonvapor-suppressed gel coat.	EF = 0.185 × %HAP × 2000.	EF = ((0.4506 × %HAP) − 0.0505) × 2000.
	h. Manual gel coat application [6].	Nonvapor-suppressed gel coat.	EF = 0.126 × % HAP × 2000 (for emissions estimation only, see footnote 6).	EF = ((0.286 × %HAP) − 0.0529) × 2000 (for emissions estimation only, see footnote 6)
2. Centrifugal casting operations. [7 8].	Heated air blown through molds.	Nonvapor-suppressed resin.	EF = 0.558 × (%HAP) × 2000.	EF = 0.558 × (%HAP) × 2000.
	Vented molds, but air vented through the molds is not heated.	Nonvapor-suppressed resin.	EF = 0.026 × (%HAP) × 2000.	EF = 0.026 × (%HAP) × 2000.

Footnotes to Table 1

[1] To obtain the organic HAP emissions factor value for an operation with an add-on control device multiply the EF above by the add-on control factor calculated using Equation 1 of § 63.5810. The organic HAP emissions factors have units of lbs of organic HAP per ton of resin or gel coat applied.

[2] Percent HAP means total weight percent of organic HAP (styrene, methyl methacrylate, and any other organic HAP) in the resin or gel coat prior to the addition of fillers, catalyst, and promoters. Input the percent HAP as a decimal, *i.e.* 33 percent HAP should be input as 0.33, not 33.

[3] The VSE factor means the percent reduction in organic HAP emissions expressed as a decimal measured by the VSE test method of appendix A to this subpart.

[4] This equation is based on a organic HAP emissions factor equation developed for mechanical atomized controlled spray. It may only be used for automated or robotic spray systems with atomized spray. All spray operations using hand held spray guns must use the appropriate mechanical atomized or mechanical nonatomized organic HAP emissions factor equation. Automated or robotic spray systems using nonatomized spray should use the appropriate nonatomized mechanical resin application equation.

[5] Applies only to filament application using an open resin bath. If resin is applied manually or with a spray gun, use the appropriate manual or mechanical application organic HAP emissions factor equation.

[6] Do not use this equation for determining compliance with emission limits in Tables 3 or 5 to this subpart. To determine compliance with emission limits you must treat all gel coat as if it were applied as part of your gel coat spray application operations. If you apply gel coat by manual techniques only, you must treat the gel coat as if it were applied with atomized spray and use Equation 1.f. to determine compliance with the appropriate emission limits in Tables 3 or 5 to this subpart. To estimate emissions from manually applied gel coat, you may either include the gel coat quantities you apply manually with the quantities applied using spray, or use this equation to estimate emissions from the manually applied portion of your gel coat.

[7] These equations are for centrifugal casting operations where the mold is vented during spinning. Centrifugal casting operations where the mold is completely sealed after resin injection are considered to be closed molding operations.

Unified Emission Factors for Open Molding of Composites

July 23, 2001

Emission Rate in Pounds of Styrene Emitted per Ton of Resin or Gelcoat Processed

Styrene content in resin/gelcoat, % [1]	<33 [2]	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	>50 [2]
Manual	0.126 x %styrene x 2000	83	89	94	100	106	112	117	123	129	134	140	146	152	157	163	169	174	180	((0.286 x %styrene) - 0.0529) x 2000
Manual w/ Vapor Suppressed Resin VSR [3]	**Manual emission factor** [listed above] x (1 - (0.50 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Atomized	0.169 x %styrene x 2000	111	126	140	154	168	183	197	211	225	240	254	268	283	297	311	325	340	354	((0.714 x %styrene) - 0.18) x 2000
Mechanical Atomized with VSR [3]	**Mechanical Atomized emission factor** [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Atomized Controlled Spray [4]	0.130 x %styrene x 2000	86	97	108	119	130	141	152	163	174	185	196	207	218	229	240	251	262	273	0.77 x ((0.714 x %styrene) - 0.18) x 2000
Mechanical Controlled Spray with VSR	**Mechanical Atomized Controlled Spray emission factor** [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Non-Atomized	0.107 x %styrene x 2000	71	74	77	80	83	86	89	93	96	99	102	105	108	111	115	118	121	124	((0.157 x %styrene) - 0.0165) x 2000
Mechanical Non-Atomized with VSR [3]	**Mechanical Non-Atomized emission factor** [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Filament application	0.184 x %styrene x 2000	122	127	133	138	144	149	155	160	166	171	177	182	188	193	199	204	210	215	((0.2746 x %styrene) - 0.0298) x 2000
Filament application with VSR [3]	0.120 x %styrene x 2000	79	83	86	90	93	97	100	104	108	111	115	118	122	125	129	133	136	140	0.65 x ((0.2746 x %styrene) - 0.0298) x 2000
Gelcoat Application	0.445 x %styrene x 2000	294	315	336	356	377	398	418	439	460	481	501	522	543	564	584	605	626	646	((1.03646 x %styrene) - 0.195) x 2000
Gelcoat Controlled Spray Application [4]	0.325 x %styrene x 2000	215	230	245	260	275	290	305	321	336	351	366	381	396	411	427	442	457	472	0.73 x ((1.03646 x %styrene) - 0.195) x 2000
Gelcoat Non-Atomized Application [8]	SEE **Note 9** below	196	205	214	223	232	241	250	259	268	278	287	296	305	314	323	332	341	350	((0.4506 x %styrene) - 0.0505) x 2000
Covered-Cure after Roll-Out	**Non-VSR process emission factor** [listed above] x (0.80 for Manual <or> 0.85 for Mechanical)																			
Covered-Cure without Roll-Out	**Non-VSR process emission factor** [listed above] x (0.50 for Manual <or> 0.55 for Mechanical)																			

Emission Rate in Pounds of Methyl Methacrylate Emitted per Ton of Gelcoat Processed

MMA content in gelcoat, % [6]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥20
Gel coat application [7]	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	0.75 x %MMA x 2000

Notes

1 Including styrene monomer content as supplied, plus any extra styrene monomer added by the molder, but before addition of other additives such as powders, fillers, glass,...etc.

2 Formulas for materials with styrene content < 33% are based on the emission rate at 33% (constant emission factor expressed as percent of available styrene), and for styrene content > 50% on the emission rate based on the extrapolated factor equations; these are not based on test data but are believed to be conservative estimates. The value for "% styrene" in the formulas should be input as a fraction. For example, use the input value 0.30 for a resin with 30% styrene content by wt.

3 The VSR reduction factor is determined by testing each resin/suppressant formulation according to the procedures detailed in the ***CFA Vapor Suppressant Effectiveness Test.***

4 SEE the ***CFA Controlled Spray Handbook*** for a detailed description of the controlled spray procedures.

5 The effect of vapor suppressants on emissions from filament winding operations is based on the ***Dow Filament Winding Emissions Study.***

6 Including MMA monomer content as supplied, plus any extra MMA monomer added by the molder, but before addition of other additives such as powders, fillers, glass,...etc.

7 Based on gelcoat data from ***NMMA Emission Study.***

8 SEE the July 17, 2001 EECS report ***Emission Factors for Non-Atomized Application of Gel Coats used in the Open Molding of Composites*** for a detailed description of the non-atomized gelcoat testing.

9 Use the equation **((0.4506 x %styrene) - 0.0505) x 2000** for gelcoats with styrene contents between 19% and 32% by wt.; use the equation **0.185 x %styrene x 2000** for gelcoats with less than 19% styrene content by wt.

Engineering Environmental
Consulting Services

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Emission Factors for Liquid Organic Peroxide Catalysts used in the Open Molding of Composites

Robert A. Haberlein, Ph.D., QEP

Introduction

Small quantities of highly reactive liquid organic peroxide solutions are used by the reinforced plastics industry to initiate the polymerization reaction (also referred to as "curing") in the resin or gelcoat material. These solutions are commonly called "catalysts," and are known by the commercial trade names Butanox™, Lupersol™, Thermacure™ or Hi-Point™. In order to start the curing reaction, enough catalyst solution is added to the resin or gelcoat material until about 1% to 2% of the material weight consists of catalyst. The catalyst solution is either sprayed together with the resin or gelcoat during spray lay-up (Mechanical), or a carefully measured amount of catalyst is stirred into a pail or bucket of resin for hand lay-up (Manual).

Most organic peroxide catalysts consist of a 30% to 47% solution of methyl ethyl ketone peroxide (MEKP) dissolved in dimethyl phthalate (DMP). The DMP acts as is a stabilizing agent to prevent the spontaneous detonation of the MEKP at room temperature. A trace amount of methyl ethyl ketone (MEK) may also be present as a contaminant byproduct left over from the manufacture of the MEKP.

MEKP

MEKP is a highly reactive, colorless liquid organic oxidizer, with a pungent burning odor, which has the following properties:

CAS registry number	1338-23-4
molecular formula	$CH_3COCH_2CH_3O_2$.
vapor pressure	less than 0.1 mm Hg at room temperature

Contrary to a popular misconception, MEKP does not decompose into MEK after being sprayed together with resin or gelcoat. Instead, the MEKP is immediately consumed by the resin to initiate the curing process, so no MEKP is released. If a trace amount of MEKP does not fully react with the resin or gelcoat, a small amount of acetic acid droplets may be formed due to reactions with moisture present in the air - but not MEK. Acetic acid droplets are neither a HAP nor a VOC. Therefore, the normal usage of MEKP at reinforced plastics facilities will not result in any measurable VOC or HAP emissions whatsoever.

DMP

DMP is a colorless, oily, viscous organic liquid with a faintly sweet, ester-like odor, which has the following properties:

CAS registry number	131-11-3
molecular formula	$C_{10}H_{10}O_4$
vapor pressure	less than 0.01 mm Hg at room temperature

DMP is both a VOC and a listed HAP. Fortunately, DMP has an extremely low vapor pressure resulting in practically no evaporation at room temperature. DMP vapor emissions from catalyst solutions are probably extremely small, but are still non-zero. The following five-step theoretical approach is employed to determine a reasonable non-zero emission factor for DMP:

1. According to the UEF model, a 50% styrene-content resin applied by spray gun will emit about 18.1% of the available styrene monomer before the resin cures. After curing, these emissions from the resin essentially stop.

2. DMP emissions will also emit a trace amount of vapor before the resin cures, and will follow the same general evaporation mechanisms as for the styrene monomer.

3. The ratio of vapor pressures for DMP to styrene is 0.01 mmHg ÷ 4.5 mmHg = 0.0022.

4. The evaporation rate for typical VOC species is proportional to the VOC vapor pressure.

5. Hence, the emission factor for DMP will be 0.0022 × 18.1% = **0.040% of available DMP by weight**.

Note that DMP emissions will be practically negligible at nearly all reinforced plastics facilities in the USA. For example, a plant using one million pounds of resin (which is a relatively large amount) would only emit the following amount of DMP vapor:

1,000,000 lb/yr resin × 1.5% catalyst × 60% DMP × 0.04% = **3.6 lb/yr DMP emissions**

This amount of DMP will be very small, so record-keeping and reporting requirements for DMP emissions from catalyst usage do not seem to be warranted.

MEK

MEK is another VOC and listed HAP, which may be a trace contaminant byproduct of the precursor chemical reactions employed to produce MEKP. However, the amount of contamination is reportedly very small - normally from about 50 ppm to a maximum of 1% by weight of MEK may be present in the raw MEKP feedstock used to make commercially-available catalyst formulations. Presumably, all of this trace amount of MEK will be released during the lamination process, because the MEK will neither react nor combine with the polyester resin during curing. However, as in the case of DMP emissions discussed above, these MEK emissions will be insignificant at nearly all reinforced plastics facilities in the USA. For example, a plant using one million pounds of resin would emit no more than the following amount of MEK vapor at a maximum contamination level of 1% MEK in the MEKP feedstock and assuming a 40% MEKP concentration in the catalyst:

1,000,000 lb/yr resin × 1.5% catalyst × 1% MEK × 40% MEKP = **60 lb/yr MEK emissions**

The actual emission of MEK would probably be lower, because most catalysts formulations use MEKP with much less than 1% MEK contamination. The actual MEK contamination in a specific catalyst formulation can be obtained from the catalyst supplier. The amount of MEK emissions will be so small that record-keeping and reporting requirements for MEK emissions from catalyst usage do not seem to be warranted.

The above information regarding MEKP, DMP, and MEK emissions may be confirmed by contacting Dr. Frank Long, a leading authority on organic peroxides, who works for the Norac Company, one of the two major manufacturers of catalyst materials for the reinforced plastics industry. Dr. Long may be reached at (626) 334-2908, or at info@norac.com. The information provided by Dr. Long can be verified by contacting Mr. Brice Milleville, another authority on MEKP catalysts, who works for Akzo Nobel, the second major manufacturer of MEKP catalysts. Mr. Milleville may be reached at (914) 674-5099, or by email at bryce.milleville@akzo-nobel.com.

Step III: Determine the Vapor Pressure of MDI @ 313.15 ^{o}K from Chart

The vapor pressure of MDI @ 313.15 is 8.76 x 10^{-4} mm

Step IV: Determine the partial pressure of MDI in air as it leaves the Scrubber

Conservatively we can assume that the mole fraction of MDI leaving the scrubber is 0.001.

Partial pressure of MDI is equal to 8.76 x 10^{-4} mm x 0.001 or 8.76 x 10^{-7} mm

Therefore:

$L_S = V_{air} * (1/359) * (273.15/T_S) * (VP_{MDI}/760) * M_W$

$L_S = (4.20 \times 10^{+9}\ ft^3/year)\ (1/359)\ (273.15/313.15)\ (8.76 \times 10^{-7}\ mm/760)\ (250.26)$

L_S = 2.59 lbs/year

17.0 Spray Foam

Methylene*bis* (phenyl isocyanate) (MDI) and polymeric diphenylmethane diisocyanate (PMDI) mixture is used in conjunction with a polyol blend to provide insulation inside motor home roof caps. This mixture is injected into the cavity walls to form the insulation barrier between the inner and outer wall. Part A being polyol and Part B diisocyanate mixture. The two parts are mixing in a customized system that mixes within the dispenser head and material dispersed into a cavity or back of roof frame.

Process Description

A two component system, (Component A: Polyol mixture; Component B: MDI/PMDI mixture), is dispersed into the motor home roof cap forming a polyurethane foam insulation at a rate of 42 lbs./hr. The temperature of the ISO is 78 ^{o}F containing a 1/1 ratio of Polyol to MDI/PMDI. The targeted foam density is 2.0 lbs./ft^3.

Calculating Stack Emissions

To estimate emissions from open processes when the volume of the mold is not known or when a large number of different cavity or mold sizes are filled each year can be determined from the following:

1. The density of the cured foam
2. The total weight of the MDI-based component in the foam
3. The Temperature of the foam at the "tack free" or "string" time during the curing process.

The enclosed process losses can be estimated from the following expression:

$$\mathbf{L_{fd} = V_{air} * (1 / 359) * (273.15 / T_{proc}) * (VP_{MDI} / 760) * M_W * K_{MDI}}$$

Where:

L_{fd}	=	emissions lb./year.
V_{air}	=	annual volume of displaced air in ft^3/year.
T_{proc}	=	process temperature in °K. (maximum temperature of the MDI).

VP_{MDI} = vapor pressure of MDI in mm Hg. at process temperature.
M_w = 250.26 (this is the molecular weight of MDI).
K_{MDI} = adjustment factor to the vapor pressure that is a function of MDI concentration in the feedstock and the temperature.

Step I: Calculate Annual Volume of Displaced Air (V_{air})

V_{air} = (Amount of material processed/year)/Foam Density
V_{air} = (42 lbs./hr)(8760 hr./year)(1/2.0 lbs./ft^3
V_{air} = $1.84 \times 10^{+5}$ ft^3/yr.

