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SEP 29 2004

BUREAU OF AIR REGULATION

September 28, 2004

Mrs. Cindy L. Phillips, P.E.
Florida Department of Environmental Protection
111 South Magnolia Avenue, Suite 4
Tallahassee, Florida 32301

Via FedEx
Airbill No. 7907 7933 3490

**Re: Tampa Electric Company
Big Bend Station
FDEP File No. 0570039-013-AV
Notification of Use of Coal Treated with
Nalcoal® 7899 and Nalcoal® 9838/9838-1 Binders**

Dear Mrs. Phillips:

Tampa Electric Company (TEC) received the Florida Department of Environmental Protection's (Department) authorization on May 15, 2002 to utilize the COVOL 298 and COVOL 298-1 binders as chemical dust suppressants for use in reducing fugitive emissions during coal handling and storage. TEC is requesting to utilize additional binders which have recently been made available that are comprised of an organic liquid latex polymer and possess similar characteristics as the COVOL 298 and COVOL 298-1. Specifically, these binders are the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders. These new binders are similarly effective in controlling fugitive coal dust.

Enclosed in Appendix A are the Professional Engineer's (P.E.) Certification along with the material safety data sheets (MSDS) and comparison of the characteristics. The MSDS and P.E. certify there will be no increase in emissions with the use of these binders as dust suppressants. Since there will be no increase in emissions, this activity is not considered a modification of a process and therefore does not require an air construction permit. In addition, a Responsible Official Certification is enclosed in Appendix B.

As noted in a letter sent to the Department dated October 21, 2002, TEC intends to combust coal treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders at Big Bend Station. Because the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders will reduce fugitive particulate matter emissions during coal handling and storage, TEC considers the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders to be a *chemical dust suppressant* and therefore authorized for use by our Title V permit by Appendix TV-3, Title V Conditions (version dated 04/30/99), Condition No. 58. This permit condition expressly authorizes the use of dust suppressants.

Subsequently, TEC received the Department's letter dated January 24, 2003 regarding TEC's request to treat solid fuel with the Nalcoal 7899 and 9838.9838-1 latex binders that are used as chemical dust suppressants at Big Bend Station. Your January 24, 2003 letter indicates the Department does not consider use of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders to be a *chemical dust suppressant* in the context of Appendix TV-3, Title V Conditions (version dated 04/30/99), Condition No. 58, but rather would constitute a *modification* subject to Department permitting procedures, i.e., requiring an air construction permit and Title V permit revision.

TEC strongly disagrees that the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders are not *chemical dust suppressants*. The binders are clearly "chemicals" and they are also clearly used for suppressing coal dust during handling and storage of the coal. Appendix TV-3, Title V Conditions, Condition No. 58 expressly states that reasonable precautions that TEC may take to control unconfined fugitive emissions include *but are not limited to*: the "[a]pplication of asphalt, water, oil, chemicals or other dust suppressants to ... yards, open stock piles and similar emissions units." The use of coal treated with a chemical dust suppressant in lieu of untreated coal falls squarely within this provision, but in any event, Condition 58 authorizes TEC to take *any* reasonable precautions to control unconfined emissions, specifically noting that those precautions shall *not* be limited to the ones that are expressly listed. Presumably, the Department is not taking the position that the use of binder-treated coal is "unreasonable."

Even assuming that the use of the new binders is not *already* authorized by the permit (which it is), TEC further notes that the handling, storage, and combustion of the treated coal is also: (1) exempt from Department air construction permit requirements, and (2) an *insignificant activity* under the Department's Title V permit regulations. Each of these permitting issues is discussed in the following sections.

Air Construction Permit Requirements

Unless exempt from permitting pursuant to Rule 62-210.300(3)(a), F.A.C. or Rule 62-210.300(3)(b), F.A.C., or by Rule 62-4.040, F.A.C., an air construction permit is required for any "modification" of an existing facility prior to the beginning of construction or modification, pursuant to Rule 62-210.300(1)(a), F.A.C. *Modification* is defined by Rule 62-210.200(169) generally as:

“any physical change in, change in the method of operation, or addition to a facility which would result in an increase in the actual emissions of any air pollutant subject to regulation under the Act, including any not previously emitted, from any emissions unit or facility”.

As set forth above, the use of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders is presently authorized by Appendix TV-3, Title V Conditions (version dated 04/30/99), Condition No. 58, and therefore would not represent a change in the method of operation. However, even if it is considered a "change in the method of operation", the handling, storage, and combustion of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders treated coal would also be exempt from

permitting pursuant to Rule 62-210.300(3)(b)1., F.A.C., *Generic Emission Unit Exemption*. This rule provides for an exemption from the requirement to obtain an air construction permit if the proposed emission unit or activity meets the following criteria:

- 1) The pollutant-emitting activity must not be subject to any unit-specific applicable requirement;
- 2) Potential emissions from the pollutant-emitting activity must not equal nor exceed 500 pounds per year (lb/yr) of lead and lead compounds expressed as lead, 1,000 lb/yr of any hazardous air pollutant (HAP), 2,500 lb/yr of total HAPs, and 5.0 tons per year (tpy) of any other regulated pollutant;
- 3) Emissions from the pollutant-emitting activity, in combination with the emissions of other units and activities at the facility, would not cause the facility to emit or have the potential to emit any pollutant in such amount as to make the facility a Title V source;
- 4) For a proposed new emission unit at an existing source, emissions of such unit, in combination with the emissions of any other proposed new or modified units and activities at the facility, would not result in a modification subject to the preconstruction review requirements of Rule 62-204.800(10)(d)2., 62-212.400 or 62-212.500, F.A.C.; and
- 5) For a proposed new pollutant-emitting activity, such activity would not constitute a modification of any existing non-exempt emissions unit at a non-Title V source or any existing non-insignificant emissions unit at a Title V source.

The activity at issue is the handling, storage and combustion of coal treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders *in lieu of* coal that is not so treated. First, such an activity will not be subject to any unit-specific applicable requirement. Rule 62.296.320(4)(c), F.A.C., which is the source of Appendix TV-3, Title V Conditions, Condition No. 58, is expressly *excluded* from the definition of "unit-specific application requirement." Rule 62-210.200(271), F.A.C. (Note that TEC will continue to comply with all existing Big Bend Station fuel yard and combustion unit applicable requirements and the handling, storage and combustion of treated coal in place of untreated coal.) Second, potential emissions resulting from the handling, storage, and combustion of coal treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders will be well below the emission thresholds listed above in permit exemption criterion (2).

Permit exemption criterion (3) above is not applicable since the Big Bend Station is already a Title V source, notwithstanding the use of treated coal in place of untreated coal. Finally, the available data indicates that any emissions reasonably anticipated from the handling, storage and combustion of treated coal in place of untreated coal will be negligible and *de minimis* at most and in fact will *reduce* fugitive emissions during storage and handling. Any emissions from this proposed activity will be well below the significance thresholds set forth in Rule 62-212.400.

Therefore, the proposed activity of handling, storage and combustion of binder treated coal in place of untreated coal meets the exemption criteria and is not required to obtain an air construction permit.

Major Source Operation (Title V) Permit Requirements

If a new activity or unit at a Title V source meets the generic exemption criteria above, it can be treated as "insignificant" for Title V purposes and listed as such in the Title V permit.

Per Rule 62-213.430(6)(a), F.A.C., *Insignificant Emissions Units or Pollutant-Emitting Activities*,:

“Emissions units or activities which are added to a Title V source after issuance of a permit under this chapter shall be incorporated into the permit at its next renewal, provided such emissions units or activities have been exempted from the requirement to obtain an air construction permit and also qualify as insignificant pursuant to this rule.”

Rule 62-213.430(6)(b), F.A.C. contains the following three criteria for the activity to be considered "insignificant":

- 1) The pollutant-emitting activity must not be subject to any unit-specific applicable requirement;
- 2) Emissions from the pollutant-emitting activity, in combination with other units and activities proposed as insignificant, would not cause the facility to exceed any major source threshold(s) as defined in subparagraphs 62-213.420(3)(c)1., F.A.C., unless it is unless it is acknowledged in the permit application that such units or activities would cause the facility to exceed such threshold(s); and
- 3) Potential emissions from the pollutant-emitting activity must not equal nor exceed 500 lb/yr of lead and lead compounds expressed as lead, 1,000 lb/yr of any HAP, 2,500 lb/yr of total HAPs, and 5.0 tpy of any other regulated pollutant.

Note that criteria (1) and (3) above are identical to criteria contained in the *Generic Emissions Unit Exemption*; see Rule 62-210.300(3)(b)1a., F.A.C. and Rule 62-210.300(3)(b)1b., F.A.C. As noted previously, the handling, storage and combustion of coal treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders will not be subject to any unit-specific applicable requirement, and potential emissions will be well below the emission thresholds listed above in criteria (3). Criteria (2) above is not applicable since Big Bend Station presently exceeds major source thresholds as defined in subparagraphs 62-213.420(3)(c)1., F.A.C., even without considering any impact from the use of the new binder (which would be negligible).

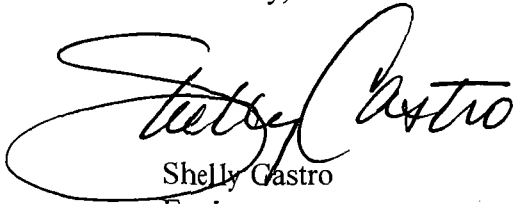
Therefore, the proposed handling, storage and combustion of treated coal in place of untreated coal will constitute an "insignificant activity" for Title V purposes.

Mrs. Cindy L. Phillips, P.E.
September 28, 2004
Page 5 of 5

In conclusion, TEC continues to believe that the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders should be considered a *chemical dust suppressant* and therefore *already* authorized for use by TEC's Title V Operating permit by Appendix TV-3, Title V Conditions (version dated 04/30/99), Condition No. 58. Alternatively, the handling, storage and combustion of coal treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders in place of untreated coal is also considered to be exempt from air source construction permit requirements pursuant to Rule 62-210.300(3)(b)1., F.A.C., *Generic Emission Unit Exemption* and to constitute an *insignificant activity* pursuant to Rule 62-213.430(6)(b), F.A.C.

TEC would appreciate the Department's review of the permitting issues addressed in this letter and receiving acknowledgment that TEC is authorized to handle, store and combust coal treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders at Big Bend Station. Please contact me at (813) 228-4408 if you have any questions.

Sincerely,



Shelly Castro
Engineer
Environmental, Health & Safety

EA/bmr/SSC204

Enclosures

c/enc: Mr. Al Linero, FDEP
Mr. Jonathan Holtom, FDEP
Mr. Jerry Kissel, FDEP-SW District
Mr. Jerry Campbell, EPCHC
Mr. Sterlin Woodard, EPCHC

Responsible Official Certification

I, the undersigned, am the responsible official as defined in Chapter 62-213, F.A.C., of the Title V source for which this document is being submitted. I hereby certify, based on the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binder information and belief formed after reasonable inquiry, that the statements made and data contained in this document are true, accurate, and complete.

Karen A. Sheffield

Signature

9/28/04

Date

Karen A. Sheffield

Name

General Manager, Big Bend Station

Title



Environmental Consulting & Technology, Inc.

August 30, 2004

Ms. Shelly Castro
Tampa Electric Company
6944 U.S. Highway 41 North
Apollo Beach, FL 33572-9200

**Re: Tampa Electric Company
Big Bend Station
Use of Coal Treated with Latex Binders
COVAL and Nalcoal® Binders**

Dear Ms. Castro:

Professional engineer certifications were previously provided to Tampa Electric Company (TEC) regarding the environmental issues associated with the handling and combustion of coal treated with dust suppressant binders. The specific binders evaluated were COVOL 298 and COVOL 298-1 made by Dow Chemical Company. The Florida Department of Environmental Protection (FDEP) subsequently approved these binders as Title V permit authorized "chemical dust suppressants" for use in reducing fugitive dust emissions during coal handling and storage. A copy of the FDEP approval letter is attached (Attachment A).

In response to your request, this letter provides a professional engineer certification for two additional binding materials planned for use at the Big Bend Station. These binding materials are manufactured by ONDEO Nalco Company and are identified as Nalcoal® 7899 and Nalcoal® 9838/9838-1. Product information bulletins and Material Safety Data Sheets (MSDS) for the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders are attached (Attachment B).

All three coal binders (COVOL 298/ COVOL 298-1, Nalcoal® 7899, and Nalcoal® 9838/9838-1 binders) are organic liquid latex polymers that possess similar characteristics. A comparison of the characteristics of the three binders is provided in Attachment C. As with the prior binding materials, the ONDEO Nalco Company Nalcoal® 7899 and Nalcoal® 9838/9838-1 coal binders will serve to reduce fugitive particulate matter emissions during coal handling and storage. The Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders reduce potential fugitive particulate matter (PM) emissions due to coal handling and storage by joining or binding fine coal particles into the binder coating. This certification addresses the collateral issues of: (a) potential emissions of volatile organic compound (VOC) emissions, (b) binder combustion emissions, and (c) potential surface runoff contamination. Each of these issues are discussed in the following sections.

42 Read's Way
New Castle, DE
19720

(302)
324-5260

FAX (302)
324-5261

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A. Potential for VOC Emissions

The Material Safety Data Sheet (MSDS) for the Nalcoal® 7899 binder indicates that the material is a light blue liquid with a density of 9.16 lb/gal and a vapor pressure of 18.5 mm Hg at 70°F. The MSDS also indicates that the liquid binder contains no VOCs, i.e., a VOC content of 0.00%. Additional information obtained from ONDEO Nalco (i.e., Nalcoal® 7899 Product Information bulletin) notes that the VOC content of 0.0% is based on EPA Reference Method 24. The Product Information bulletin provides additional data regarding the as-received Nalcoal® 7899 binder including a heat content of 5,817 Btu/lb, moisture content of 44 to 46 weight percent, boiling point greater than 221°F, ash content of 0.11 percent by weight, and sulfur content of 0.01 percent by weight.