Step II: Calculate Process Temperature in ^oK

The process temperature is 78°F or;

T_{proc} = 298.7°K

Step III: Determine Vapor Pressure of MDI @ 298.7 °K (VP_{MDI})

The vapor pressure @ 298.7°K is 1.071×10^{-5}mm

Step IV: Determine Adjustment factor (K_{MDI})

A Blend of 50/50 of MDI/PMDI at a ratio of 1/1 of Polyol to MDI/PMDI yields a composition of 25% MDI. Therefore,

Adjustment factor @ 298.7 °K and 25% MDI is 0.33

Therefore:

$$L_{fd} = V_{air} * (1 / 359) * (273.15 / T_{proc}) * (VP_{MDI} / 760) * M_w * K_{MDI}$$

$$L_{fd} = (1.81 \times 10^{+5}\ ft^3/yr.)(1/359)(273.15^oK / 298.7^oK)(1.071 \times 10^{-5} mm/760)(250.26)(0.33)$$

L_{fd} = 5.454×10^{-4} lbs. / year.

18.0 Spray Booth

A spray coating operation, carried out in the Specialty Products Section, spray coats automotive parts in a spray booth. The exhaust temperature is 90 °F and the blower air exhaust rate is 10,000 cfm. The percentage of MDI in the spray mix is 33%. The total annual spray time was 1000 hours.

The exh aust airflow rate and the temperature at which the spray coating is carried out will govern the emissions associated with a spray booth operation. If the concentration of the exit gas is not known , the worst-case scenario is to assume that the air is saturated with MDI/PMDI at the exit temperature.

Appendix A – Vapor Pressure/Temperature Chart

MDI Vapor Pressure/Temperature Chart[3]

Table I: MDI Vapor Pressure Chart is a table that lists the Vapor Pressure of 4,4'-MDI vapor pressure (VP) at temperature from 20 ^{o}C to 207 ^{o}C.

To determine the vapor pressure of 4,4'-MDI at a temperature not listed or if the temperature range is outside the range of values listed, you may use the following equation:

Log (MDI VP in mm mercury) = 11.15 - 4809.8 / Temperature in ^{o}K

Where:

Temp in ^{o}K = 273 + Temp in ^{o}C

Temp in ^{o}C = 5/9 x (temp in ^{o}F – 32)

Table I: MDI Vapor Pressure Chart

Temperature (° Farenheit)	Temperature (°Celsius)	Vapor Pressure (mm Hg)
68.0	20	5.424E-06
69.8	21	6.168E-06
71.6	22	7.008E-06
73.4	23	7.956E-06
75.2	24	9.024E-06
77.0	25	1.023E-05
78.8	26	1.158E-05
80.6	27	1.310E-05
82.4	28	1.481E-05
84.2	29	1.673E-05
86.0	30	1.888E-05
87.8	31	2.130E-05
89.6	32	2.400E-05
91.4	33	2.702E-05
93.2	34	3.040E-05
95.0	35	3.418E-05
96.8	36	3.840E-05
98.6	37	4.310E-05
100.4	38	4.835E-05
102.2	39	5.420E-05
104.0	40	6.071E-05
105.8	41	6.795E-05
107.6	42	7.600E-05
109.4	43	8.494E-05
111.2	44	9.487E-05

Temperature (° Farenheit)	Temperature (°Celsius)	Vapor Pressure (mm Hg)
152.6	67	1.008E-03
154.4	68	1.109E-03
156.2	69	1.220E-03
158.0	70	1.340E-03
159.8	71	1.472E-03
161.6	72	1.616E-03
163.4	73	1.774E-03
165.2	74	1.945E-03
167.0	75	2.132E-03
168.8	76	2.335E-03
170.6	77	2.557E-03
172.4	78	2.798E-03
174.2	79	3.061E-03
176.0	80	3.346E-03
177.8	81	3.656E-03
179.6	82	3.993E-03
181.4	83	4.358E-03
183.2	84	4.755E-03
185.0	85	5.186E-03
186.8	86	5.652E-03
188.6	87	6.158E-03
190.4	88	6.706E-03
192.2	89	7.299E-03
194.0	90	7.941E-03
195.8	91	8.635E-03

3 Chakrabarti, A., *Vapor Pressure of Diphenylmethane Diisocyanate (MDI) Formulations*, The Dow Chemical Company, Midland, Michigan.

Appendix B – Vapor Pressure of MDI/PMDI Mixtures

Table II: MDI/PMDI Adjustment Factors Chart

PMDI is considerably less volatile than MDI and as a consequence mixtures of MDI/PMDI have a lower vapor pressure than pure MDI. Engineering estimates that are based on the vapor pressure of pure MDI may significantly overestimate the reportable emissions of a facility, therefore, an adjustment factor will have to be used. The adjustment factors are a ratio of the ratio of the vapor pressure of MDI/PMDI mixtures and the vapor pressure of pure MDI. Your release estimates, calculated assuming pure MDI, should be corrected for the presence of PMDI by multiplying your estimates by the appropriate factor. The table in this appendix shows the adjustment factor as it relates to the percent MDI in the mixture at a specific temperature.

Table II: MDI/PMDI Adjustment Factors Chart

	Percentage MDI										
Temperature											
Fahrenheit	0	10	20	30	40	50	60	70	80	90	100
70	0.09	0.18	0.27	0.37	0.45	0.54	0.64	0.73	0.83	0.92	1.00
80	0.11	0.20	0.29	0.38	0.46	0.55	0.65	0.74	0.83	0.92	1.00
90	0.12	0.21	0.30	0.39	0.47	0.65	0.65	0.74	0.83	0.92	1.00
100	0.13	0.22	0.31	0,40	0.48	0.57	0.66	0.74	0.84	0.92	1.00
110	0.14	0.23	0.33	0.41	0.49	0.58	0.66	0.75	0.84	0.92	1.00
120	0.16	0.24	0.35	0.41	0.50	0.58	0.67	0.75	0.84	0.93	1.00
130	0.17	0.25	0.35	0.42	0.50	0.59	0.67	0.71	0.84	0.93	1.00
140	0.18	0.26	0.36	0.43	0.51	0.60	0.68	0.76	0.85	0.93	1.00
150	0.20	0.27	0.37	0.44	0.51	0.61	0.68	0.76	0.85	0.93	1.00
160	0.21	0.28	0.37	0.45	0.52	0.61	0.69	0.76	0.85	0.93	1.00
170	0.22	0.29	0.38	0.46	0.53	0.62	0.69	0.77	0.85	0.93	1.00
180	0.24	0.31	0.39	0.47	0.54	0.62	0.70	0.77	0.85	0.93	1.00
190	0.25	0.33	0.40	0.47	0.55	0.63	0.70	0.77	0.86	0.93	1.00
200	0.27	0.34	0.42	0.48	0.55	0.63	0.71	0.78	0.86	0.93	1.00
210	0.29	0.36	0.44	0.51	0.57	0.65	0.72	0.79	0.86	0.93	1.00
230	0.31	0.40	0.48	0.54	0.60	0.69	0.72	0.79	0.86	0.94	1.00
248	0.33	0.44	0.52	0.58	0.65	0.70	0.74	0.80	0.86	0.94	1.00
266	0.37	0.46	0.58	0.63	0.69	0.73	0.75	0.80	0.86	0.94	1.00
284	0.41	0.49	0.66	0.68	0.72	0.76	0.79	0.82	0.88	0.94	1.00
302	0.43	0.50	0.70	0.74	0.77	0.78	0.80	0.82	0.88	0.95	1.00
320	0.48	0.52	0.74	0.77	0.79	0.80	0.82	0.84	0.9	0.95	1.00
360	0.55	0.59	0.78	0.80	0.82	0.84	0.86	0.88	0.91	0.95	1.00
400	0.63	0.68	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.96	1.00
450	0.75	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.93	0.96	1.00
480	0.82	0.83	0.85	0.87	0.89	0.91	0.93	0.95	0.96	0.97	1.00

DOCUMENT ID: FSI-06
Material Safety Data Sheets

AOC®
World Leader in Resin Technology

Material Safety Data Sheet

MSDS No. 7192V2

WHMIS (Canada)	NFPA (USA)	HMIS (USA)	Protective Clothing
 B-2 D-2A D-2B		Health Hazard 2 Fire Hazard 3 Reactivity 2 Personal Protection X	

Section I. Chemical Product and Company Identification

Trade name	C668-FFG-20	Product Type	Polyester Resin Solution
CAS#	Mixture.	Synonym	None..
Chemical Name	Not applicable.	Chemical Formula	Not applicable.
Chemical Family	Aromatic.		
Material Uses	Used in the manufacture of thermoset plastic parts.		
TSCA	All ingredients are listed or compliant with TSCA.		
DSL	All ingredients are listed or compliant with the NSNR.		

Manufacturer

AOC, LLC
950 Highway 57 East
Collierville, TN U.S.A. 38017
Phone Number: (901) 854-2800
8am-5pm (CST) Mon-Fri

In case of Emergency

CHEMTREC (US): 24 hours/7 days (800) 424-9300
CANUTEC (Canada): 24 hours/7 days (613) 996-6666

Section II. Information on Hazardous Ingredients

Name	CAS #	% by Weight
Cobalt 2-ethylhexanoate	136-52-7	0.1-1
Propylene glycol	57-55-6	1-5
Styrene	100-42-5	35-37

Section III. Hazards Identification.

Potential Acute Health Effects

Inhalation of spray mist or liquid vapors may cause upper respiratory irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of coordination, impaired judgement and general weakness. Severe eye irritant which may result in redness, burning, tearing and blurred vision. Skin irritant which may result in burning sensation. Ingestion may result in mouth, throat and gastrointestinal irritation, nausea, vomiting and diarrhea.

Potential Chronic Health Effects

Carcinogenic Effects:
Styrene: Classified A4 (Not classifiable for human or animal.) by ACGIH. Classified 2B (Possible for human.) by IARC. An increased incidence of lung tumors was observed in mice from a recent inhalation study. The relevance of this finding is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic. Lung effects have been observed in mouse studies following repeated exposure.
Cobalt 2-ethylhexanoate: Classified 2B (Possible for human.) by IARC. **Mutagenic effects:** Not Available
Teratogenic effects: Not Available
Skin: Prolonged exposure may cause dermatitis.

Section IV. First Aid Measures

Eye Contact	Flush with a continuous flow of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention.
Skin Contact	Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, seek medical attention.
Hazardous Skin Contact	No additional information.
Inhalation	Evacuate the victim to a safe area as soon as possible. Allow the victim to rest in a well ventilated area.
Hazardous Inhalation	Evacuate the victim to a safe area as soon as possible. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Ingestion	Do not induce vomiting. Seek immediate medical attention.
Hazardous Ingestion	No additional information.

Section V. Fire and Explosion Data

The Product is:	Flammable liquid, Class IC.
Auto-Ignition Temperature	914 °F (490 °C) Styrene
Flash Points	87.6°F (31°C) Styrene
Flammable Limits	LOWER: 1.1% UPPER: 6.1% Styrene
Products of Combustion	May produce carbon monoxide, carbon dioxide, and irritating or toxic vapors, gases or particulate.
Fire Hazards	Flammable in the presence of open flames, sparks, or heat.
Explosion Hazards	Can react with oxidizing materials. Explosive in the form of vapor when exposed to heat or flame. Material may polymerize when container is exposed to heat (fire) and polymerization will increase pressure in a closed container which may cause the container to rupture violently.
Fire Fighting Media and Instructions	SMALL FIRE: Use carbon dioxide, foam, dry chemical or water fog to extinguish. LARGE FIRE: Evacuate surrounding areas. Use carbon dioxide, foam, dry chemical or water fog to extinguish. Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Prevent run off to sewers or other water ways.

Section VI. Accidental Release Measures

Small Spill	Absorb with an inert material and place in an appropriate waste disposal container.
Large Spill	Stop leak if without risk. Eliminate all sources of ignition. Contain with an inert material, recover as much as possible and place the remainder in an appropriate waste disposal container. Warn unauthorized personnel to move away. Prevent entry into sewers or confined areas.

Section VII. Handling and Storage

Precautions	WARNING! Use only in well-ventilated areas. Avoid inhalation and contact with eyes, skin, and clothing. Wear appropriate personal protective equipment for your task. Ground and bond all containers when transferring the material. Empty containers may retain product and product vapor. Do not expose to heat, flame, sparks or other ignition sources such as cutting, welding, drilling, grinding or static electricity. Do not pressurize. Provide adequate safety showers and eyewashes in the area of use.
Storage	Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material.

Section VIII. Exposure Controls/Personal Protection

Exposure Limits	Cobalt 2-ethylhexanoate	**OSHA PEL (United States).** TWA: 500 ppm TWA: 0.05 mg/m³ **ACGIH TLV (United States).** TWA: 0.05 mg/m³
	Propylene glycol	Not available.
	Styrene	**OSHA PEL (United States).** TWA: 100 ppm TWA: 426 mg/m³ **ACGIH TLV (United States).** TWA: 20 ppm TWA: 85 mg/m³
Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Provide adequate safety showers and eyewashes in the area of use.	
Personal Protection	Personal protective equipment may vary depending on the job being performed. **Eye/Face:** Wear eye protection such as safety glasses with side shields, splash goggles or face shield with safety glasses. **Skin:** Avoid skin contact. Impervious gloves should be worn. Other items may include long sleeves, lab coats, or impervious jackets. **Respiratory:** Determine if airborne concentrations are below the recommended exposure limits in accordance your company's PPE program and regulatory requirements. If they are not, select a NIOSH-approved respirator that provides adequate protection from the concentration levels encountered. Air-purifying respirators are generally adequate for organic vapors. Use positive pressure, supplied-air respirators if there is potential for an uncontrolled release, if exposure levels are unknown, or under circumstances where air-purifying respirators may not provide adequate protection. Reference OSHA 29 CFR 1910.134	
Personal Protection in Case of a Large Spill	Chemical resistant gloves, full protective suit, and boots. Respiratory protection in accordance with OSHA regulation 29 CFR 1910.134. A self-contained breathing apparatus should be used to avoid inhalation of the product vapors.	

Section IX. Physical and Chemical Properties

Physical State	Liquid.	Odor	Aromatic.
Color	amber/hazy	pH (1% soln/water)	Not applicable.
Molecular Weight (g/mol)	1000 to 15000	Boiling Point	293°F (145°C) Styrene
Melting Point	Not applicable.	Specific Gravity	1.1 (Water = 1)
Vapor Pressure	4.5 mmHg @ 68°F (20°C) Styrene	Vapor Density	3.59 Styrene (Air = 1)
Odor Threshold	0.14 ppm Styrene	Water/Oil Dist. Coeff.	Not available.
Evaporation rate	Not available.	Dispersion Properties	Not dispersed in water.
Solubility	Soluble in acetone, styrene, toluene, methanol, carbon tetrachloride, and methylene chloride.		

Section X. Stability and Reactivity Data

Stability	The product is stable as supplied.
Instability Temperature	>170°F (77°C)
Conditions of Instability	Heat.
Incompatibility with various substances	Polymerizes in the presence of organic peroxides, oxidizing materials, or heat.
Corrosivity	No specific information is available in our database.

Section XI. Toxicological Information

Routes of Entry	Inhalation. Ingestion. Skin Contact. Eye contact.	
Toxicity to Animals	Cobalt 2-ethylhexanoate	Not available.
	Propylene glycol	ORAL (LD50): Acute: 20000 mg/kg [Rat]. 22000 mg/kg [Mouse]. DERMAL (LD50): Acute: 20800 mg/kg [Rabbit].
	Styrene	ORAL (LD50): Acute: 2650 mg/kg [Rat]. VAPOR (LC50): Acute: 5634.2 ppm 4 hour(s) [Rat].
Special Remarks on Toxicity to Animals	Lung effects have been observed in mouse studies following repeated exposure.	
Special Remarks on Chronic Effects on Humans	No additional remark.	
Special Remarks on Other Toxic Effects on Humans	No additional remark.	

Section XII. Ecological Information

Ecotoxicity	Toxic to aquatic organisms. Should not be released to sewage system or other bodies of water at concentrations above limits established in regulations or permits.

Section XIII. Disposal Considerations

Waste Disposal	Recycle, if possible. Consult your local or regional authorities. Ignitable characteristic.