ONDEO Nalco has further advised that the Nalcoal® 7899 binder is a liquid copolymer that consists of: (a) 52.5 weight percent proprietary emulsion of high molecular weight vinyl acetate/ethylene copolymer (*organic solids*), (b) 5 percent by weight diethylene glycol solution (aqueous solution contains approximately 20 percent by weight diethylene glycol and 80 percent by weight water), and (c) 46.5 weight percent water. Range of binder organic solids is 52 to 55 weight percent and range of water content is 45 to 48 weight percent.

The Product Information bulletin states that the Nalcoal® 7899 binder attaches itself to the raw coal fuel and is essentially irreversible once cured. The Nalcoal® 7899 binder MSDS vapor pressure data (i.e., 18.5 mm Hg at 70°F) indicates that the binder vapor pressure is primarily due to the water content of the material (vapor pressure of water at 70°F is 18.8 mm Hg).

The physical and chemical characteristics of the Nalcoal® 9838/9838-1 binder are very similar to the Nalcoal® 7899 binder. The Nalcoal® 9838/9838-1 binder has a vapor pressure equal to that of water and does not contain any VOCs as determined by EPA RM 24. The Nalcoal® 9838/9838-1 binder contains approximately 40 weight percent organic polymer solids and 60 weight percent water.

The chemical and physical properties noted above for the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders are on an "as-received" basis; i.e., on a wet basis. Since TEC plans to receive coal that has been previously treated with the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders (i.e., following curing of the binder), any VOC emissions during storage and handling of the treated coal at the Big Bend Station will be negligible.

B. Coal Binder Combustion Emissions

The as-received Nalcoal® 7899 and Nalcoal® 9838/9838-1 binder materials are liquid emulsions comprised of a polymerized hydrocarbon (i.e., high molecular weight vinyl acetate/ethylene copolymer) and water. The high combustion temperatures and residence times occurring in the Big Bend Station coal-fired units would be expected to result in essentially complete combustion of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binder organic polymers to carbon dioxide (CO₂) and water (H₂O). The dosage rate of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders is approximately 4 to 8 pounds of as-received binder per ton of coal. Following curing, each ton of treated coal will contain approximately 2 to 4 pounds of binder copolymer solids. The Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders therefore represent a very small portion of the treated coal (i.e., 0.1 to 0.2 weight percent on a cured binder basis).

The Nalcoal® 7899 binder contains 0.2 weight percent ash and 0.02 weight percent sulfur on a cured (i.e., dry) basis. The Nalcoal® 9838/9838-1 binder contains up to 0.6 weight percent ash and 0.13 weight percent sulfur on a cured, dry basis. These ash and sulfur levels are well below the levels found in the parent (i.e., untreated) coal. The Big Bend Station boilers are equipped with high efficiency electrostatic precipitators and wet flue gas desulfurization (FGD) air pollution control systems for particulate matter (PM) and sulfur dioxide (SO₂) control. Due to the low level of cured binder in the treated coal (0.1 to 0.2 weight percent), the low levels of ash and sulfur in the cured binder, and the existing Big Bend Station air pollution control systems, no changes in PM or SO₂ emissions would be expected. Similarly, no changes in emissions rates of pollutants that are primarily affected by combustion process conditions (i.e., NO_x, CO, and VOCs) are expected since boiler operating conditions will not change due to use of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binder treated coal.

The higher heating values (HHVs) of the cured (dry basis) Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders are comparable to that of the parent coal. Accordingly, coal treated with the binders will slightly reduce potential SO₂ emissions due to the much lower sulfur content of the binders. However, this reduction will be insignificant due to the small amount of binder that is applied to the parent coal. Overall, coal and coal treated with the latex binders will have essentially the same characteristics and emission rates.

C. Potential Surface Runoff Contamination

The Product Information bulletin states that the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders attach to the raw coal fuel and are essentially irreversible once cured. Accordingly, the Nalcoal® 7899 and Nalcoal® 9838/9838-1 cured binder solids would be expected to remain with the coal and ultimately be oxidized in the Big Bend Station boilers. Surface

Ms. Shelly Castro
August 30, 2004
Page 4 of 4

runoff from the treated coal handling and storage areas would therefore be expected to contain negligible, if any, amounts of the Nalcoal® 7899 and Nalcoal® 9838/9838-1 binders.

Please contact me at (352) 332-6230, Ext. 351 if there are any questions regarding this certification.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

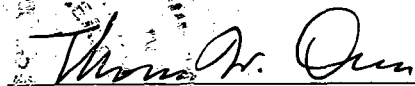
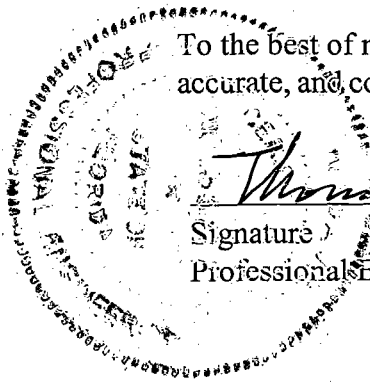


Thomas W. Davis, P.E.
Principal Engineer

Professional Engineer Statement:

I, the undersigned, hereby certify that:

To the best of my knowledge, the emission estimates reported in this certification are true, accurate, and complete based upon reasonable techniques available for estimating emissions.



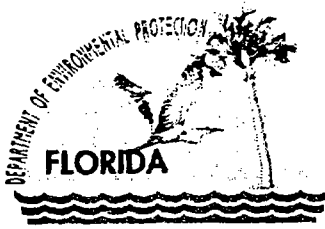
Signature
Professional Engineer No. 36777

8/30/04

Date

ATTACHMENT A

**FDEP APPROVAL LETTER
COVOL 298 AND COVOL 298-1 BINDERS**



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

May 15, 2002

Ms. Shelly Castro
Associate Engineer, Environmental Affairs
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Re: Recognition of Latex Binders as Dust Suppressants

Dear Ms. Castro:

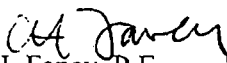
We have received your request to begin using two different latex binders on your coal as a means of suppressing fugitive dust (COVOL 298 and COVOL 298-1, made by DOW Chemical Company). We have also received a certification from your Professional Engineer detailing the lack of detrimental environmental effects resulting from the use of this product.

It is our opinion that these particular materials falls within the classification of "chemical dust suppressant" that is authorized by your Title V permit (see Appendix TV-3, condition 57.). For inspection purposes, please retain on-site a copy of the material safety data sheets (MSDS), a copy of your contract with the coal supplier(s) specifying the material that will be applied to your coal, and a certification from the supplier(s) accompanying each delivery that attests that this is the only material that has been applied to your coal. If TECO or the supplier desires to use a different material, you must inform the Department and receive concurrence prior to combusting the new product.

Under the provisions of Rule 62-297.310(7)(b), F.A.C., if, at any time, the Department has good reason to believe that any of your emission limits are not being met (i.e. increased particulate matter, etc.), it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department.

Should you have any questions regarding this matter, please contact Jonathan Holtom, P.E., at (850) 921-9531, or write to me at the above letter head address.

Sincerely,


C.H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/jh

cc: Mr. Thomas W. Davis, P.E., ECT
Mr. Buck Oven, P.E., DEP
Mr. Jerry Kissel, P.E., DEP-SWD
Mr. Jerry Campbell, P.E., EPCHC

"More Protection, Less Process"

ATTACHMENT B

**PRODUCT INFORMATION BULLETINS
MATERIAL SAFETY DATA SHEETS**

NALCOAL® 7899 BINDER

NALCOAL® 9838/9838-1 BINDER

NALCOAL® 7899 BINDER

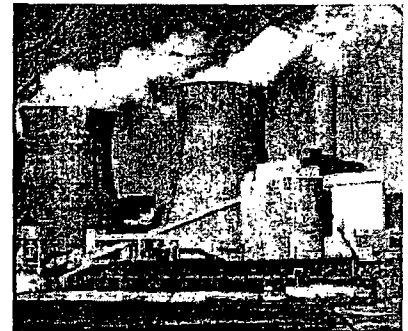
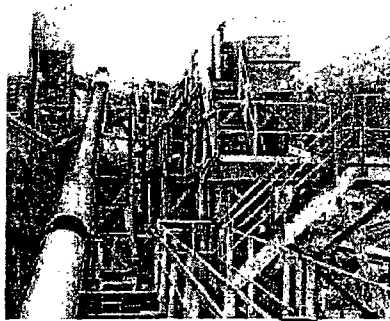


Program Profile PR-226

NALCOAL[®] 7899 Synthetic Fuel Change Agent

NALCOAL 7899 provides maximized power production availability to the fuel buyer and provable consistent chemical change* to the synfuel producer, while it improves fuel handling characteristics throughout the delivery chain.

From the Producer . . .



To the Consumer

FEATURES	BENEFITS
<ul style="list-style-type: none"> Applied in concentrated form at low dosages and adds no free water 	<ul style="list-style-type: none"> Enhances power production availability Eliminates "wet coal" handling problems and Btu losses Provides consistent, provable chemical change* Affords superior cost effectiveness Cuts delivery frequency and freight costs Reduces application equipment size and cost
<ul style="list-style-type: none"> Creates a quick curing non-petroleum based water-resistant film 	<ul style="list-style-type: none"> May eliminate the need for curing and double handling Reduces leach of toxic contaminants in transit and storage
<ul style="list-style-type: none"> Environmentally friendly in transit and combustion 	<ul style="list-style-type: none"> Uses no toxic chemicals Eliminates water pollution hazards in transit Requires no new OSHA, CERCLA or SARA reporting Reduces leach, flash, and wash-off hazards Creates no hazardous by-products when burned
<ul style="list-style-type: none"> 100% virgin organic materials 	<ul style="list-style-type: none"> Fully combustible, generates no new ash Ensures predictable performance Eliminates unknown by-product toxicity risks
<ul style="list-style-type: none"> No makeup required 	<ul style="list-style-type: none"> Simplifies application system Minimizes equipment headaches Reduces maintenance costs
<ul style="list-style-type: none"> High volume, domestic manufacture 	<ul style="list-style-type: none"> Improves response time Ensures adequate supply

(Continued on Reverse Side)



Available Services

ONDEO Nalco provides an array of available services that can be combined to meet the needs of both the synfuel producer and consumer. Among the most popular are the following:

- On-Site Process Consulting
- Application Equipment Design, Installation and Start-Up Services
- Application and Performance Monitoring at Any Point Along the Supply Chain
- Application Equipment Maintenance and Troubleshooting
- Opticus® Automated Process Control Software and Hardware
- Opticus Installation, Customization, Maintenance and Troubleshooting
- Analytical Testing of Coal, Water, Tailings and Synthetic Fuel Samples
- Data Collection and Analysis
- Inventory and Logistics Management

Principal Uses

NALCOAL 7899 liquid copolymer is formulated for easy application to fossil-based fuel feed stocks. When properly applied, NALCOAL 7899 may achieve a significant chemical change* at unusually low dosages, verifiable by independent laboratories, as well as superior handling and combustion benefits to the fuel user.

General Description

NALCOAL 7899 is an easily handled and applied liquid copolymer that maintains low viscosity across a broad temperature range. NALCOAL 7899 uses no oil, domestic or foreign, and contains no volatile organic carbon (VOC) emission potential (per US-EPA's Reference Method 24).

For additional chemical and physical properties, ask your ONDEO Nalco Representative for a copy of the NALCOAL 7899 Material Safety Data Sheet.

Dosage and Application

Applications of NALCOAL 7899 in "neat" or concentrated form cure quickly and may eliminate unproductive moisture addition. Dosage requirements, typically 3 to 6 pounds, will vary depending upon the characteristics of the fossil feedstock. Your ONDEO Nalco Representative has all the resources necessary to help determine the optimum dosage and application requirements.

Handling

While NALCOAL 7899 is not toxic in use, care should always be exercised in the handling and application of any chemical additive. Consult the package label and Material Safety Data Sheet for complete handling information before using this product.

Shipping and Storage

NALCOAL 7899 Synfuel Additive is available in bulk. Evaluation quantities are also available in non-returnable containers. Suggested in-plant storage is one year in unopened containers. Preferred metallurgy for storage, transfer and feeding are stainless steel, fiber-glass, polyethylene or epoxy-lined carbon steel. While NALCOAL 7899 is moderately incompatible with carbon steel, continuing to use existing carbon steel tanks, lines and pumps that are in good condition should still provide adequate service life and pose no immediate need for replacement.

Remarks

If you need further assistance or information, please contact your ONDEO Nalco representative or our corporate office toll free at (888) 879-7656. For more information about ONDEO Nalco Company, its people, programs, products and services, visit www.ondeo-nalco.com.

For Medical and Transportation Emergencies in the United States, involving ONDEO Nalco products, call 1-800-424-9300 anytime, day or night.