Section XIV. Transport Information

DOT - Proper Shipping Name	Resin Solution, Class 3, UN1866, PGIII.	Labels	
TDG - Proper Shipping Name	Resin Solution, Class 3, UN1866, PGIII.	Labels	

C668-FFG-20

IATA/IMDG Regulations	IATA Classification: Resin solution, 3, UN1866, PG III, Pkg Inst passenger 309; cargo 310 IMDG Classification: Resin solution, 3, UN1866, PG III, FP=31°C, EmS No.3-05

Section XV. Other Regulatory Information

Other Regulations

This section does not reference all applicable regulatory compliance lists.

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

For the following states; Hazardous and Extraordinarily Hazardous Substances on the Material Substance List (MSL), which exceed the state's criterion level, must be identified when present in products.

Florida RTK: Styrene.

Massachusetts: Styrene.

Minnesota: Styrene, Propylene glycol.

New Jersey: Styrene.

Pennsylvania: Styrene, Propylene glycol.

Proposition 65 Warning: This product contains a chemical(s) known to the State of California to cause cancer, birth defects and/or reproductive harm.

SARA 302 component(s): None..

SARA 313 component(s): Styrene, Cobalt 2-ethylhexanoate.

CERCLA RQ(s):

Styrene-1000 lbs. (453.6 kg)

Hazardous Air Pollutant Target Value(s) (% by Weight):

Styrene- 35.4
Cobalt compounds- 0.2

Section XVI. Other Information

References

-Transportation of Dangerous Goods Act - "Regulations respecting the handling, offering for transport and transporting of dangerous goods." Extract from the Canada Gazette Part II
-Canada Gazette Part II, Hazardous Products Act "Ingredient Disclosure List".
-Manufacturer's Material Safety Data Sheet.
-29 CFR 1910.1000, Z - Tables
-ACGIH 2000 TLVs for Chemical Substances and Physical Agents
-Registry of Toxic Effects of Chemical Substances (RTECS)
-California Code of Regulation Proposition 65

Prepared by: AOC, LLC - Corporate Regulatory Affairs. 115

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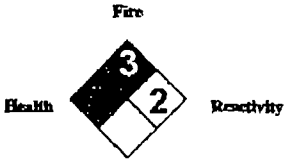
Material Safety Data Sheet

MSDS No. 10048V1

WHMIS (Canada)	NFPA (USA)	HMIS (USA)	Protective Clothing
 B-2 D-2A D-2B		Health Hazard 2 Fire Hazard 3 Reactivity 2 Personal Protection X	

Section I. Chemical Product and Company Identification

Trade name	C668-FFH-20	Product Type	Polyester Resin Solution
CAS #	Mixture.	Synonym	None.
Chemical Name	Not applicable.	Chemical Formula	Not applicable.
Chemical Family	Aromatic.		
Material Uses	Used in the manufacture of thermoset plastic parts.		
TSCA	All ingredients are listed or compliant with TSCA.		
DSL	All ingredients are listed or compliant with the NSNR.		

Manufacturer

AOC, LLC
950 Highway 57 East
Collierville, TN U.S.A. 38017
Phone Number: (901) 854-2800
8am-5pm (CST) Mon-Fri

In Case of Emergency

CHEMTREC (US): 24 hours/7 days (800) 424-9300
CANUTEC (Canada): 24 hours/7 days (613) 996-6666

Section II. Information on Hazardous Ingredients

Name	CAS #	% by Weight
1) propylene glycol	57-55-6	1-5
2) styrene	100-42-5	35.4

Section III. Hazards Identification.

Potential Acute Health Effects

Inhalation of spray mist or liquid vapors may cause upper respiratory irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of coordination, impaired judgement and general weakness. Severe eye irritant which may result in redness, burning, tearing and blurred vision. Skin irritant which may result in burning sensation. Ingestion may result in mouth, throat and gastrointestinal irritation, nausea, vomiting and diarrhea.

Potential Chronic Health Effects

Carcinogenic effects:
styrene: Classified A4 (not classifiable for human or animal) by ACGIH. Classified 2B (possible for human) by IARC. An increased incidence of lung tumors was observed in mice from a recent inhalation study. The relevance of this finding is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic. Lung effects have been observed in mouse studies following repeated exposure.

Mutagenic effects:
Not Available.

Teratogenic effects:

Not Available.
Skin effects:
Prolonged exposure may cause dermatitis.

Section IV. First Aid Measures

Eye Contact	Flush with a continuous flow of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention.
Skin Contact	Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, seek medical attention.
Hazardous Skin Contact	No additional information.
Inhalation	Evacuate the victim to a safe area as soon as possible. Allow the victim to rest in a well ventilated area.
Hazardous Inhalation	Evacuate the victim to a safe area as soon as possible. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Ingestion	Do not induce vomiting. Seek immediate medical attention.
Hazardous Ingestion	No additional information.

Section V. Fire and Explosion Data

The Product is:	Flammable liquid, Class IC.
Auto-Ignition Temperature	914 °F (490 °C) Styrene
Flash Points	87.6°F (31°C) Styrene
Flammable Limits	LOWER: 0.9% UPPER: 6.1% (Styrene)
Products of Combustion	May produce carbon monoxide, carbon dioxide, and irritating or toxic vapors, gases or particulate.
Fire Hazards	Flammable in the presence of open flames, sparks, or heat.
Explosion Hazards	Can react with oxidizing materials. Explosive in the form of vapor when exposed to heat or flame. Material may polymerize when container is exposed to heat (fire) and polymerization will increase pressure in a closed container which may cause the container to rupture violently.
Fire Fighting Media and Instructions	SMALL FIRE: Use carbon dioxide, foam, dry chemical or water fog to extinguish. LARGE FIRE: Evacuate surrounding areas. Use carbon dioxide, foam, dry chemical or water fog to extinguish. Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Prevent run off to sewers or other water ways.

Section VI. Accidental Release Measures

Small Spill	Absorb with an inert material and place in an appropriate waste disposal container.
Large Spill	Stop leak if without risk. Eliminate all sources of ignition. Contain with an inert material, recover as much as possible and place the remainder in an appropriate waste disposal container. Warn unauthorized personnel to move away. Prevent entry into sewers or confined areas.

Section VII. Handling and Storage

Precautions	WARNING! Use only in well-ventilated areas. Avoid inhalation and contact with eyes, skin, and clothing. Wear appropriate personal protective equipment for your task. Ground and bond all containers when transferring the material. Empty containers may retain product and product vapor. Do not expose to heat, flame, sparks or other ignition sources such as cutting, welding, drilling, grinding or static electricity. Do not pressurize. Provide adequate safety showers and eyewashes in the area of use.
Storage	Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material.

Section VIII. Exposure Controls/Personal Protection

Exposure Limits	1) propylene glycol 2) styrene	Not available. **OSHA PEL (United States).** TWA: 100 ppm TWA: 426 mg/m^3 **ACGIH TLV (United States).** TWA: 20 ppm TWA: 85 mg/m^3
Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Provide adequate safety showers and eyewashes in the area of use.	
Personal Protection	Personal protective equipment may vary depending on the job being performed. **Eye/Face:** Wear eye protection such as safety glasses with side shields, splash goggles or face shield with safety glasses. **Skin:** Avoid skin contact. Impervious gloves should be worn. Other items may include long sleeves, lab coats, or impervious jackets. **Respiratory:** Determine if airborne concentrations are below the recommended exposure limits in accordance your company's PPE program and regulatory requirements. If they are not, select a NIOSH-approved respirator that provides adequate protection from the concentration levels encountered. Air-purifying respirators are generally adequate for organic vapors. Use positive pressure, supplied-air respirators if there is potential for an uncontrolled release, if exposure levels are unknown, or under circumstances where air-purifying respirators may not provide adequate protection. Reference OSHA 29 CFR 1910.134	
Personal Protection in Case of a Large Spill	Chemical resistant gloves, full protective suit, and boots. Respiratory protection in accordance with OSHA regulation 29 CFR 1910.134. A self-contained breathing apparatus should be used to avoid inhalation of the product vapors.	

Section IX. Physical and Chemical Properties

Physical State	Liquid.	Odor	Aromatic.
Color	amber/hazy	pH (1% soln/water)	Not applicable.
Molecular Weight (g/mol)	1000 to 15000	Boiling Point	293°F (145°C) Styrene
Melting Point	Not available.	Specific Gravity	1.1 (Water = 1)
Vapor Pressure	4.5 mmHg @ 68°F (20°C) Styrene	Vapor Density	3.59 Styrene (Air = 1)
Odor Threshold	0.14 ppm Styrene	Water/oil dist. coeff.	Not available.
Evaporation Rate	Not available.	Dispersion Properties	Not dispersed in water.
Solubility in water	Slight		

Section X. Stability and Reactivity Data

Stability	The product is stable as supplied.
Instability Temperature	>170°F (77°C)
Conditions of Instability	Heat.
Incompatibility with Various Substances	Polymerizes in the presence of organic peroxides, oxidizing materials, or heat.
Corrosivity	No specific information is available in our database regarding the corrosivity of this product in presence of various materials.

Section XI. Toxicological Information

Routes of Entry	Inhalation. Ingestion. Skin Contact. Eye contact.	
Toxicity to Animals	1) propylene glycol	ORAL (LD50): Acute: 20000 mg/kg [Rat]. 22000 mg/kg [Mouse]. DERMAL (LD50): Acute: 20800 mg/kg [Rabbit].
	2) styrene	ORAL (LD50): Acute: 2650 mg/kg [Rat]. VAPOR (LC50): Acute: 5634.2 ppm 4 hour(s) [Rat].
Special Remarks on Toxicity to Animals	Lung effects have been observed in mouse studies following repeated exposure.	
Special Remarks on Chronic Effects on Humans	No additional remark.	
Special Remarks on Other Toxic Effects on Humans	No additional remark.	

Section XII. Ecological Information

Ecotoxicity	Toxic to aquatic organisms. Should not be released to sewage system or other bodies of water at concentrations above limits established in regulations or permits.

Section XIII. Disposal Considerations

Waste Disposal	Recycle, if possible. Consult your local or regional authorities. Ignitable characteristic.

Section XIV. Transport Information

DOT - Proper Shipping Name	Resin Solution, Class 3, UN1866, PGIII.	Labels	
TDG - Proper Shipping Name	Resin Solution, Class 3, UN1866, PGIII.	Labels	
IATA/IMDG Regulations	IATA Classification: Resin solution, 3, UN1866, PG III, Pkg Inst passenger 309; cargo 310 IMDG Classification: Resin solution, 3, UN1866, PG III, FP=31°C, EmS No.3-05		

Section XV. Other Regulatory Information

Other Regulations	**This section does not reference all applicable regulatory compliance lists.** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). Proposition 65 Warning: This product contains a chemical(s) known to the State of California to cause cancer, birth defects and/or reproductive harm. SARA 302 component(s): None. SARA 313 component(s): styrene. CERCLA RQ(s): styrene-1000 lbs. (453.6 kg)

Section XVI. Other Information

References	-Transportation of Dangerous Goods Act - "Regulations respecting the handling, offering for transport and transporting of dangerous goods." Extract from the Canada Gazette Part II -Canada Gazette Part II, Hazardous Products Act "Ingredient Disclosure List". -Manufacturer's Material Safety Data Sheet -29 CFR 1910.1000, Z - Tables -ACGIH 2000 TLVs for Chemical Substances and Physical Agents -Registry of Toxic Effects of Chemical Substances (RTECS) -California Code of Regulation Proposition 65
Prepared by	AOC, LLC - Corporate Regulatory Affairs. 115

Akzo Nobel Polymer Chemicals LLC
MATERIAL SAFETY DATA SHEET

DATE PRINTED: 02/25/1999 PAGE 1
MSDS NO. 11-076290

Cadox M-50a Red

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME
Cadox M-50a Red

CHEMICAL NAME
Methyl ethyl ketone peroxide in solution

SYNONYM
MEKP

CHEMICAL FORMULA
Mixture

CAS #
MIXTURE

CHEMICAL FAMILY
Organic peroxides/ketone peroxides

MANUFACTURERS NAME
Akzo Nobel Polymer Chemicals LLC

PRODUCT/TECHNICAL INFORMATION
1-800-828-7929

ADDRESS
300 South Riverside Plaza
Chicago, IL 60606

MEDICAL/HANDLING EMERGENCY
1-914-693-6946

COUNTRY
USA

TRANSPORTATION EMERGENCY
CHEMTREC 1-800-424-9300

PRODUCT USE
Polymerization initiator

REVISION DATE
12/08/1999

ISSUE DATE
2/12/1997

REVISION NO.
008

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Bill Russell

SUBSTANCE DESCRIPTION	PERCENT	CAS#
Methyl ethyl ketone peroxide (MEKP)	30.000- 35.000	1338-23-4
Hydrogen peroxide	0.001- 3.000	7722-84-1
2,2,4-Trimethylpentanediol-1,3-diisobutyrate	60.000- 70.000	6846-50-0
Water	0.001- 2.000	7732-18-5
Methyl ethyl ketone	** 0.001- 2.000	78-93-3

** SUBSTANCE IS A COMPOUND AND/OR MIXTURE

SECTION 3. HAZARDS IDENTIFICATION

Appearance & Odor
Red liquid with a faint ketone odor.

STATEMENT OF HAZARDS
DANGER!
ORGANIC PEROXIDE.
HEAT OR CONTAMINATION MAY CAUSE HAZARDOUS DECOMPOSITION.
CAUSES SEVERE EYE AND SKIN BURNS.
CAUSES RESPIRATORY TRACT IRRITATION.
COMBUSTIBLE LIQUID AND VAPORS.

Fire & Explosion Hazards
This product is a combustible liquid. Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.

Primary Route of Exposure
Skin and eye contact and inhalation of vapor are the principal routes of exposure to this product.

SECTION 3. HAZARDS IDENTIFICATION (CONTINUED)

Inhalation Acute Exposure
Inhalation of vapor, mist or aerosol is expected to be severely irritating to the respiratory tract.

Skin Contact - ACUTE
Skin contact can cause chemical burns with severe blistering.

Eye contact - ACUTE
Direct eye contact with this chemical can cause an immediate severe reaction and may result in loss of functional vision in the involved eye. Use of fully protective goggles is essential when using this product.

Ingestion - ACUTE
If swallowed, this material can cause severe irritation or burns of the mouth, throat, esophagus and stomach.

CARCINOGENICITY

IARC	....NO	OSHA	....NO
NTP	....NO	ACGIH	....NO

SECTION 4. FIRST AID MEASURES

Inhalation First Aid
Remove to fresh air. If breathing becomes difficult, oxygen may be given, preferably with a physician's advice. If not breathing, give artificial respiration. Get medical attention.

Skin Contact - First Aid
Immediately remove contaminated clothing and shoes. Wash skin with soap and plenty of water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Get medical attention. Wash contaminated clothing before reuse. Destroy contaminated shoes.

Eye Contact - First Aid
Immediately flush eyes with large quantities of running water for a minimum of 15 minutes. If the victim is wearing contact lenses, remove them. Take care not to contaminate the victim's healthy skin and eyes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids. DO NOT let victim rub eye(s). Do not attempt to neutralize with chemical agents. Get medical attention immediately. Oils or ointments should not be used at this time. Continue flushing for an additional 15 minutes if a physician is not immediately available.

Ingestion - First Aid
Do NOT induce vomiting. Call a physician or a poison control center immediately. Give victim plenty of water to drink. Never give anything by mouth to an unconscious or convulsing person. Get medical attention immediately.

Medical conditions aggravated
Persons with pre-existing skin and/or respiratory disease may be at increased risk if exposed to this material.

Note to Physician
Methyl ethyl ketone peroxide is severly corrosive to the eyes and may cause delayed keratitis. The normally prescribed 15 minute eye irrigation after exposure may be difficult because of the severe pain. The prior installation of a topical ocular anesthetic is essential to facilitate a comprehensive ocular lavage.

Swallowing of this corrosive material may result in severe

SECTION 4. FIRST AID MEASURES (CONTINUED)

ulceration, inflammation, and possible perforation of the upper alimentary tract, with hemorrahage and fluid loss. Aspiration of this product during induced emesis can result in severe lung injury. If evacuation of the stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Control Center for additional treatment information.

SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT
179.60 F 82.00 C

FLASH METHOD
Setaflash Closed Cup

AUTO IGNITION TEMPERATURE
N/D F N/D C

UPPER EXPLOSION LIMIT
N/D

LOWER EXPLOSION LIMIT
N/D

Extinquishing Media
Use water fog, dry chemical, carbon dioxide, or foam extinguishing agents.
Extinguish large fires with large amounts of water spray, fog or foam from a safe/protected position.

Fire Fighting Procedures
As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate non-essential personnel from the fire area. Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. If possible, move containers from the fire area. If not leaking, keep fire exposed containers cool with a water fog or spray to prevent rupture due to excessive heat. High pressure water may spread product from broken containers increasing contamination or fire hazard.

Contaminated buildings, areas and equipment must not be used until they are properly decontaminated. Dike fire water for later disposal. Do not allow contaminated water to enter waterways.

Fire & Explosion Hazards
This product is a combustible liquid. Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.

Other Fire + Explosion Hazards
This product can produce flammable vapors which may travel to a source of ignition and flash back.

Hazardous Products/Combustion
Thermal decomposition products may include carbon dioxide, water, acetic acid, formic acid, propionic acid, methyl ethyl ketone and flammable gases and vapors.

NFPA HEALTH RATING
3

NFPA FLAMMABILITY RATING
2

NFPA REACTIVITY RATING
2

NFPA OTHER

SECTION 6. ACCIDENTAL RELEASE MEASURES

Cleanup
Remove all sources of ignition from the spill area. Stop source of spill. If tools are needed, they should be non-sparking. Dike area to prevent spill from spreading.

Evacuate all non-essential personnel upwind. Any person entering an area of a significant spill or of an unknown concentration of a gas or a vapor should use a NIOSH-approved, positive-pressure/pressure-demand, self-contained breathing apparatus. Protective equipment to prevent skin and eye contact should be worn.

Soak up spilled material with a suitable absorbent such as clay,sand or earth. Sweep up absorbed material and place in a chemical waste container for disposal.

SECTION 7. HANDLING AND STORAGE

Handling
Wear protective clothing when handling this product to avoid eye and skin contact. Wash thoroughly after handling.

Electrically grounded tanks and containers should always be used as should non-sparking, electrically grounded hand tools and appliances. Ground or bond to ground all vessels when transferring to prevent the accumulation of static electricity. See National Electric Code.
Emptied container may retain product residues. Follow all warnings and precautions even after container is emptied.

Storage
To insure product quality, storage temperatures should not exceed MAXIMUM STORAGE TEMPERATURE shown below.
To prevent possible self-accelerating decomposition, temperatures in the storage facility must not exceed 131 F (55 C).

Keep containers tightly closed. Store away from amines, acids alkalis and heavy metal compounds (e.g. driers, metal soaps and accelerators).

MAXIMUM STORAGE TEMPERATURE
86.00 F 30.00 C
(to maintain product quality)

General Comments
Containers should not be opened until ready for use. Use clean non-sparking equipment and tools when handling.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection
Use a NIOSH-approved organic vapor respirator with dust, mist and fume filters to reduce potential for inhalation exposure if use conditions generate vapor, mist or aerosol and adequate ventilation (e.g., outdoor or well-ventilated area) is not available. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure/pressure-demand, air-supplied respirator.

When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the workshift) to assure breakthrough exposure does not occur.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

Skin Protection
Skin contact with liquid or its aerosol must be prevented through the use of permeation resistant clothing, gloves and footwear. Unprotected skin exposed to vapor, aerosol or mist must be thoroughly washed before eating, drinking, smoking and at the end of the workshift.

Eye Protection
Because eye contact with this product may cause burns and possibly permanent damage, chemical goggles and/or a full face shield must be worn whenever handling this product.

Ventilation protection
Local exhaust ventilation, enclosed system design, continuous monitoring devices, process isolation and remote control are traditional exposure control techniques which may be used to effectively minimize employee exposure.

Other Protection
Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

APPLICABLE EXPOSURE LIMITS
Available exposure limits applicable to this product are shown below.

EXPOSURE LIMITS/REGULATORY INFORMATION
(IN MG/M3)

SUBSTANCE DESCRIPTION	REG. AGCY	PEL	TLV	TWA	STEL	CEIL
Methyl ethyl ketone peroxide (MEKP)						
	OSHA	N/D	N/D	N/D	N/D	N/D
	ACGIH	N/D	N/D	N/D	N/D	1.5000
	NIOSH	N/D	N/D	N/D	N/D	1.5000
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
Hydrogen peroxide						
	OSHA	1.4000	N/D	N/D	N/D	N/D
	ACGIH	N/D	1.4000	N/D	N/D	N/D
	NIOSH	N/D	N/D	1.4000	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
2,2,4-Trimethylpentanediol-1,3-diisobutyrate						
	OSHA	N/D	N/D	N/D	N/D	N/D
	ACGIH	N/D	N/D	N/D	N/D	N/D
	NIOSH	N/D	N/D	N/D	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
Water						
	OSHA	N/D	N/D	N/D	N/D	N/D
	ACGIH	N/D	N/D	N/D	N/D	N/D
	NIOSH	N/D	N/D	N/D	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

Methyl ethyl ketone

OSHA	590.0000	N/D	N/D	885.0000	N/D
ACGIH	N/D	590.0000	N/D	885.0000	N/D
NIOSH	N/D	N/D	590.0000	885.0000	N/D
SUPPLIER	N/D	N/D	N/D	N/D	N/D

LEGEND:

EXPOSURE LIMIT DESCRIPTIONS

CEIL	Ceiling Exposure Limit
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

N/D = Not Determined

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

VAPOR PRESSURE (mm Hg)
N/D

VAPOR DENSITY (Air = 1.0)
N/D

EVAPORATION RATE
N/D

VOLATILE %
N/D

BOILING POINT
N/D F N/D C

ODOR THRESHOLD (ppm)
N/D

SPECIFIC GRAVITY
1.0 @ 20 deg C (68 deg F)

BULK DENSITY
N/D

SOLUBILITY IN WATER
N/D

SOLUBILITY IN OTHER SOLVENTS

COEFFICIENT OF OIL/WATER
N/D

POUR POINT
N/D F N/D C

MELTING POINT
N/D F N/D C

pH FACTOR
N/D

CLOUD POINT
N/D F N/D C

FLASH POINT
179.60 F 82.00 C

FLASH METHOD
Setaflash Closed Cup

UPPER EXPLOSION LIMIT
N/D

LOWER EXPLOSION LIMIT
N/D

AUTO IGNITION TEMPERATURE
N/D F N/D C

Other
SADT = 140 F (60 C) (See Sect. 10).

SECTION 10. STABILITY AND REACTIVITY

Stability
This product is stable at temperatures up to 131 F (55 C).

Incompatibilities
Avoid contact with strong acids, strong alkalis, strong oxidizers, accelerators and reducing agents.

SECTION 10. STABILITY AND REACTIVITY (CONTINUED)

Polymerization
Hazardous polymerization is not expected to occur under normal temperatures and pressures.

Decomposition
Decomposition products include carbon dioxide, carbon monoxide, ethane and methane.

Conditions to Avoid
Hazardous and uncontrollable decomposition may occur if this product is exposed to temperatures above 131 F (55 C). This temperature is based on the Self-Accelerating Decomposition Temperature (SADT). The SADT is an experimentally derived temperature at which a typical package of the product will undergo self-accelerating decomposition.

For this product, the SADT is 140 F (60 C).

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological - Inhalation
Inhalation toxicity data is not available for this product. However, the acute LC50 for a similar product is 17.0 mg/L in rats (4 hr exposure). Exposure to methyl ethyl ketone at high concentrations has resulted in central nervous system depression.

Inhalation Chronic Exposure
Prolonged and/or repeated inhalation is expected to be severely irritating to the respiratory system.

Toxicological - Dermal
Dermal toxicity data is not available for this product. However, the dermal LD50 for a similar product is 4000 mg/kg in rabbits. A similar product was corrosive to albino rabbits after a 4 hour occlusive contact.

Skin Contact - CHRONIC
Chronic dermal exposure effects for this product are not known.

In a 13-week study conducted by the NTP, a similar product was administered topically for 5 days per week to rats at doses of 1.07 to 107 mg/rat and to mice at doses of 0.357 to 35.7 mg/mouse. Necrosis, inflammation, and epidermal hyperplasia were observed in both species. Since toxicity was seen at all dose levels, a no-observed adverse-effect level could not be determined in this study. The results of this study suggest that a similar product does not become systemically available and the primary toxicity associated with contact to this chemical is limited to the application site.

Toxicological - Eye
This product can be expected to be corrosive to eyes based upon tests with a similar product.

Toxicological - Ingestion
Ingestion toxicity data is not available for this product. However, the acute oral LD50 for a similar product is 1017 mg/kg in rats (moderately toxic). The acute oral LD50 for a component of this product is greater than 3200 mg/kg in rats (slightly to practically non-toxic).

SECTION 11. TOXICOLOGICAL INFORMATION (CONTINUED)

Ingestion - CHRONIC
Chronic ingestion effects of this product are not known.
A component of this product was administered in the diet of rats (103 days) and dogs (90 days). The NOAEL for both species was a 1% concentration (highest dose tested).

CARCINOGENICITY/MUTAGENICITY
This product is not classified as a carcinogen by IARC, NTP, OSHA or ACGIH.
There is no mutagenicity data for this product, however, information is available for a similar product. Four in vitro mutagenicity assays were conducted by the NTP in the presence and absence of metabolic activation. The similar product was not mutagenic in the Ames test. It was mutagenic in mouse lymphoma cells without metabolic activation and induced sister chromatid exchanges and chromosomal aberrations in Chinese hamster ovary cells in the presence and absence of metabolic activation. In the 13-week dermal study in mice, no increase in micronucleated erythrocytes was seen in peripheral blood samples obtained at the end of the study.

REPRODUCTIVE EFFECTS
Development inhalation toxicity studies with methy ethyl ketone in rats and mice resulted in fetal toxicity at maternally toxic doses.

NEUROTOXICITY
The neurotoxic effects of this product are not known.

Other Toxicological Effects
No other toxic effects for this product are known.

Target Organs
Exposure to this product may affect the skin, eyes and respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION
The ecological toxicity of this product is not known.

DISTRIBUTION
Other ecological information on this product is not known.

CHEMICAL FATE
This product is expected to be readily biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal
This unused product is listed by the EPA hazardous waste number U160 (MEKP) and meets the EPA hazardous waste definitions for the characteristics of reactivity (D003) and corrosivity (D002).
It is the responsibility of the waste generator to evaluate whether the waste meets EPA's definition of hazardous waste by characteristic or listing. Dispose of in accordance with all local, state and federal regulations.

SECTION 13. DISPOSAL CONSIDERATIONS (CONTINUED)

CONTAINER DISPOSAL

Containers should be drained of residual product before disposal. Empty containers should be disposed of in accordance with all applicable laws and regulations.

SECTION 14. TRANSPORT INFORMATION

SHIPPING DESCRIPTION

ORGANIC PEROXIDE TYPE E, LIQUID
(METHYL ETHYL KETONE PEROXIDE, <=40%)
5.2, UN3107, PG II
NORTH AMERICAN EMERGENCY RESPONSE GUIDE NO.: 145

REQUIRED LABELS

ORGANIC PEROXIDE.

ENVIRON. HAZARDOUS SUBSTANCE

This product contains methyl ethyl ketone peroxide (RQ=10 lbs.) which is an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

SECTION 15. REGULATORY INFORMATION

Component Methyl ethyl ketone peroxide (MEKP) is subject to the following

Enviromental List

CERCLA	CERCLA Hazardous Substances
DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
TSCA	Toxic Subst. Cont. Act -listed

Component Hydrogen peroxide is subject to the following

Enviromental List

DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
SARA 302	SARA Title III, Section 302
TSCA	Toxic Subst. Cont. Act -listed

SECTION 15. REGULATORY INFORMATION (CONTINUED)

Component 2,2,4-Trimethylpentanediol-1,3-diisobutyrate is subject to the follow

Enviromental List

DSL	Domestic Substance List-Canada
TSCA	Toxic Subst. Cont. Act -listed

Component Water is subject to the following

Enviromental List

DSL	Domestic Substance List-Canada
TSCA	Toxic Subst. Cont. Act -listed

Component Methyl ethyl ketone is subject to the following

Enviromental List

CAA 112	Clean Air Act Sect. 112
CERCLA	CERCLA Hazardous Substances
DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
SARA 302	SARA Title III, Section 302
SARA 313	SARA Title III, Section 313
TSCA	Toxic Subst. Cont. Act -listed

OTHER REGULATORY INFORMATION
No other regulatory information is available on this product.

WHMIS HAZARD CLASS
B-3,C,E,F

HAZARD RATING SOURCE
HMIS

HEALTH
3

REACTIVITY
2

FLAMMABILITY
2

OTHER

SECTION 16. OTHER INFORMATION

OTHER INFORMATION
CADOX is a registered trademark of Akzo Nobel Chemicals Inc.

CREATED BY
Product Safety 914 674-5000

SECTION 16. OTHER INFORMATION (CONTINUED)

KEY TO ABBREVIATIONS:

EQ=EQual	LT=Less Than	GT=Greater Than
AP=APproximately	TR=TRace	ND=No Data available

AKZO NOBEL

Cadox M-30a Red

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name Cadox M-30a Red	**Chemical description** Methyl ethyl ketone peroxide in solution
Synonym MEKP	**Chemical formula** MIXTURE
CAS number MIXTURE	**Chemical family** Organic peroxides/Ketone peroxides
Supplier Akzo Nobel Polymer Chemicals LLC 300 South Riverside Plaza Chicago, IL 60606 USA	
Medical/Handling Emergency + 1-914-693-6946 Dobbs Ferry, NY USA	**Transportation Emergency** CHEMTREC - USA: 1-800-424-9300 CANUTEC - CANADA: 1-613-996-6666
Product use Polymerization initiators	**Product/technical Information** 1-800-828-7929
Date of first issue 02-12-1997	**Date of last issue / Revision** 04-01-1999 / 7.00

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	Percentage(s)	CAS number
Methyl ethyl ketone peroxide (MEKP)	17.00 - 22.00	1338-23-4
Water	0.00 - 2.00	7732-18-5
2,2,4-Trimethylpentanediol-1,3-diisobutyrate	73.00 - 83.00	6846-50-0
Hydrogen peroxide	0.00 - 3.00	7722-84-1
Methyl ethyl ketone	0.00 - 2.00	78-93-3

3. HAZARDS IDENTIFICATION

Emergency overview
Red liquid with a faint ketone odor.
DANGER!
ORGANIC PEROXIDE.
HEAT OR CONTAMINATION MAY CAUSE HAZARDOUS DECOMPOSITION.
CAUSES SEVERE EYE AND SKIN BURNS.
CAUSES RESPIRATORY TRACT IRRITATION.
COMBUSTIBLE LIQUID AND VAPORS.
This product is a combustible liquid. Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.

Health effects
Skin and eye contact and inhalation of vapor are the principal routes of exposure to this product.
Inhalation of vapor, mist or aerosol is expected to be severely irritating to the respiratory tract.
Skin contact can cause chemical burns with severe blistering.
Direct eye contact with this chemical can cause an immediate severe reaction and may result in loss of functional vision in the involved eye. Use of fully protective goggles is essential when using this product.
If swallowed, this material can cause severe irritation or burns of the mouth, throat, esophagus and stomach.

Cadox M-30a Red

Carcinogenicity	
Description	Applicable
IARC	no
NTP	no
OSHA	no
ACGIH	no

4. FIRST AID MEASURES

Inhalation
Remove to fresh air. If breathing becomes difficult, oxygen may be given, preferably with a physician's advice. If not breathing, give artificial respiration. Get medical attention.

Skin
Immediately remove contaminated clothing and shoes. Wash skin with soap and plenty of water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Get medical attention. Wash contaminated clothing before reuse. Destroy contaminated shoes.