**Based upon Fourier Transform Infrared Spectrometry (FTIR) and Thermogravimetric Analysis (TGA) tests conducted by an independent third party laboratory and the independent laboratory's statistical analysis of the test results. Results vary based upon the characteristics of the substance treated and the amount of the NALCOAL 7899 additive used.*

NALCOAL ... Making Coal... Better!™

ONDEO Nalco Company Ondeo Nalco Center • Naperville, Illinois 60563-1198

SUBSIDIARIES AND AFFILIATES IN PRINCIPAL LOCATIONS AROUND THE WORLD

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Nalcoal 7899 Product Information (Expanded and Refined 3-2002)

Element	"Wet" (As Received) Trace Metals Analysis (p.p.m.)	Post Ignition Trace Metals Analysis (% by wt. in 0.2% ash*)
Aluminum		0.18% of ash
Antimony	0.003	
Arsenic	0.32	
Barium		0.01% of ash
Beryllium	<0.001	
Cadmium	<0.001	
Calcium		0.30% of ash
Chromium	<0.001	
Cobalt	<0.001	
Copper	6.852	
Iron		0.01% of ash
Lead	0.86	
Lithium	0.0121	
Manganese		0.01% of ash
Magnesium		3.08% of ash
Mercury	0.04	
Molybdenum	<.001	
Nickel	0.118	
Phosphorus		41.25% of ash
Potassium		0.01% of ash
Selenium	0.037	
Silica		2.28% of ash
Silver	0.0089	
Sodium		48.51% of ash
Strontium		0.03% of ash
Sulfur		3.19% of ash
Titanium		0.01% of ash
Total Halogens (See Below)	228	
Bromide	20	
Chloride	170	
Fluoride	22	
Iodide	6	
Vanadium	0.034	
Zinc	0.620	
*Total Halogens: SW 846 Method 9253 • Chloride: ASTM D 4208 • Fluorine: ASTM D 3761 • Bromine: ASTM D-4208 (modified) • Iodine: by difference		

* 7899 as received is 99.99 % organic compounds, 0.01% ash. **Extractable Organic Halides were NOT DETECTABLE

Nalcoal 7899 Product Information (cont'd.)

General Information

Nalcoal 7899 is manufactured in the U.S. using raw materials produced within the U.S.

IMPORTANT: Nalcoal 7899 contains NO Volatile Organic Carbon (VOC) (EPA method 24)

Nalcoal 7899 attaches itself to the raw fuel via Van der Waals physical forces and, once cured, is essentially irreversible. Curing generates a water-resistant film on the surface of the coal particles. As a result of this bonding action, Nalcoal 7899 cannot be leached out of the coal under ambient conditions. Independent laboratory data further indicates that this film may actually assist in prevention of leaching of pre-existing toxic contaminants from so-treated synfuel.

Nalcoal 7899 permits the joining of fine coal particles into the film. The cured film formed with Nalcoal 7899 exhibits no tackiness and largely eliminates airborne particulate problems associated with flowability, handling, milling and grinding.

Nalcoal 7899 is typically fed neat when available mixing is adequate. The product may also be diluted with water at a 1:1 ratio (or less) when needed. Nalcoal 7899 is easily diluted with an in-line mixer. Water added (typically 4-5 pounds per ton) with concentrated Nalcoal 7899 is minimal, particularly when compared with paper process waste/by-products or asphaltine emulsions.

MSDS Information

NFPA 704/HMIS Ratings:	
Health	0/1 (Insignificant/Slight)
Flammability	1/1 (Slight/Slight)
Reactivity	0/0 (Insignificant/Insignificant)
Percent Solids	55%
Physical State	Liquid
Appearance	Bluish White
Odor	Slight, Vinegar
Density	9.1 lbs.(±0.1 lbs.)/gallon
Solubility in Water	Completely Dispersible
pH (100% Nalcoal 7899)	4.5
Boiling Point	> 221° F
Volatile Organic Carbon (VOC)	0% per EPA Method 24
Freeze Point	24° F No Freeze/Thaw recovery

Nalcoal 7899 Product Information (cont'd.)

Proximate Analysis (as received):	Ultimate Analysis	
Btu Value: approx. 5817/pound	As Received	Dry Basis
Moisture: 44 to 46%	Carbon: 33.12	Carbon: 59.76%
Ash: 0.11% as received	Hydrogen: 3.58%	Hydrogen: 6.46%
Fixed Carbon: 0.15%	Nitrogen: 0.10%	Nitrogen: 0.18%
VOC: 0% (EPA Method 24)	Oxygen: 18.50%	Oxygen: 33.38%
Volatiles Matter: 53 to 56%	Sulfur: 0.01%	Sulfur: 0.02%

Ash Composition (Energy Dispersive X-Ray Analysis)

EDXA analysis of the ash resulting from combustion of Nalcoal 7899 indicates the presence of sodium, sulfur, calcium and potassium.

Viscosity Data

Degrees F	centiPoise
45	960
60	760
75	630
90	600

Toxicity Information

Nalcoal 7899 contains no substances on the SARA Section 313 list of toxic chemicals (40 CFR 372) as indicated in the MSDS. Nalcoal 7899 contains no compounds reportable under TRI.

Nalcoal 7899 is non-toxic and generates no hazardous materials when added to coal. No aromatic organic raw materials or their derivatives such as benzene, toluene, xylene or phenol are used in the manufacture of Nalcoal 7899. At dose levels, synthetic fuels produced using Nalcoal 7899 are odorless and generally indistinguishable from coal.

Although Nalcoal 7899 is combustible when applied to coal, flammable vapors are not produced by the application or combustion of Nalcoal 7899 with coal. The sole combustion products of Nalcoal 7899 are carbon dioxide and/or carbon monoxide. Nalcoal 7899 treatment generally has no adverse impact on sulfur dioxide or nitrogen oxide emissions upon combustion of the resulting fuel product. The treatment of coal with Nalcoal 7899 typically yields a product with a lower sulfur content per ton, due to the replacement of some of the sulfur-containing coal with a very low sulfur content of Nalcoal 7899. The change in sulfur content may not be considered significant by most end users.

Leachability (TCLP) Analysis

Leachability testing (TCLP) has been performed on representative coals treated with Nalcoal 7899. Samples were prepared with Nalcoal 7899 at a 0.2% dose level. With the exception of barium, no toxic leach products were detected during TCLP analysis. The levels of Barium from treated synfuel were consistent with levels found in the untreated coal feedstock.

ATTACHMENT A-2

NALCOAL[®] 9383 BINDER

DESCRIPTION AND PRODUCT INFORMATION

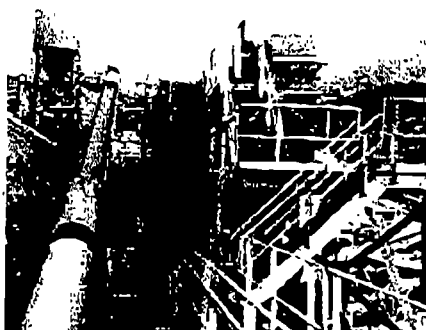


Program Profile PR-231

NALCOAL® 9838 Synthetic Fuel Change Agent

NALCOAL 9838 provides maximized power production availability to the fuel buyer and provable consistent chemical change* to the synfuel producer, while it improves fuel handling characteristics throughout the delivery chain.

From the Producer . . .



To the Consumer

FEATURES	BENEFITS
<ul style="list-style-type: none"> Applied in concentrated form at low dosages and adds no free water 	<ul style="list-style-type: none"> Enhances power production availability Eliminates "wet coal" handling problems and Btu losses Provides consistent, provable chemical change* Affords superior cost effectiveness Cuts delivery frequency and freight costs Reduces application equipment size and cost
<ul style="list-style-type: none"> Creates a quick curing non-petroleum based water-resistant film 	<ul style="list-style-type: none"> May eliminate the need for curing and double handling Reduces leach of toxic contaminants in transit and storage
<ul style="list-style-type: none"> Environmentally friendly in transit and combustion 	<ul style="list-style-type: none"> Uses no toxic chemicals Eliminates water pollution hazards in transit Requires no new OSHA, CERCLA or SARA reporting Reduces leach, flash, and wash-off hazards Creates no hazardous by-products when burned
<ul style="list-style-type: none"> 100% virgin organic materials 	<ul style="list-style-type: none"> Fully combustible, generates no new ash Ensures predictable performance Eliminates unknown by-product toxicity risks
<ul style="list-style-type: none"> No makeup required 	<ul style="list-style-type: none"> Simplifies application system Minimizes equipment headaches Reduces maintenance costs
<ul style="list-style-type: none"> High volume, domestic manufacture 	<ul style="list-style-type: none"> Improves response time Ensures adequate supply

(Continued on Reverse Side)



Available Services

ONDEO Nalco provides an array of available services that can be combined to meet the needs of both the synfuel producer and consumer. Among the most popular are the following:

- On-Site Process Consulting
- Application Equipment Design, Installation and Start-Up Services
- Application and Performance Monitoring at Any Point Along the Supply Chain
- Application Equipment Maintenance and Troubleshooting
- Opticus® Automated Process Control Software and Hardware
- Opticus Installation, Customization, Maintenance and Troubleshooting
- Analytical Testing of Coal, Water, Tailings and Synthetic Fuel Samples
- Data Collection and Analysis
- Inventory and Logistics Management

Principal Uses

NALCOAL 9838 liquid copolymer is formulated for easy application to fossil-based fuel feed stocks. When properly applied, NALCOAL 9838 may achieve a significant chemical change* at unusually low dosages, verifiable by independent laboratories, as well as superior handling and combustion benefits to the fuel user.

General Description

NALCOAL 9838 is an easily handled and applied liquid copolymer that maintains low viscosity across a broad temperature range. NALCOAL 9838 uses no oil, domestic or foreign, and contains no volatile organic carbon (VOC) emission potential (per US-EPA's Reference Method 24).

For additional chemical and physical properties, ask your ONDEO Nalco Representative for a copy of the NALCOAL 9838 Material Safety Data Sheet.

Dosage and Application

Applications of NALCOAL 9838 in "neat" or concentrated form cure quickly and may eliminate unproductive moisture addition. Dosage requirements, typically 3 to 6 pounds, will vary depending upon the characteristics of the fossil feedstock. Your ONDEO Nalco Representative has all the resources necessary to help determine the optimum dosage and application requirements.

Handling

While NALCOAL 9838 is not toxic in use, care should always be exercised in the handling and application of any chemical additive. Consult the package label and Material Safety Data Sheet for complete handling information before using this product.

Shipping and Storage

NALCOAL 9838 Synfuel Additive is available in bulk. Evaluation quantities are also available in non-returnable containers. Suggested in-plant storage is one year in unopened containers. Preferred metallurgy for storage, transfer and feeding are stainless steel, fiberglass, polyethylene or epoxy-lined carbon steel. While NALCOAL 9838 is moderately incompatible with carbon steel, continuing to use existing carbon steel tanks, lines and pumps that are in good condition should still provide adequate service life and pose no immediate need for replacement.

Remarks

If you need further assistance or information, please contact your ONDEO Nalco representative or our corporate office toll free at (888) 879-7656. For more information about ONDEO Nalco Company, its people, programs, products and services, visit www.ondeo-nalco.com.

For Medical and Transportation Emergencies in the United States, involving ONDEO Nalco products, call 1-800-424-9300 anytime, day or night.

**Based upon Fourier Transform Infrared Spectrometry (FTIR) and Thermogravimetric Analysis (TGA) tests conducted by an independent third party laboratory and the independent laboratory's statistical analysis of the test results. Results vary based upon the characteristics of the substance treated and the amount of the additive used.*

NALCOAL ... Making Coal... Better!™

ONDEO Nalco Company Ondeo Nalco Center • Naperville, Illinois 60563-1198

SUBSIDIARIES AND AFFILIATES IN PRINCIPAL LOCATIONS AROUND THE WORLD

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MATERIAL SAFETY DATA SHEET
PRODUCT
NALCOAL® 9838
EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
PRODUCT NAME : NALCOAL® 9838

APPLICATION : SYNTHETIC FUEL ADDITIVE

COMPANY IDENTIFICATION : Ondeo Nalco Company
 Ondeo Nalco Center
 Naperville, Illinois
 60563-1198

EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING
HEALTH : 0/1 **FLAMMABILITY :** 0/0 **REACTIVITY :** 0/0 **OTHER :**
 0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

2. COMPOSITION/INFORMATION ON INGREDIENTS

Based on our hazard evaluation, none of the substances in this product are hazardous.

3. HAZARDS IDENTIFICATION
****EMERGENCY OVERVIEW****
CAUTION

May cause irritation with prolonged contact.

Do not get in eyes, on skin, on clothing. Do not take internally. Wear suitable protective clothing. Keep container tightly closed. Flush affected area with water.

May evolve oxides of carbon (COx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :
EYE CONTACT :

No adverse effects expected.

SKIN CONTACT :

No adverse effects expected.

INGESTION :

Not a likely route of exposure. No adverse effects expected.

INHALATION :

Not a likely route of exposure. No adverse effects expected.

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1 / 8

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SYMPTOMS OF EXPOSURE :**

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

4. FIRST AID MEASURES**EYE CONTACT :**

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. If symptoms develop, seek medical advice.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES**FLASH POINT :** > 200 °F / > 93 °C (PMCC)**EXTINGUISHING MEDIA :**

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of carbon (COx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****6. ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Stop or reduce any leaks if it is safe to do so. Do not touch spilled material. Ventilate spill area if possible. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE**HANDLING :**

Avoid eye and skin contact. Do not take internally. Ensure all containers are labelled. Keep the containers closed when not in use.

STORAGE CONDITIONS :

Store the containers tightly closed. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**OCCUPATIONAL EXPOSURE LIMITS :**

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :

General ventilation is recommended.

RESPIRATORY PROTECTION :

Respiratory protection is not normally needed.

HAND PROTECTION :

Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HYGIENE RECOMMENDATIONS :**

Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Milky
ODOR	Slight, Vinegar
SPECIFIC GRAVITY	1.07 @ 60 °F / 15.6 °C
DENSITY	8.9 lb/gal
SOLUBILITY IN WATER	Dispersible
pH (100 %)	4.5 - 5.5
VISCOSITY	39.8 cps @ 77 °F / 25 °C
VAPOR PRESSURE	Same as water
EVAPORATION RATE	Same as water
VOC CONTENT	0.00 %

10. STABILITY AND REACTIVITY**STABILITY :**

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Freezing temperatures.

MATERIALS TO AVOID :

None known

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.