Eye
Immediately flush eyes with large quantities of running water for a minimum of 15 minutes. If the victim is wearing contact lenses, remove them. Take care not to contaminate the victim's healthy skin and eyes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids. DO NOT let victim rub eye(s). Do not attempt to neutralize with chemical agents. Get medical attention immediately. Oils or ointments should not be used at this time. Continue flushing for an additional 15 minutes if a physician is not immediately available.

Ingestion
Do NOT induce vomiting. Call a physician or a poison control center immediately. Give victim plenty of water to drink. Never give anything by mouth to an unconscious or convulsing person. Get medical attention immediately.

Note to physician
Persons with pre-existing skin and/or respiratory disease may be at increased risk if exposed to this material.

Methyl ethyl ketone peroxide is severly corrosive to the eyes and may cause delayed keratitis. The normally prescribed 15 minute eye irrigation after exposure may be difficult because of the severe pain. The prior installation of a topical ocular anesthetic is essential to facilitate a comprehensive ocular lavage.
Swallowing of this corrosive material may result in severe ulceration, inflammation, and possible perforation of the upper alimentary tract, with hemorrahage and fluid loss. Aspiration of this product during induced emesis can result in severe lung injury. If evacuation of the stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Control Center for additional treatment information.

5. FIRE-FIGHTING MEASURES

Flash point	**Autoignition temperature**
190.40 °F 88.00 °C	not determined
Flash Method	**Explosion limits**
Setaflash Closed Cup	lower: N/D upper: N/D

Extinguishing media
Use water fog, dry chemical, carbon dioxide, or foam extinguishing agents. Extinguish large fires with large amounts of water spray, fog or foam from a safe/protected position.

Fire fighting procedures
As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate non-essential personnel from the fire area. Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. If possible, move containers from the fire area. If not leaking,

keep fire exposed containers cool with a water fog or spray to prevent rupture due to excessive heat. High pressure water may spread product from broken containers increasing contamination or fire hazard.
Contaminated buildings, areas and equipment must not be used until they are properly decontaminated. Dike fire water for later disposal. Do not allow contaminated water to enter waterways.

Fire and explosion hazards
This product is a combustible liquid. Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.
This product can produce flammable vapors which may travel to a source of ignition and flash back.

Hazardous products of combustion
Thermal decomposition products may include carbon dioxide, water, acetic acid, formic acid, propionic acid, methyl ethyl ketone and flammable gases and vapors.

NFPA ratings	
Hazard	**Rating**
Health	3
Flammability	2
Reactivity	2
Other	

6. ACCIDENTAL RELEASE MEASURES

Methods for cleaning up
Remove all sources of ignition from the spill area. Stop source of spill. If tools are needed, they should be non-sparking. Dike area to prevent spill from spreading.
Evacuate all non-essential personnel upwind. Any person entering an area of a significant spill or of an unknown concentration of a gas or a vapor should use a NIOSH-approved, positive-pressure/pressuredemand, self-contained breathing apparatus. Protective equipment to prevent skin and eye contact should be worn.
Soak up spilled material with a suitable absorbent such as clay,sand or earth. Sweep up absorbed material and place in a chemical waste container for disposal.

7. HANDLING AND STORAGE

Handling
Wear protective clothing when handling this product to avoid eye and skin contact. Wash thoroughly after handling.
Electrically grounded tanks and containers should always be used as should non-sparking, electrically grounded hand tools and appliances. Ground or bond to ground all vessels when transferring to prevent the accumulation of static electricity. See National Electric Code. Emptied container may retain product residues; Follow all warnings and precautions even after container is emptied.

Storage
To insure product quality, storage temperatures should not exceed MAXIMUM STORAGE TEMPERATURE shown below. To prevent possible self-accelerating decomposition, temperatures in the storage facility must not exceed 131 F (55 C).
Keep containers tightly closed. Store away from amines, acids alkalis and heavy metal compounds (e.g. driers, metal soaps and accelerators).

Maximum storage temperature
86.00 °F 30.00 °C
(to maintain product quality)

General comments
Containers should not be opened until ready for use. Use clean non-sparking equipment and tools when handling.

AKZO NOBEL

Cadox M-30a Red

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection
Use a NIOSH-approved organic vapor respirator with dust, mist and fume filters to reduce potential for inhalation exposure if use conditions generate vapor, mist or aerosol and adequate ventilation (e.g., outdoor or well-ventilated area) is not available. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure/pressure-demand, air-supplied respirator.
When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the workshift) to assure breakthrough exposure does not occur.

Skin protection
Skin contact with liquid or its aerosol must be prevented through the use of permeation resistant clothing, gloves and footwear. Unprotected skin exposed to vapor, aerosol or mist must be thoroughly washed before eating, drinking, smoking and at the end of the workshift.

Eye protection
Because eye contact with this product may cause burns and possibly permanent damage, chemical goggles and/or a full face shield must be worn whenever handling this product.

Ventilation protection
Local exhaust ventilation, enclosed system design, continuous moni- toring devices, process isolation and remote control are traditional exposure control techniques which may be used to effectively minimize employee exposure.

Other information
Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freezeups in cold weather.

Applicable exposure limits
Available exposure limits applicable to this product are shown below.

Agency	Value/Unit of measurement
Methyl ethyl ketone peroxide (MEKP)	
ACGIH TLV/CEILING	1.500 mg/m³
NIOSH REL/CEILING	1.500 mg/m³
Hydrogen peroxide	
OSHA PEL/TWA	1.400 mg/m³
ACGIH TLV/TWA	1.400 mg/m³
NIOSH REL/TWA	1.400 mg/m³
Methyl ethyl ketone	
OSHA PEL/TWA	590.000 mg/m³
OSHA PEL/STEL	885.000 mg/m³
ACGIH TLV/TWA	590.000 mg/m³
ACGIH TLV/STEL	885.000 mg/m³
NIOSH REL/TWA	590.000 mg/m³
NIOSH REL/STEL	885.000 mg/m³

PEL = Permissible Exposure Limit
TLV = Threshold Limit Value
TWA = Time Weighted Average
STEL = Short Term Exposure Limit
CEIL = Ceiling Exposure Limit
REL = Recommended Exposure Limit
WEEL = Workplace Environmental Exposure Limit
IDLH = Immediate Dangerous to Life and Health

AKZO NOBEL

Cadox M-30a Red

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor Red liquid with a faint ketone odor.	**pH value** not determined
Odor threshold (ppm) not determined	**Relative vapor density (air=1)** N/D
Volatile % N/D	**Vapor pressure (mm Hg)** not determined
Boiling point/range not determined	**Evaporation rate** not determined
Melting point/range not determined	
Cloud point N/D	**Pour point** not determined
Flash point 190.40 °F 88.00 °C	**Solubility in water** not determined
Flash method Setaflash Closed Cup	**Solubility in other solvents** not determined
Autoignition temperature not determined	
Specific Gravity/Density 1.0 @ 20 deg C (68 deg F)	**Partition coefficient n-octanol/water** not determined
Bulk density not determined	
Other information SADT = 140 F (60 C) (See Sect. 10).	**Explosion limits** lower: N/D upper: N/D

10. STABILITY AND REACTIVITY

Stability This product is stable at temperatures up to 131 F (55 C).
Incompatibilities Avoid contact with strong acids, strong alkalis, strong oxidizers, accelerators and reducing agents.
Polymerization Hazardous polymerization is not expected to occur under normal temperatures and pressures.
Decomposition Decomposition products include carbon dioxide, carbon monoxide, ethane and methane.
Conditions to avoid Hazardous and uncontrollable decomposition may occur if this product is exposed to temperatures above 131 F (55 C). This temperature is based on the Self-Accelerating Decomposition Temperature (SADT). The SADT is an experimentally derived temperature at which a typical package of the product will undergo self-accelerating decomposition. For this product, the SADT is 140 F (60 C).

AKZO NOBEL

Cadox M-30a Red

11. TOXICOLOGICAL INFORMATION

Oral LD50	Ingestion toxicity data is not available for this product. However, the acute oral LD50 for a similar product is 1017 mg/kg in rats (moderately toxic). The acute oral LD50 for a component of this product is greater than 3200 mg/kg in rats (slightly to practically non-toxic).
Dermal LD50	Dermal toxicity data is not available for this product. However, the dermal LD50 for a similar product is 4000 mg/kg in rabbits. A similar product was corrosive to albino rabbits after a 4 hour occlusive contact.
Inhalation LC50	Inhalation toxicity data is not available for this product. However, the acute LC50 for a similar product is 17.0 mg/L in rats (4 hr exposure). Exposure to methyl ethyl ketone at high concentrations has resulted in central nervous system depression.
Skin	Chronic dermal exposure effects for this product are not known. In a 13-week study conducted by the NTP, a similar product was administered topically for 5 days per week to rats at doses of 1.07 to 107 mg/rat and to mice at doses of 0.357 to 35.7 mg/mouse. Necro- sis, inflammation, and epidermal hyperplasia were observed in both species. Since toxicity was seen at all dose levels, a no-observed adverse-effect level could not be determined in this study. The results of this study suggest that a similar product does not become systemically available and the primary toxicity associated with contact to this chemical is limited to the application site.
Eye	This product can be expected to be corrosive to eyes based upon tests with a similar product.
Chronic toxicity/carcinogenicity	Chronic ingestion effects of this product are not known. A component of this product was administered in the diet of rats (103 days) and dogs (90 days). The NOAEL for both species was a 1% concentration (highest dose tested). Prolonged and/or repeated inhalation is expected to be severely irritating to the respiratory system. This product is not classified as a carcinogen by IARC, NTP, OSHA or ACGIH. There is no mutagenicity data for this product, however, information is available for a similar product. Four in vitro mutagenicity assays were conducted by the NTP in the presence and absence of metabolic activation. The similar product was not mutagenic in the Ames test. It was mutagenic in mouse lymphoma cells without metabolic activation and induced sister chromatid exchanges and chromosomal aberrations in Chinese hamster ovary cells in the presence and absence of metabolic activation. In the 13-week dermal study in mice, no increase in micronucleated erythrocytes was seen in peripheral blood samples obtained at the end of the study.

AKZO NOBEL

Cadox M-30a Red

	Development inhalation toxicity studies with methy ethyl ketone in rats and mice resulted in fetal toxicity at maternally toxic doses. The neurotoxic effects of this product are not known. Exposure to this product may affect the skin, eyes and respiratory system.
Other toxicological information	No other toxic effects for this product are known.

12. ECOLOGICAL INFORMATION

Ecotoxicological information	The ecological toxicity of this product is not known.
Bioaccumulation	This product is expected to be readily biodegradable.
Other information	Other ecological information on this product is not known.

13. DISPOSAL CONSIDERATIONS

Waste disposal in accordance with regulations This unused product is listed by the EPA hazardous waste number U160 (MEKP) and meets the EPA hazardous waste definitions for the characteristics of reactivity (D003) and corrosivity (D002). It is the responsibility of the waste generator to evaluate whether the waste meets EPA's definition of hazardous waste by characteristic or listing. Dispose of in accordance with all local, state and federal regulations.
Container disposal Containers should be drained of residual product before disposal. Empty containers should be disposed of in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

Shipping description	ORGANIC PEROXIDE TYPE E, LIQUID (METHYL ETHYL KETONE PEROXIDE, <=40%) 5.2, UN3107, PG II NORTH AMERICAN EMERGENCY RESPONSE GUIDE NO.: 145
Required labels	ORGANIC PEROXIDE.
Environmentally hazardous substance	This product contains methyl ethyl ketone peroxide (RQ=10 lbs.) which is an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

15. REGULATORY INFORMATION

Products and/or components listed below are subject to the following:	
Methyl ethyl ketone peroxide (MEKP)	
CERCLA Hazardous Substance	yes
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
Toxic Subst. Cont. Act -listed	yes
Domestic Substance List-Canada	yes

AKZO NOBEL

Cadox M-30a Red

Water	
Toxic Subst. Cont. Act -listed	yes
Domestic Substance List-Canada	yes
2,2,4-Trimethylpentanediol-1,3-diisobutyrate	
Toxic Subst. Cont. Act -listed	yes
Domestic Substance List-Canada	yes
Hydrogen peroxide	
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
SARA Title III, Section 302	yes
Toxic Subst. Cont. Act -listed	yes
Domestic Substance List-Canada	yes
Methyl ethyl ketone	
Clean Air Act Sect. 112	yes
CERCLA Hazardous Substance	yes
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
SARA Title III, Section 302	yes
SARA Title III, Section 313	yes
Toxic Subst. Cont. Act -listed	yes
Domestic Substance List-Canada	yes

Hazard classes	
Description	**Applicable**
HMIS Hazard Rating Source	HMIS
HMIS Health	3
HMIS Flammability	2
HMIS Reactivity	2
WHMIS Hazard Class	B-3,C,E,F

Other regulatory information
No other regulatory information is available on this product.

16. OTHER INFORMATION

Other information
CADOX is a registered trademark of Akzo Nobel Chemicals Inc.

Created by
PRODUCT SAFETY 914 674-5000

Richmond Hill, Ontario L4B 1E4 Tel 1(800)567-4447 Fax (905) 731-7774
For Emergency: 1-905-731-5141 (US: (800)424-9300)

MATERIAL SAFETY DATA SHEET

1 PRODUCT — FOAM CLEANER (ENER 10)

2 COMPOSITION

CHEMICAL	CAS#	CONCENTRATION	REGULATED 1
Ethyl 3-Ethoxypropionate (EEP)	763-69-9	40-70%	Yes
N-Methylpyrrolidinone (NMP)	872-50-4	30-60%	Yes
Carbon Dioxide		3-7%	No

(1- see regulatory section for more information)
(2- different raw material source)

Appearance: Clear, colorless liquid with characteristic odor

3 HAZARDS IDENTIFICATION

HMIS: H F R PPE
2 1 0

CAUTION! *Contents under pressure.*
Irritancy of Product: Irritating to eyes, skin and respiratory tract.
Routes of Entry: Eye and skin contact, inhalation, ingestion.

4 FIRST AID MEASURES

EYE *flush with clean, low pressure water for 15 minutes while holding eyelids open.*

SKIN *remove contaminated clothing; wash skin with soap and water.*

INHALATION *remove to fresh air.*

INGESTION in case of excessive ingestion, give large amount of liquids. Do not induce vomiting.
In all cases, seek additional medical attention.

5 FIRE-FIGHTING MEASURES

Flash Point: 168.8°F (76°C)
Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam
Special Protective Equipment: Self Contained Breathing Apparatus
Hazardous Decomposition Products: During combustion, Carbon Monoxide and Carbon Dioxide, Nitrogen Oxides, and trace amounts of peroxides of unknown stability

6 ACCIDENTAL RELEASE MEASURES

Provide adequate ventilation.
Wear suitable personal protective clothing and equipment.
Absorb the liquid with a suitable absorbant and collect into a waste receptacle. Avoid spreading the spill to other surfaces. Dispose of according to local regulations

7 HANDLING AND STORAGE

Protect containers from physical abuse.
Avoid direct sunlight
Storage temperature: 32°F-120°F (0°-49°C)
DO NOT incinerate aerosol can.