MATERIAL SAFETY DATA SHEET
PRODUCT
NALCOAL® 9838
EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC
SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION
ECOTOXICOLOGICAL EFFECTS :

The following results are for a similar product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	92.22 g/l	Similar Product

Rating : Essentially non-toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs		13.68 g/l	Similar Product

Rating : Essentially non-toxic

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Low

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are:

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(630)305-1000

5/8


MATERIAL SAFETY DATA SHEET
PRODUCT
NALCOAL® 9838
EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC
LAND TRANSPORT :

Proper Shipping Name :

 PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :

 PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :

 PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

15. REGULATORY INFORMATION
NATIONAL REGULATIONS, USA :
OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Based on our hazard evaluation, none of the substances in this product are hazardous.

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :
SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR / formerly Sec. 311 :

None of the substances are specifically listed in the regulation.

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6 / 8

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :
None of the substances are specifically listed in the regulation.

CALIFORNIA PROPOSITION 65 :

This product does not contain substances which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS :

None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :

None of the substances are specifically listed in the regulation.

NATIONAL REGULATIONS, CANADA :**WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

Not considered a WHMIS controlled product.

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

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7 / 8

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department
Date issued : 10/09/2001

Nalcoal® 9838 Product Information¹
Trace Element and Halogen Analyses:

Element	"Wet" (As Received) Analysis (p.p.m.)	Post Ignition Analysis % by wt. in ash (0.24% of dry solids**)
Alumina		0.12
Arsenic	0.038	
Barium oxide		0.01
Beryllium	< 0.001	
Cadmium	< 0.001	
Calcium oxide		0.04
Chromium	0.058	
Cobalt	0.029	
Copper	0.779	
Iron oxide		7.62
Lead	0.026	
Manganese oxide		0.04
Magnesium oxide		2.8
Mercury	0.02	
Molybdenum	0.036	
Nickel	<0.001	
Phosphorus pentoxide		21.90
Potassium oxide		0.01
Selenium	< 0.006	
Silica		8.35
Sodium oxide		56.61
Strontium oxide		0.01
Sulfur trioxide		1.74
Titania		0.01
Vanadium	0.004	
Zinc	0.317	
Total Halogens*(See Below)	<168	
Bromine	<20	
Chlorine	105	
Fluorine	39	
Iodine	4	
Extractable Organic Halides	NOT DETECTABLE	

*Total Halogens: SW 846 Method 9253

NALCOAL® 9838/9838-1 BINDER



Program Profile PR-231

NALCOAL® 9838 Synthetic Fuel Change Agent

NALCOAL 9838 provides maximized power production availability to the fuel buyer and provable consistent chemical change* to the synfuel producer, while it improves fuel handling characteristics throughout the delivery chain.

From the Producer...



To the Consumer

FEATURES	BENEFITS
<ul style="list-style-type: none"> Applied in concentrated form at low dosages and adds no free water 	<ul style="list-style-type: none"> Enhances power production availability Eliminates "wet coal" handling problems and Btu losses Provides consistent, provable chemical change* Affords superior cost effectiveness Cuts delivery frequency and freight costs Reduces application equipment size and cost
<ul style="list-style-type: none"> Creates a quick curing non-petroleum based water-resistant film 	<ul style="list-style-type: none"> May eliminate the need for curing and double handling Reduces leach of toxic contaminants in transit and storage
<ul style="list-style-type: none"> Environmentally friendly in transit and combustion 	<ul style="list-style-type: none"> Uses no toxic chemicals Eliminates water pollution hazards in transit Requires no new OSHA, CERCLA or SARA reporting Reduces leach, flash, and wash-off hazards Creates no hazardous by-products when burned
<ul style="list-style-type: none"> 100% virgin organic materials 	<ul style="list-style-type: none"> Fully combustible, generates no new ash Ensures predictable performance Eliminates unknown by-product toxicity risks
<ul style="list-style-type: none"> No makeup required 	<ul style="list-style-type: none"> Simplifies application system Minimizes equipment headaches Reduces maintenance costs
<ul style="list-style-type: none"> High volume, domestic manufacture 	<ul style="list-style-type: none"> Improves response time Ensures adequate supply

(Continued on Reverse Side)



Available Services

ONDEO Nalco provides an array of available services that can be combined to meet the needs of both the synfuel producer and consumer. Among the most popular are the following:

- On-Site Process Consulting
- Application Equipment Design, Installation and Start-Up Services
- Application and Performance Monitoring at Any Point Along the Supply Chain
- Application Equipment Maintenance and Troubleshooting
- Opticus® Automated Process Control Software and Hardware
- Opticus Installation, Customization, Maintenance and Troubleshooting
- Analytical Testing of Coal, Water, Tailings and Synthetic Fuel Samples
- Data Collection and Analysis
- Inventory and Logistics Management

Principal Uses

NALCOAL 9838 liquid copolymer is formulated for easy application to fossil-based fuel feed stocks. When properly applied, NALCOAL 9838 may achieve a significant chemical change* at unusually low dosages, verifiable by independent laboratories, as well as superior handling and combustion benefits to the fuel user.

General Description

NALCOAL 9838 is an easily handled and applied liquid copolymer that maintains low viscosity across a broad temperature range. NALCOAL 9838 uses no oil, domestic or foreign, and contains no volatile organic carbon (VOC) emission potential (per US-EPA's Reference Method 24).

For additional chemical and physical properties, ask your ONDEO Nalco Representative for a copy of the NALCOAL 9838 Material Safety Data Sheet.

Dosage and Application

Applications of NALCOAL 9838 in "neat" or concentrated form cure quickly and may eliminate unproductive moisture addition. Dosage requirements, typically 3 to 6 pounds, will vary depending upon the characteristics of the fossil feedstock. Your ONDEO Nalco Representative has all the resources necessary to help determine the optimum dosage and application requirements.

Handling

While NALCOAL 9838 is not toxic in use, care should always be exercised in the handling and application of any chemical additive. Consult the package label and Material Safety Data Sheet for complete handling information before using this product.

Shipping and Storage

NALCOAL 9838 Synfuel Additive is available in bulk. Evaluation quantities are also available in non-returnable containers. Suggested in-plant storage is one year in unopened containers. Preferred metallurgy for storage, transfer and feeding are stainless steel, fiberglass, polyethylene or epoxy-lined carbon steel. While NALCOAL 9838 is moderately incompatible with carbon steel, continuing to use existing carbon steel tanks, lines and pumps that are in good condition should still provide adequate service life and pose no immediate need for replacement.

Remarks

If you need further assistance or information, please contact your ONDEO Nalco representative or our corporate office toll free at (888) 879-7656. For more information about ONDEO Nalco Company, its people, programs, products and services, visit www.ondeo-nalco.com.

For Medical and Transportation Emergencies in the United States, involving ONDEO Nalco products, call 1-800-424-9300 anytime, day or night.