MATERIAL SAFETY DATA SHEET

8	EXPOSURE CONTROLS / PERSONAL PROTECTION	EYE wear safety goggles. SKIN wear protective clothing. RESPIRATORY use only in well-ventilated areas. With insufficient ventilation, or in situations where the potential exists for exceeding the TLV, wear organic vapor respirator
9	PHYSICAL AND CHEMICAL PROPERTIES	Vapor Pres. (21°C/70°F): 32.2mm Hg Specific Gravity: 0.958 VOC Content (%): 95.8
10	STABILITY AND REACTIVITY	Stable under normal handling and use. Avoid oxidizing agents
11	TOXICOLOGICAL INFORMATION	Concentrations of components (Sec. 2) must be considered to determine effects of this mixture. NMP is a mammalian reproductive toxin NMP: LD50- 3914 mg/kg - oral; 8 gm/kg - dermal EEP: LD50- 4.3g/kg - oral; >20 ml/kg - dermal CAUTION! Contents under pressure. Irritancy of Product: irritating to eyes, skin and respiratory tract. (Acute and Chronic) High vapor concentrations may cause drowsines and irritation. Adverse effect to target organ after long period of exposure - NMP is a reproductive toxin. Routes of Entry: Eye and skin contact, inhalation, ingestion.
12	ECOLOGICAL INFORMATION	EEP has a moderate potential to affect some aquatic organisms and the growth of some plant seedlings.
13	DISPOSAL INFORMATION	Do not puncture or incinerate. Relieve all pressure prior to disposal. Empty cylinders, once relieved of all pressure, can be disposed as non-hazardous waste. Dispose of leftover chemical by following instructions under "Accidental Release Measures".
14	TRANSPORTATION INFORMATION	Consumer Commodity ORM-D TDG (Canada): Compressed gases, N.O.S. (Carbon Dioxide). 2.2 UN1956

15 REGULATORY INFORMATION

1 EXPOSURE LIMITS	TWA (8 hour), mg/m³	SHORT TERM (10 min.), mg/m³
EEP	>1000 ppm/6hr	

1 REGULATED CHEMICAL	APPLICABLE REGULATIONS
NMP	SARA 311/312/313, MA, PA

16	OTHER INFORMATION	N/A

MATERIAL SAFETY DATA SHEET

SECTION I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : ISOPROPANOL
IDENTIFICATION NUMBER : 01T000015
DATE PRINTED : 09/10/02
PRODUCT USE/CLASS :

SUPPLIER:
Delta Laboratories, Inc.
3710 NW County Road 326
P. O. Box 2258
Ocala, Fl 34478
Jordan Dern

MANUFACTURER:
Delta Laboratories, Inc.
3710 NW County Road 326
P. O. Box 2258
Ocala, Fl 34478
Jordan Dern

800-424-9300 24 Emergency Hotlin

PREPARER: MIKE KELLOGG, PHONE: 352 629 8101, PREPARE DATE: 06/21/96

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WT. PERCENT IS LESS THAN	OCCUPATIONAL EXPOSURE LIMITS TLV-TWA	TLV-STEL	PEL-TWA	PEL-CEILING	SKIN
ISOPROPANOL	67-63-0	100.0 %	400 ppm	500 ppm	400 ppm	500 ppm	NO

(See Section XI for abbreviation legend)

SECTION III - PHYSICAL DATA

BOILING RANGE : 180 - 181 F
ODOR : SOLVENT
APPEARANCE : CLEAR LIQUID
SOLUBILITY IN H2O : SOLUBLE IN WATER
VOLATILE BY WEIGHT: 100.0%
VOCS, lbs/gal : 6.55

VAPOR DENSITY : Is heavier than air
SPECIFIC GRAVITY: 0.7912
EVAPORATION RATE: Is faster than Butyl Acetate
VOLATILE BY VOL.: 100.0%
VOCS, grams/ltr : 784

(See Section XI for abbreviation legend)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 54 F
(TAGLIABUE CLOSED CUP)

LOWER EXPLOSIVE LIMIT: 2.0 %
UPPER EXPLOSIVE LIMIT: 12.7 %

EXTINGUISHING MEDIA: CO2 DRY CHEMICAL FOAM

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed when not in use. Vapors are heavier than air and can travel long distances to a source of ignition. Isolate from excessive heat, open flame, sparks and

(Continued on Page 2)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

electrical equipment. Application of this product to hot surfaces requires special precautions. Closed containers may explode due to pressure build-up when exposed to extreme heat. Follow label warnings until container has been thoroughly cleaned or destroyed.

SPECIAL FIREFIGHTING PROCEDURES: Wear full protective equipment, including self-contained breathing apparatus. Water may be used to cool unruptured containers to prevent pressure build-up and possible autoignition or explosion.

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - EYE CONTACT: May cause severe irritation, redness, tearing and blurred vision.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Prolonged or repeated contact may cause irritation, defatting and dermatitis. May be harmful if absorbed through skin.

EFFECTS OF OVEREXPOSURE - INHALATION: Vapors may irritate mucous membranes and cause headaches, nausea, dizziness, vomiting, fatigue and/or impairment of coordination.

EFFECTS OF OVEREXPOSURE - INGESTION: May cause nausea, vomiting, irritation and/or diarrhea.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Chronic exposure to high concentrations of hazardous material in this product may cause loss of appetite, diarrhea, nose bleeds, encephalopathy and neural disfunctions. WARNING! This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

FIRST AID - EYE CONTACT: Flush eyes immediately with large amounts of fresh water for at least 15 minutes. Obtain medical treatment.

FIRST AID - SKIN CONTACT: Wash affected areas of skin with soap and water. Remove all contaminated clothing. Consult a physician if irritation persists.

FIRST AID - INHALATION: Remove to fresh air and, if necessary, restore breathing. Treat symptomatically and consult a physician.

FIRST AID - INGESTION: Call a physician or poison control center immediately. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT SKIN ABSORPTION INHALATION EYE CONTACT

(Continued on Page 3)

SECTION VI - REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS: Smoke, carbon monoxide, carbon dioxide and other potentially toxic gases may be released when this product is heated to decomposition. Overexposure to these decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

CONDITIONS TO AVOID: High temperature, sources of ignition and poor ventilation.

INCOMPATABILITY: Strong oxidizers, acids and caustics.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate non-essential personnel from immediate area and remove all sources of ignition. Ventilate area if possible and avoid breathing vapors. Wear a respirator while collecting material with inert absorbent and non-sparking tools. Large spills beyond normal maintenance should be collected by trained emergency response personnel.

WASTE DISPOSAL METHOD: Dispose of material in accordance with federal, state and local regulations. Refer to hazard caution statements in Sections IV, V, and VI.

SECTION VIII - SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If ventilation is not adequate to reduce vapors below the below listed in Section II, use a self-contained, positive-pressure breathing apparatus or a NIOSH/MSHA approved respirator for organic vapors. The user must be properly fitted and trained to assure effective protection.

VENTILATION: Sufficient ventilation, in volume and pattern, should be provided to keep the air contaminant concentration below the current OSHA Permissible Exposure Limit (PEL) or ACGIH Threshold Limit Value (TLV). NOTE: Heavy solvent vapors should be removed from the lower levels of the work area. All ignition sources, including non-explosion proof equipment, should be eliminated. Remove all decomposition products formed during welding or flame cutting of surfaces coated with this product.

SKIN PROTECTION: Use solvent-impervious gloves for prolonged or repeated contact.

EYE PROTECTION: Use safety glasses with splash guards or side shields, splash goggles or face shield.

(Continued on Page 4)

SECTION VIII - SAFE HANDLING AND USE INFORMATION

OTHER PROTECTIVE EQUIPMENT: A protective apron or solvent-impervious clothing is recommended for splash protection. Wear chemical resistant footwear.

HYGIENIC PRACTICES: Wash hands and face before eating, drinking, using tobacco products or using the bathroom. Remove and wash contaminated clothing before reuse. Do not reuse contaminated footwear unless they are decontaminated. Store personal items, such as cigarettes and gum, away from the work area.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: FLAMMABLE LIQUID! Keep container tightly closed when not in use. Ground all holding and transfer containers. Avoid storage above 120F or near fire or open flame. Do not transfer to unlabeled containers.

OTHER PRECAUTIONS: For industrial use only. NOTICE: Reports have associated repeated or prolonged occupational overexposure to solvents with permanent brain damage. Intentional misuse by deliberately concentrating and inhaling the contents of this product may be harmful or fatal.

SECTION X - HMIS RATINGS

HMIS RATINGS - HEALTH: 1 FLAMMABILITY: 3 REACTIVITY: 0

SECTION XI - OTHER REGULATIONS

SARA SECTION 313:
This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

---------- CHEMICAL NAME ---------- CAS NUMBER WT/WT % IS LESS THAN
No SARA Section 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:
This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

---------- CHEMICAL NAME ----------	CAS NUMBER
ISOPROPANOL	67-63-0

PREVIOUS MSDS REVISION DATE: 11/01/91

LEGEND: N.A. - Not Applicable, N.E. - Not Established,
N.D. - Not Determined

(Continued on Page 5)

SECTION XI - OTHER REGULATIONS

The information contained herein is, to the best of our knowledge and belief, accurate. However, 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. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

<END OF MSDS>

07/16/01#spa stain Revised

MATERIAL SAFETY DATA SHEET

ECO Chemical, Inc.
2101 Fourth Avenue, Suite 300F
Seattle, WA 98121

(206) 448-7930
(800) 677-7930
Fax (206) 448-8553

Date of Preparation: 4/7/00

SECTION I — PRODUCT IDENTIFICATION

Chemical Family Acrylic Copolymer Aqueous

Common Name Eco Waterborne Spa Stain B(DIP-TANK at a 2 to 1 mix)

SECTION II — HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT WT.	OCCUPATIONAL EXPOSURE LIMITS TLV	PEL	VAPOR PRESSURE mm Hg
NONE	(LESS THAN REPORTABLE QUANTITY)			

SECTION III — PHYSICAL DATA

Boiling Range: 212 to 395 degrees F.

Evaporation Rate: Slower than ethyl ether

Wt/Gal: 8.50 lbs.

Vapor Density: Heavier than air

VOC g/l 85.0 g/l (Excluding water)

VOC'S: 8.2 g/l (Including water) As Packaged

% VOC'S BY VOL .86

Appearance in container: Red.

Odor: Mild, characteristic

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

Flammability Classification: Nonflammable

Flash Point: None

DOT Classification: Not applicable

Extinguishing Media: Not applicable

Unusual Fire and Explosion Hazards:
Closed containers may explode when exposed to extreme heat due to build up of steam.

Special Firefighting Procedures:
Remove all ignition sources. Wear self-contained breathing apparatus and complete personal protective equipment when entering confined areas where potential for exposure to vapors or products of combustion exist. Water may be used to cool containers to prevent steam build up.

SECTION V — HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

Inhalation: May cause irritation to nose, throat, or lungs.

Eye Contact: May cause irritation.

Skin Contact: May cause irritation.

Ingestion: May be harmful if swallowed.

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Remove to fresh air.

Splash (eyes): Flush with plenty of water for at least 15 minutes and seek medical attention.

Splash (skin): Remove contaminated clothing and wash contact area with soap and water.

Ingestion: If appreciable quantities are swallowed, seek medical attention.

SECTION VI — REACTIVITY DATA

Stability: Stable

Hazardous Polymerization: Will not occur

Hazardous Decomposition Products: Fumes produced when heated to decomposition may include carbon monoxide, carbon dioxide.

Conditions to Avoid: Excessive heat

SECTION VII — SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: Dike spill. Absorb with inert material and collect for disposal.

Waste Disposal Method: Dispose in accordance with federal, state, and local regulations.

SECTION VIII — SAFE HANDLING AND USE INFORMATION

Respiratory Protection: Use NIOSH approved chemical cartridge respirator (TC23C) to remove solid airborne particles of overspray and organic vapors during spray application. **In confined areas:** Use NIOSH approved supplied-air respirators or hoods (TC19C).

Ventilation: Sufficient to prevent overexposure.

Protective Gloves: For operations where contact can occur, wear impervious gloves (Neoprene).

Eye Protection: Use safety eyewear designed to protect against splash of liquids.

Other Protective Equipment: For operations where contact can occur, a safety shower and eye wash facility should be available.

SECTION IX — SPECIAL PRECAUTIONS

Other: Non-flammable. KEEP FROM FREEZING.

MATERIAL SAFETY DATA SHEET

Stepan

1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Trade Name	**STEPANFOAM RS2001**
Manufacturer	Stepan Company 22 West Frontage Road Northfield, IL 60093 USA

Telephone Numbers - 24 Hour Emergency Assistance

Medical	800-228-5635
Chemtrec	800-424-9300
Chemtrec Int'l	703-527-3887

Telephone Numbers - General Assistance

General	(847) 446-7500

Product Number 9915

2 COMPOSITION / INFORMATION ON INGREDIENTS

3 HAZARDS IDENTIFICATION

Emergency Overview

May cause irritation to the eyes, skin, and respiratory system.

Health Effects: Eyes

This product may cause irritation to the eyes.

Health Effects: Skin

Prolonged and/or repeated skin contact with this product may cause irritation/dermatitis.

Health Effects: Inhalation

Inhalation of vapors or mists of the product may be irritating to the respiratory system.Breathing high concentrations of fluorocarbons can cause narcosis, anesthesia, and suffocation.

4 FIRST AID MEASURES

Eyes

Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

Skin

For skin contact flush with large amounts of water.If irritation persists, get medical attention.Immediately take off all contaminated clothing.Wash contaminated clothing before reuse.

Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air.If the affected person is not breathing, apply artificial respiration.If breathing is difficult, give oxygen.

Ingestion

If the material is swallowed, get immediate medical attention or advice.

5 FIRE FIGHTING MEASURES

Flash Point (), Not Determined

Extinguishing Media

Dry chemical, foam, carbon dioxide, water fog.

Fire Fighting Equipment / Instructions

Firefighters should wear full protective clothing including self contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES

Emergency Action:
Isolate spill or leak area immediately.Keep unauthorized personnel away.Stay upwind.Keep out of low areas.Ventilate closed spaces before entering.

Do not touch or walk through spilled material.Stop leak if you can do it without risk.Wear appropriate protective equipment during cleanup.Small Spills:Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.Large Spills:Dike ahead of liquid spill for later disposal.Prevent entry into waterways, sewers, basements or confined areas.

Surfaces may become slippery after spillage.

7 HANDLING & STORAGE

Handling Procedures

Wash thoroughly after handling.As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Procedures

Store in a cool, dry, well-ventilated area.Room temperature - normal conditions.Vent container carefully, as needed to relieve pressure.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

Personal Protective Equipment: Eyes/Face

Wear chemical goggles or a full face shield.

Personal Protective Equipment: Skin

Wear suitable protective clothing.Use impervious gloves.

Personal Protective Equipment: Respiratory

If vapors are present or irritation is experienced, NIOSH approved respiratory protection for organic vapors should be worn.

Personal Protective Equipment: General

Eye wash fountain and emergency showers are recommended.

9 PHYSICAL & CHEMICAL PROPERTIES

Flash Point	(), Not Determined
Specific Gravity	(9.52 lb/gal), 1.1442 g/ml
Vapor Density	Estimated heavier than air.
Viscosity	420 cps max @ 77 F (25 C)
Evaporation Rate	Estimated slower than ethyl ether.

10 STABILITY & REACTIVITY

Chemical Stability

Stable under normal conditions.

Incompatibility

This product may react with strong oxidizing agents.

Hazardous Polymerization

Will not occur.

11 TOXICOLOGICAL INFORMATION

Other Toxicological Information

None available.

12 ECOLOGICAL INFORMATION

Ecotoxicity

No data available for this product.

13 DISPOSAL CONSIDERATIONS

Disposal Instructions

This substance, when discarded or disposed of, is not specifically listed as a "Hazardous Waste" in the Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply.Chemical additions, processing or otherwise altering this material may make the material management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment and disposal of this material must be conducted in compliance with all applicable federal, state, and local regulations.

14 TRANSPORT INFORMATION

DOT Proper Shipping Name Refer to bill of lading or container label for DOT or other transportation hazard classification, if any.

15 REGULATORY INFORMATION

Inventories

All components of this product are listed on the following inventories:U.S.A.(TSCA),

There is no calculable reportable quantity (RQ) for this product.

16 OTHER INFORMATION

Disclaimer

Disclaimer: Nothing contained herein grants or extends a license, express or implied, in connection with patents, issued or pending, of the manufacturer or others. The information contained herein is based on the manufacturer's own study and the works of others. The manufacturer makes no warranties, expressed or implied, as to the accuracy, completeness, or adequacy of the information contained herein. The manufacturer shall not be held liable (regardless of fault) to the vendee's employees, or anyone for any direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishing of such information.

NEGATIVE DECLARATION: The material(s) in this product (by CAS#) have been compared against the regulated lists contained in the LOLI® Database. These do include the PROP-65 and SARA lists. Therefore, if a material is not mentioned in section 2, 15 or 16 of this MSDS, then the Product Safety Group of Stepan Company does not believe any "listed" materials to be present in our product.

Completed On	1/22/02	**Replaces Sheet Dated**	07/17/2001
Completed By	Product Safety & Compliance		

MATERIAL SAFETY DATA SHEET

Stepan®

1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Trade Name **MONDUR MR LIGHT**

Manufacturer Stepan Company
22 West Frontage Road
Northfield, IL 60093 USA

Telephone Numbers - 24 Hour Emergency Assistance

Medical	800-228-5635
Chemtrec	800-424-9300
Chemtrec Int'l	703-527-3887

Telephone Numbers - General Assistance

General	(847) 446-7500

Product Class Polymeric diisocyanate

Product Number 9507

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	Percent
_Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	45 - 55 %
_Methylenebisphenylene diisocyanate (MDI)	101-68-8	35 - 45 %
_Diphenylmethane diisocyanate	26447-40-5	1 - 5 %

3 HAZARDS IDENTIFICATION

Emergency Overview

Liquid, brown color.

Warning!

May cause irritation to the eyes, skin, and respiratory system.Repeated exposure may lead to respiratory sensitization.May cause irritation or corrosion when ingested.

Health Effects: Eyes

This product may cause irritation to the eyes.

Health Effects: Skin

This product may cause irritation to the skin.Prolonged or repeated skin contact may result in redness, burning sensation or dermatitis.May cause sensitization by skin contact.

Health Effects: Inhalation

Vapors or mist at high concentrations may irritate the mucous membrane in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function.Repeated exposure may lead to respiratory sensitization reactions, producing an asthma-like condition.Prolonged or repeated overexposure to isocyanates has been reported to cause lung damage which may be permanent.

Health Effects: Ingestion

Ingestion of large amounts may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.This product may produce corrosive damage to the gastrointestinal tract if it is swallowed.

4 FIRST AID MEASURES

Eyes

Immediately flush eyes with water for at least 15 minutes while holding eyelids open.If irritation persists get medical attention.

Skin

Immediately take off all contaminated clothing.For skin contact flush with large amounts of water.If irritation persists, get medical attention.Wash contaminated clothing before reuse.

Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air.If symptoms persist, get medical attention.If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.If breathing is difficult, give oxygen.Seek medical attention.

Ingestion

If the material is swallowed, get immediate medical attention or advice.Do not induce vomiting.

5 FIRE FIGHTING MEASURES

Flash Point (> 198.9 °C), > 390 F PMCC

Extinguishing Media

Dry chemical, foam, carbon dioxide, water fog.

Fire Fighting Equipment / Instructions

Firefighters should wear full fire-fighting turn-out gear (full Bunker gear) including NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Hazardous Combustion Products

Irritating and toxic gases or fumes may be released during a fire.

6 ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES

Emergency Action:
Isolate spill or leak area immediately.Keep unauthorized personnel away.Stay upwind.Keep out of low areas.Ventilate closed spaces before entering.

Do not touch or walk through spilled material.Wear appropriate personal protective equipment during cleanup.Small Spills:Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.Collect material in a suitable and properly labeled OPEN container. Do not place in sealed container.Large Spills:Dike ahead of liquid spill for later disposal.Prevent entry into waterways, sewers, basements or confined areas.

Surfaces may become slippery after spillage.

7 HANDLING & STORAGE

Handling Procedures

Avoid contact with skin and eyes.Avoid breathing vapors or mists of this product.Wash thoroughly after handling.As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Procedures

Store in a dry, well-ventilated area.Room temperature - normal conditions.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

Personal Protective Equipment: Eyes/Face

Wear chemical goggles; face shield (if splashing is possible).

Personal Protective Equipment: Skin

Work clothing sufficient to prevent all skin contact should be worn, such as coveralls and long sleeves.Use impervious gloves.

Personal Protective Equipment: Respiratory

If vapors are present or irritation is experienced, NIOSH approved respiratory protection for organic vapors should be worn.

Personal Protective Equipment: General

Eye wash fountain and emergency showers are recommended.

_Methylenebisphenylene 101-68-8

ACGIH - Time Weighted Averages	0.005 ppm TWA
NIOSH - Health Standards - Exposure Limits	5 ppb TWA; 50 ug/m3 TWA; C (10 min) 20 ppb; C (10 min) 200 ug/m3 (Listed under 'Diisocyanates')
NIOSH - Health Standards - Health Effects and Precautions	Respiratory effects and sensitization, pulmonary irritation (Listed under 'Diisocyanates')
NIOSH - Pocket Guide - Ceiling Limits	C 0.2 mg/m3; C 0.020 ppm (10 min)
NIOSH - Pocket Guide - IDLHs	75 mg/m3 IDLH
NIOSH - Pocket Guide - Target Organs	eyes, respiratory system
NIOSH - Pocket Guide - TWAs	0.05 mg/m3 TWA; 0.005 ppm TWA
OSHA - Final PELs - Ceiling Limits	C 0.02 ppm; C 0.2 mg/m3

9 PHYSICAL & CHEMICAL PROPERTIES

Flash Point	(> 198.9 °C), > 390 F PMCC
Boiling Point	(207.8 °C), 406 F
Specific Gravity	(10.317 lb/gal), 1.24 g/ml (@ 25 C)
Melting Point	(< 0 °C), < 32 F
Percent Volatile	NIL
Vapor Pressure	(<10-5 mm HG @ 25 C)
Vapor Density	8.5 (Air = 1)
Viscosity	200 cps (@ 25 C)
Evaporation Rate	Estimated slower than ethyl ether.
Solubility in Water	Not soluble.
Bulk Density	(), 10.3 lbs/gal
Freezing Point	(< 0 °C), < 32 F

Appearance and Odor

Liquid, brown color.

Storage Procedures

Store in a dry, well-ventilated area.Room temperature - normal conditions.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

Personal Protective Equipment: Eyes/Face

Wear chemical goggles; face shield (if splashing is possible).

Personal Protective Equipment: Skin

Work clothing sufficient to prevent all skin contact should be worn, such as coveralls and long sleeves.Use impervious gloves.

Personal Protective Equipment: Respiratory

If vapors are present or irritation is experienced, NIOSH approved respiratory protection for organic vapors should be worn.

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_Methylenebisphenylene 101-68-8

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9 PHYSICAL & CHEMICAL PROPERTIES

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Solubility in Water	Not soluble.
Bulk Density	(), 10.3 lbs/gal
Freezing Point	(< 0 °C), < 32 F

Appearance and Odor

Liquid, brown color.

10 STABILITY & REACTIVITY

Chemical Stability

Stable under normal conditions.

Incompatibility

This product is incompatible with water, alcohols, amines, alkalies,metal compounds (catalysts),

Hazardous Decomposition

Carbon monoxide, oxides of nitrogen, traces of HCN, MDI vapors or aerosols.

Hazardous Polymerization

Contact with moisture, other materials which react with isocyanates, or temperatures above 320 F (160 C) may cause polymerization.

11 TOXICOLOGICAL INFORMATION

Carcinogenicity

Not listed as carcinogenic according to IARC, NTP or OSHA.

Other Toxicological Information

Information available upon request. Please contact Stepan Technical Service Department.

_Isocyanic acid, 9016-87-9	
NIOSH - Selected LD50s and LC50s	Inhalation LC50 Rat : 490 mg/m3/4H; Oral LD50 Rat : 49 gm/kg; Dermal LD50 Rabbit : >9400 mg/kg
_Methylenebisphenylene 101-68-8	
Mexico - Instruction No. 10 - Ceiling Limits	P 0.02 ppm; P 0.2 mg/m3
Mexico - Instruction No. 10 - TWAs	0.02 ppm TWA; 0.2 mg/m3 TWA
NIOSH - Selected LD50s and LC50s	Inhalation LC50 Rat : 178 mg/m3; Oral LD50 Rat : 9200 mg/kg; Oral LD50 Mouse : 2200 mg/kg

12 ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic LC50 = >100-1000 mg/L

13 DISPOSAL CONSIDERATIONS

Disposal Instructions

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Regulations may vary in different locations. Characterization and compliance with applicable laws are the responsibility solely of the generator.

14 TRANSPORT INFORMATION

DOT Proper Shipping Name Refer to bill of lading or container label for DOT or other transportation hazard classification, if any.

15 REGULATORY INFORMATION

Ingredient Name	CAS Number	Percent
_Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	45 - 55 %
_Methylenebisphenylene diisocyanate (MDI)	101-68-8	35 - 45 %
_Diphenylmethane diisocyanate	26447-40-5	1 - 5 %

Inventories

All components of this product are listed on the following inventories:U.S.A.(TSCA), Canada(DSL), Japan(ENCS), Australia(AICS), Korea(ECL), China (EICS),Philippines(PICCS)

Reportable Quantity (RQ) of this product is 12500 pounds based upon _Methylenebisphenylene diisocyanate (MDI)(101-68-8) which yielded the lowest resultant RQ according to the following formula: CERCLA ingredient RQ / % of that ingredient in the product.

16 OTHER INFORMATION

Disclaimer

Disclaimer: Nothing contained herein grants or extends a license, express or implied, in connection with patents, issued or pending, of the manufacturer or others. The information contained herein is based on the manufacturer's own study and the works of others. The manufacturer makes no warranties, expressed or implied, as to the accuracy, completeness, or adequacy of the information contained herein. The manufacturer shall not be held liable (regardless of fault) to the vendee's employees, or anyone for any direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishing of such information.

HAZARD RATINGS	HMIS	NFPA
Health	3	3
Flammability	1	1
Reactivity	1	1
PPE	X	

Completed On	1/6/03	**Replaces Sheet Dated**	10/28/2002
Completed By	Product Safety & Compliance		

DOCUMENT ID: FSI-06
Department of Environmental Protection Documents

Questions for potential REINFORCED PLASTIC COMPOSITES PRODUCTION (40 CFR 63 Subpart WWWW) facilities that will help reduce the length of the permit:

1. Does your facility only **repair** reinforced plastic composites? (Y or N) N

2. Is your facility a research and development facility as defined in section 112(c)(7) of the Clean Air Act? (Y or N) N

3. Do your reinforced plastic composites operations use less than 1.2 tons per year of thermoset resins and gel coats that contain styrene combined? (Y or N) N

4. Is your facility subject to 40 CFR 63 Subpart VVVV, Boat Manufacturing, and all the reinforced plastic composites you manufacture are used in the manufacturing of your boats? (Y or N) N

5. Do you want to limit your individual/total HAPs to less than 10/25 tons per year by the compliance date for Subpart WWWW (April 21, 2006 for existing facilities)? N

If you answered "Yes" to question 1, 2, 3, 4, or 5 Subpart WWWW does not apply to your facility and you do not need to answer the following questions.

6. If your facility is subject to 40 CFR 63 Subpart VVVV, Boat Manufacturing, and you would prefer that all of the reinforced plastic composites that you manufacture, including those that are not used in the manufacturing of your boats, be regulated by Subpart VVVV, please submit information to demonstrate that complying with Subpart VVVV in lieu of Subpart WWWW will not result in any organic HAP emissions increase compared to complying with Subpart WWWW. N/A

7. Are you a "new" affected source? (Y or N) Y [A "new" affected source is a facility that commences construction after August 2, 2001 where no other reinforced plastic composites production facility exists. Otherwise a facility is an "existing" affected source.]

8. Please check which of the following operations you would like to have included in your permit:

- X open molding
  - X manual resin application
    - ___nonvapor-suppressed resin
    - ___vapor-suppressed resin
    - ___vacuum bagging/closed-mold curing without roll-out
  - ___atomized mechanical resin application
    - ___nonvapor-suppressed resin
    - ___vapor-suppressed resin
    - ___vacuum bagging/closed-mold curing without roll-out
  - X nonatomized mechanical resin application
    - ___nonvapor-suppressed resin
    - ___vapor-suppressed resin
    - ___vacuum bagging/closed-mold curing without roll-out
  - ___atomized mechanical resin application with robotic or automated spray control
    - ___nonvapor-suppressed resin
  - ___filament application
    - ___nonvapor-suppressed resin
    - ___vapor-suppressed resin
  - ___atomized spray gel coat application; nonvapor-suppressed gelcoat
  - ___nonatomized spray gel coat application; nonvapor-suppressed gelcoat
  - ___manual gel coat application; nonvapor-suppressed gelcoat

Missing Above

8. (cont'd) Please check which of the following operations you would like to have included in your permit:

_____ open molding (continued)
___resin/filament application
___corrosion-resistant and/or high strength (CR/HS)
___non-CR/HS
___tooling
___low-flame spread/low-smoke products
___shrinkage-controlled resins
___gel coat
X tooling
___white/off-white pigmented
___all other pigmented
___CR/HS or high performance
___fire retardant
___clear production
_____ centrifugal casting
___heated air blown through molds; nonvapor-suppressed resin
___vented molds, but air vented through the molds is not heated; nonvapor-suppressed resin
___CR/HS
___non-CR/HS
_____ closed molding
___compression molding
___injection molding
___resin transfer molding
_____ continuous lamination
_____ continuous casting
_____ polymer casting
_____ pultrusion
_____ sheet molding compound (SMC) manufacturing
_____ bulk molding compound (BMC) manufacturing
_____ mixing
_____ cleaning of equipment used in reinforced plastic composites manufacture
_____ HAP-containing materials storage
_____ repair operations on parts you also manufacture
_____ use of production resins that must meet military specifications

9. Do you want to use an application technology (new or existing) whose organic HAP emissions characteristics are not represented by the equations in Table 1 to subpart WWWW (see attachment)? (Y or N)_N_ If yes, what?

10. If your facility is an "existing" affected source, do you want to accept an enforceable permit limit of less than 100 tons per year of hazardous air pollutants (HAPs) in total from the combination of centrifugal casting and continuous lamination/casting operations? (Y or N)_N/A_

11. If your facility is a "new" affected source, do you want to accept an enforceable permit limit of less than 100 tons per year of hazardous air pollutants (HAPs) in total from the combination of open molding, centrifugal casting, continuous lamination/casting, pultrusion, SMC manufacturing, mixing, and BMC manufacturing? (Y or N)_Y_

98 TPY

12. If your facility is a "new" affected source, do you manufacture "large" reinforced plastic composites parts using open molding or pultrusion operations? (Y or N) Y If yes, which products are "large"? [Note: A "large" open molding part is defined as a part that, when the final finished part is enclosed in the smallest rectangular six-sided box into which the part can fit, the total interior volume of the box exceeds 250 cubic feet, or any interior sides of the box exceed 50 square feet. A "large" pultruded part is a part that exceeds an outside perimeter of 24 inches or has more than 350 reinforcements.] *

13. Does your facility want to be permitted to use an add-on pollution control device? (Y or N) N
If yes, will the add-on control device be a permanent total enclosure (PTE) as defined in EPA Method 204 of 40 CFR Part 51, Appendix M? (Y or N)___

* N/A since emissions are limited to less than 100 TPY.

Table 1 to Subpart WWWW of Part 63 - Equations to Calculate Organic HAP Emissions Factors for Specific Open Molding and Centrifugal Casting Process Streams

As required in §§63.5796, 63.5799(a)(1) and (b), and 63.5810(a)(1), to calculate organic HAP emissions factors for specific open molding and centrifugal casting process streams you must use the equations in the following table:

If your operation type is a new or existing...	And you see	With	Use this organic HAP Emissions Factor (EF) Equation for materials with less than 33 percent organic HAP (19 percent organic HAP for nonatomized gel coat) a, b,c...	Use this organic HAP emissions Factor (EF) Equation for materials with 33 percent or more organic HAP (19 percent for nonatomized gel coat) a, c...
1. Open Molding Operation	a. manual resin application	i. nonvapor-suppressed resin	EF = 0.126 x % HAP x 2000	EF = ((0.286 x %HAP)-0.0529) x 2000
		ii. vapor suppressed resin	EF = 0.126 x % HAP x 2000 x (1-(0.5 x VSE factor))	EF = ((0.286 x %HAP)-0.0529) x 2000 x (1-(0.5 x VSE factor))
		iii. vacuum bagging/closedmold curing with roll out	EF = 0.126 x % HAP x 2000 x 0.8	EF = ((0.286 x %HAP)-0.0529) x 2000 x 0.8
		iv. vacuum bagging/closedmold curing without roll-out	EF = (0.126 x % HAP x 2000 x 0.5	EF = ((0.286 x %HAP)-0.0529) x 2000 x 0.5
	b. atomized mechanical resin application	i. nonvapor-suppressed resin	EF = 0.169 x %HAP x 2000	EF = ((0.714 x %HAP)-0.18) x 2000
		ii. vapor-suppressed resin	EF = 0.169 x %HAP x 2000 x (1-(0.45 x VSE factor))	EF = ((0.714 x %HAP)-0.18) x 2000 x (1-(0.45 x VSE factor))
		iii. vacuum bagging/closedmold curing with roll out	EF = 0.169 x %HAP x 2000 x 0.85	EF = ((0.714 x %HAP)-0.18) x 2000 x 0.85
		iv. vacuum bagging/closedmold curing without roll-out	EF = 0.169 x %HAP x 2000 x 0.55	EF = ((0.714 x %HAP)-0.18) x 2000 x 0.55
	c. nonatomized mechanical resin application	v. nonvapor-suppressed resin	EF = 0.107 x %HAP x 2000	EF = ((0.157 x %HAP)-0.0165) x 2000
		vi. vapor-suppressed resin	EF = 0.107 x %HAP x 2000 x (1-(0.45 x VSE factor))	EF = ((0.157 x %HAP)-0.0165) x 2000 x (1-(0.45 x VSE factor))
		vii. closedmold curing with roll out	EF = 0.107 x %HAP x 2000 x 0.85	EF = ((0.157 x %HAP)-0.0165) x 2000x 0.85
		viii. vacuum bagging/closedmold curing without roll-out	EF = 0.107 x %HAP x 2000 x 0.55	EF = ((0.157 x %HAP)-0.0165) x 2000 x 0.55
	d. atomized mechanical resin application with robotic or automated spray control [d]	nonvapor-suppressed resin	EF = 0.169 x %HAP x 2000 x 0.77	EF = 0.77 x ((0.714 x %HAP)-0.18) x 2000
	e. filament application e	i. nonvapor-suppressed resin	EF = 0.184 x %HAP x 2000	EF = ((0.2746 x %HAP)-0.0298) x 2000
		ii. vapor-suppressed resin	EF = 0.12 x %HAP x 2000	EF = ((0.2746 x %HAP)-0.0298) x 2000 x 0.65
	f. atomized spray gel coat application	nonvapor-suppressed gel coat	EF = 0.446 x %HAP x 2000	EF = ((1.03646 x %HAP)-0.195) x 2000
	g. nonatomized spray gel coat application	nonvapor-suppressed gel coat	EF = 0.185 x %HAP x 2000	EF = ((0.4506 x %HAP)-0.0505) x 2000
	h. manual gel coat application [f]	nonvapor-suppressed gel coat	EF = 0.126 x % HAP x 2000 (for emissions estimation only, see footnote f)	EF = ((0.286 x %HAP)-0.0529) x 2000 (for emissions estimation only, see footnote f)
2. centrifugal casting operations g	heated air blown through molds	novapor-suppressed resin	EF = 0.558 x (%HAP) x 2000	EF = 0.558 x (%HAP) x 2000
	vented molds, but air vented through the molds is not heated	nonvapor-suppressed resin	EF = 0.026 x (%HAP) x 2000	EF = 0.026 x (%HAP) x 2000

Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

VIA Certified Mail Return Receipt
May 15, 2003

Mr. Charles Wiley
Production Supervisor
Hydro Spa
13055 49th Street North
Clearwater, FL 33762

Re: Request for Additional Information
Regarding Air Construction Permit Request, Dated January 24, 2003
DEP Project No. 0830151-001-AC
Hydro Spa Ocala

Dear Mr. Wiley:

On February 12, 2003, the Department received your request to modify an existing building (previously owned by another company) for spa manufacturing. On April 30, 2003, the Department received your response, via your consultant Southern Environmental Sciences, Inc., to the Department's March 6, 2003 request for additional information. However, in order to process the application, the Department will need the following additional information pursuant to Rules 62-4.050 and 62-4.070(1), F.A.C.

Should your response to any of the below require new calculations, please submit the new calculations, assumptions, reference material and appropriate pages of the application form (DEP Form 62-210.900(1) Effective 2/11/99). Please note that up to date versions of the application form can be down loaded from the Department's webpage:
http://www.dep.state.fl.us/air/forms/application.htm#airpermit.

1. Section II. Facility Information, Subsection B. Facility Pollutants. Per the DEP Form No. 62-210.900(1) instructions, only regulated pollutants should be included in the application. A copy of the form directions for this section is included with this letter. Methyl ethyl ketone peroxide, Trimethyl pentane diol 1,3 diosobutyrate, and Isopropanol may be part of the regulated pollutant VOCs (non-styrene) total but are not regulated pollutants as listed

separately. Acetone is also not a regulated pollutant (see item 2 of this correspondence). Please re-submit this information with only the regulated pollutants. The applicant may indicate in the comment field of Section III. Emissions Unit Information, Subsection G. Emissions Unit Detail Information for the non-styrene VOCs total what compounds make up the total.

2. Section II. Facility Information, Subsection B. Facility Pollutants. The definition of Volatile Organic Compound (VOC) can be found in 40 CFR 51.100(s) and Rule 62-210.100 (280). Note in each acetone is part of the list of compounds excluded from this definition due to negligible photochemical reactivity. Please re-submit this form with out acetone. Also re-calculate all non-styrene VOC emissions without acetone (see item 4 of this correspondence).
3. Section III. Emissions Unit Information, Subsection E. Segment (Process/Fuel) Information. In the Department's March 6, 2003 request for additional information, the following was requested: *"Also, in Segment 2, the maximum hourly and annual rates fields refer to the VOC calculation page. In the VOC potential to emit calculation field 8 of Subsection G. Emissions Unit Pollutant Detail Information, the maximum tons used is not clear. To clarify and avoid confusion, please provide the information either in fields 4 and 5 or field 10 of the Subsection E. Segment (Process/Fuel) Information and re-submit the form."* Your response indicated that information for fields 4 and 5 for Segment 2 was "almost impossible" to obtain. Yet fields 4 and 5 for Segment 2 refer to the VOC calculation page and the VOC calculation page's method of compliance is "...demonstrated through accurate record-keeping of material usage and limiting spa production to 50,000 per year." As indicated in the Department's March 6, 2003 letter, this reference to the VOC calculation page is confusing and unclear. What information specifically in Subsection G. Emissions Unit Pollutant Detail Information for VOC (non-styrene) is the applicant referring? Please provide the information in field 10 of the Subsection E. Segment (Process/Fuel) Information, if it will not fit into fields 4 and 5 of the Subsection E. Segment (Process/Fuel) Information form.
4. Section III. Emissions Unit Information, Subsection F. Emissions Unit Pollutants and Subsection G. Emissions Unit Detail Information. See items 1 and 2 of this correspondence. Please re-submit the application forms for only the regulated pollutants emitted from this facility. For the total non-styrene VOCs, please indicate the total VOCs as total non-styrene VOCs in Subsection F. Emissions Unit Pollutants. Also as indicated above, please re-calculate all non-styrene VOC totals excluding acetone (see item 2 of this correspondence) and re-submit the corrected information and application forms.
5. Item 10. of Department's March 6, 2003 Request for Additional Information. The Department has reviewed the formula from the MDI Emissions Estimator that was used to provide a MDI emissions estimate of 0.005 lbs (MDI) per hour. How did the applicant estimate a MDI Concentration of 0.0319 ppmv in the exhaust air and the exhaust airflow rate of 10,000 cfm?

Professional Engineer (P.E.) Certification Statement: Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature.

The Department must receive a response from you no later than June 30, 2003. If you have any questions, please let me know at (813)744-6100 x117.

Sincerely,

Ann Quillian, P.E.
Air Permit Engineer

Enclosure

cc: James C. Andrews, Jr., P.E., Southern Environmental Sciences, Inc.

62-296.404(3)(c)1.b. (where it is necessary to go to a greater level of detail than section)

Local: Will vary in format from county to county.

Note: The Department maintains a core list of rules to which all Title V sources are presumptively subject. To help in completing this section of the form, the core list may be referenced in its entirety, or with specific exceptions.

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. **Pollutant Emitted** - Enter, in this column, the identification code as listed in Appendix D of each pollutant the facility emits, has the potential to emit, or, after any proposed construction or modification, would emit or have the potential to emit in a major amount; each pollutant for which the facility's emissions are, or would be, synthetically limited to less than a major amount; and each pollutant which is, or would be, subject to an emissions limitation or work practice standard at one or more emissions units within the facility. If a code is not listed for the pollutant, enter a narrative description of the pollutant. Major source thresholds are as follows:

   a. 100 tons per year for CO, NOx, PM10, SO2, and VOC;

   b. 5 tons per year for Pb and Pb compounds expressed as lead;

   c. 10 tons per year for any HAP (H001 through H189);

   d. 25 tons per year for HAPS (total HAPs, all species); and

   e. 100 tons per year for any other regulated pollutant.

   Regulated pollutant, for purposes of this entry, means any pollutant to which an emissions limitation or work practice standard applies at one or more emissions units within the facility under any applicable requirement or pursuant to the facility's most recent air permit.

2. **Pollutant Classification** - Enter, in this column, the pollutant classification code from the list below for each pollutant identified in Column 1.

Code	Description
A	Major pollutant
SM	Synthetic minor pollutant
B	Regulated pollutant, not major or synthetic minor

3. **Requested Emissions Cap** - Fields 3-5 must be completed only for those pollutants for which the applicant proposes to establish a multi-unit or facility-wide emissions cap. Enter the rate of emissions of the pollutant, in pounds per hour, tons per year, or both, that the group of units or facility would be limited to as a specific condition of its permit. A multi-unit or facility-wide emissions cap occurs only when the group of emissions units or the facility as a whole is limited to an amount of emissions less than the sum of the potential

Department of Environmental Protection

Jeb Bush
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Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
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VIA Certified Mail Return Receipt
March 6, 2003

Mr. Charles Wiley
Production Supervisor
Hydro Spa
13055 49th Street North
Clearwater, FL 33762

Re: Request for Additional Information
Regarding Air Construction Permit Request, Dated January 24, 2003
DEP Project No. 0830151-001-AC
Hydro Spa Ocala

Dear Mr. Wiley:

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Should your response to any of the below require new calculations, please submit the new calculations, assumptions, reference material and appropriate pages of the application form (DEP Form 62-210.900(1) Effective 2/11/99). Please note that up to date versions of the application form can be down loaded from the Department's webpage:
http://www.dep.state.fl.us/air/forms/application.htm#airpermit.

1. Section II. Facility Information, Subsection B. Facility Pollutants. The VOC emissions are listed as 20 TPY. This estimate seems low as the MEK and TPD were estimated at 47 TPY and 32 TPY, respectively. Are the 20 TPY other VOCs? Please explain. Also, please provide the total HAPs for this facility.
2. Section II. Facility Information, Subsection C. Facility Plot Plan and Document 2. An area on the facility plot plan is noted as "Existing Booths Not Used." What booths are these and if they are paint booths are there plans to put them in use for painting or another activity? Or are there plans to dismantle them? Please explain.
3. Section II. Facility Information, Subsection C. Facility Plot Plan and Document 2. A portion of the building was labeled as off-line operations, including woodwork and electrical tasks,

on the facility plot plan. Woodshop activities are noted in the insignificant list. Please confirm if the offline operations includes the woodshop. Also please note if there are any venting or building fans installed near these activities.

4. Section II. Facility Information, Subsection C. Facility Plot Plan, Process Flow Diagram and Document 2. Storage of resins and miscellaneous VOC/HAP containing materials were not indicated on the drawings. Please provide information regarding how these materials will be stored and what reasonable precautions will be taken to minimize spill, odors, and emissions.
5. Section III. Emissions Unit Information, Subsection A. General Emissions Unit Information, Page 13. Hydro Spa indicated that the emissions were uncontrolled. As odors could possibly be a problem, please provide information on activities and reasonable precautions to be taken that will minimize odors and emissions.
6. Section III. Emissions Unit Information, Subsection C. Emissions Unit Regulations. The Reinforced Plastic Composites Production MACT, 40 CFR 63 Subpart WWWW (http://www.epa.gov/airlinks/airlinks3.html) just became a final regulation. In order to determine if your facility's products meet the definition of "large open molding part, " please provide the dimensions of the spas to be produced at this facility. EPA defines the large open molding part as a part that, when the final finished part is enclosed in the smallest rectangular six-sided box into which the part can fit, the total interior volume of the box exceeds 250 cubic feet, or any interior sides of the box exceed 50 square feet,
7. Section III. Emissions Unit Information, Subsection E. Segment (Process/Fuel) Information. In Segment 1 for the resin application, the maximum monthly rate and maximum annual rate (fields 4 and 5) were left blank. Please clarify or correct and re-submit this information. Also, in Segment 2, the maximum hourly and annual rates fields refer to the VOC calculation page. In the VOC potential to emit calculation field 8 of Subsection G. Emissions Unit Pollutant Detail Information, the maximum tons used is not clear. To clarify and avoid confusion, please provide the information either in fields 4 and 5 or field 10 of the Subsection E. Segment (Process/Fuel) Information and re-submit the form. Also, please indicate if there are any other operations that will be ongoing at the facility (e.g. polymer casting).
8. Section III. Emissions Unit Information, Subsection F. Emissions Unit Pollutants' and Subsection G. Emissions Unit Detail Information. Total HAPs should also be included. Please re-submit corrected forms with the Total HAPs.
9. Section III. Emissions Unit Information, Subsection G. Emissions Unit Detail Information, Styrene. Please indicate the styrene content in the resin as well as the method of application to document the origination of the 83 lb/ton emissions factor used.
10. Section III. Emissions Unit Information, Subsection G. Emissions Unit Detail Information, Methylene Diphenyl Diisocyanate (MDI). Please provide a print out or copy showing where the emissions factor of 0.014 lbs MDI/hour came from or how it was derived based on the MDI Emissions Estimator Program.

11. Section III. Emissions Unit Information, Subsection G. Emissions Unit Detail Information, Methyl Ethyl Ketone (MEK). According to the MSDS provided, Cadox contains 2% MEK and 35% Methyl Ethyl Ketone Peroxide (MEKP). MEKP is a different organic compound than MEK. Is the applicant assuming that 100% of the MEKP reacts to form MEK? Please clarify the emissions estimate and, if applicable, how MEKP converts to form MEK.
12. Section III. Emissions Unit Information, Subsection G. Emissions Unit Detail Information, VOC (non-styrene). See item 1 of this correspondence. The VOC (non-styrene) seems low as the sum of MEK, MDI, and TPD would be greater than 20.2 TPY. Please clarify and if applicable correct this estimate. Please explain the basis of 0.78 ton VOC/ton MEKP. It was not clear in the MSDS provided. Please highlight on the MSDS, the basis for the VOC content as used in the emissions estimate.

Professional Engineer (P.E.) Certification Statement: Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature.

The Department must receive a response from you no later than May 9, 2003. If you have any questions, please let me know at (813)744-6100 x117.

Sincerely,

Ann Quillian, P.E.
Air Permit Engineer

cc: James C. Andrews, Jr., P.E., Southern Environmental Sciences, Inc.

Attachment FSI-06
Exempt Activities

Description

Internal Combustion Engines - Vehicles
Wood Working Equipment, Vented Indoors
Brazing, Soldering or Welding Equipment
Emergency Generators
Heating Units, General Purpose IC Engines and Other Combustion Sources
Fire & Safety Equipment
Fungicide, Herbicide, & Pesticide Applications
Asbestos Renovation & Demolition Activities
Lawn & Ground Maintenance Equipment