**Based upon Fourier Transform Infrared Spectrometry (FTIR) and Thermogravimetric Analysis (TGA) tests conducted by an independent third party laboratory and the independent laboratory's statistical analysis of the test results. Results vary based upon the characteristics of the substance treated, and the amount of the additive used.*

NALCOAL ... Making Coal... Better!™

ONDEO Nalco Company Ondeo Nalco Center • Naperville, Illinois 60563-1198

SUBSIDIARIES AND AFFILIATES IN PRINCIPAL LOCATIONS AROUND THE WORLD

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Nalcoal® 9838 and 9838-1 Product Information¹

Typical Characteristics

Parameters	Typical Value (as received product basis)
Percent Solids (as measured by moisture balance)	> 39% (\pm 1.0)
Calorific Value (ASTM D-5865):	> 3900 Btu/lb
Volatile Organic Content (VOC) (EPA Method 24)	0%
Proximate Analysis	
Moisture (ASTM D-95)	< 62%
Ash (ASTM D-482)	< 0.25%
Volatile matter (D-3175)	< 62%
Sulfur (ASTM D-4294)	< 0.05%
Ultimate Analysis (ASTM D-5291)	
Carbon	> 21%
Hydrogen	< 4%
Nitrogen	< 0.2%
Oxygen (by difference of Moisture, Ash, and Sulfur)	< 17%

Although Nalcoal 9838/9838-1 are combustible when applied to coal, flammable vapors are not produced by the application of Nalcoal 9838/9838-1 to coal. The sole combustion products of Nalcoal 9838/9838-1 are carbon dioxide and/or carbon monoxide and water vapor. Nalcoal 9838/9838-1 treatment generally has no adverse impact on sulfur dioxide or nitrogen oxide emissions upon combustion of the resulting fuel product. Treatment of coal with Nalcoal 9838 or 9838-1 typically yields a fuel product with slightly lower sulfur content per ton, due to the replacement of a portion of the sulfur-containing coal with the very low sulfur content of Nalcoal 9838 and 9838-1.

IMPORTANT: Nalcoal 9838 and 9838-1 contain no volatile organic carbon (VOC) (based on tests conducted on 9838 using EPA method 24)

¹ Updated 7-2004



Nalcoal 9838 and 9838-1 Product Information (cont'd.)

Typical Physical Characteristics*

Physical State	Liquid
Appearance	Milky White
Odor	Slight Vinegar
Density	8.9 lbs/gallon
Solubility in Water	Dispersible
pH (100% Nalcoal 9838 and 9838-1)	4.5 - 5.5
Boiling Point	> 221 °F
Volatile Organic Carbon (VOC)	0% per EPA Method 24
Freeze Points: 9838 / 9838-1	32°F / 25°F (No Freeze/Thaw Recovery)
Flash Point	> 200 °F

* For additional information, see Materials Safety Data Sheet (MSDS)

Typical 9838 Trace Element Concentrations (based on as-received liquid product)

Element	Concentration, ppm
Antimony	< 1
Aluminum	< 10
Arsenic	< 2
Barium	< 1
Beryllium	< 1
Calcium	< 100
Cadmium	< 1
Chromium	< 1
Cobalt	< 1
Copper	< 8
Iron	< 13
Lead	< 3
Lithium	< 1
Magnesium	< 50
Manganese	< 1
Mercury	< 0.005
Molybdenum	< 3
Nickel	< 3

Element	Concentration, ppm
Phosphorus	< 80
Potassium	< 6
Selenium	< 1
Silicon	< 100
Silver	< 1
Sodium	< 500
Strontium	< 1
Thallium	< 1
Titanium	< 2
Vanadium	< 1
Zinc	< 2
Total Halogens	< 200
Chlorine	< 105
Bromine	< 20
Fluorine	< 35
Iodine	< 4
Extractable Organic Halides	NOT DETECTABLE



Nalcoal 9838 and 9838-1 Product Information (cont'd.)

Toxicity Information

Nalcoal 9838 and 9838-1 contain no substances on the SARA Section 313 list of toxic chemicals (40 CFR 372) as indicated in the MSDS. Nalcoal 9838 and 9838-1 contain no compounds reportable under TRI.

Nalcoal 9838 and 9838-1 are non-toxic and generates no hazardous materials when added to coal. No aromatic organic raw materials or their derivatives such as benzene, toluene, xylene or phenol are used in the manufacture of Nalcoal 9838 and 9838-1. At typical dose levels, synthetic fuels produced using Nalcoal 9838 and 9838-1 are odorless and generally indistinguishable from coal.

EPA Priority Pollutant Status

Nalco Co. and its suppliers do not knowingly use or add the chemicals listed in the EPA 822-Z-99-001 "National Recommended Water Quality Criteria for Priority Toxic Pollutants" in our Nalcoal Synfuel Additives or the materials used in their manufacture.

Toxicity Characteristics Leaching Procedure (TCLP) Analysis

Leachability testing (TCLP) on representative coals treated with Nalcoal 9838 were conducted at a typical 0.2% dose level. With the exception of barium, no toxic leach products were detected during those TCLP analyses. Levels of barium in treated coals were found to be consistent with the levels found in the untreated coal feedstock alone. Complete TCLP Data is available on request.

General Information

Nalcoal 9838 and 9838-1 are manufactured in the U.S. using raw materials produced within the U.S.

Performance Properties

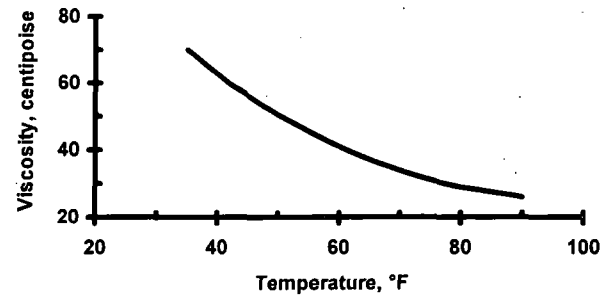
Curing of Nalcoal 9838/9838-1 generates a water-resistant film capable of joining of fine coal particles. The cured film exhibits no tackiness and largely eliminates airborne particulate problems associated with flowability, handling, milling, and grinding.

Application Suggestions

Nalcoal 9838 and 9838-1 may be fed neat when available mixing is adequate. These products may also be diluted with water at a 1:1 ratio (or less) when needed. Nalcoal 9838 and 9838-1 are easily diluted with an in-line mixer. Water added (typically 4 to 5 pounds per ton of synfuel) to/with concentrated Nalcoal 9838 and 9838-1 is minimal, particularly when compared with other additives such as paper process waste/by-products or asphaltine emulsions.

Nalcoal 9838 and 9838-1 Product Information (cont'd.)

Typical Brookfield Viscosity*



* #2 spindle @ 20 rpm and as-received product



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCOAL® 9838

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : NALCOAL® 9838

APPLICATION : SYNTHETIC FUEL ADDITIVE

COMPANY IDENTIFICATION : Ondeo Nalco Company
Ondeo Nalco Center
Naperville, Illinois
60563-1198

EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING
HEALTH: 0/1 FLAMMABILITY: 0/0 REACTIVITY: 0/0 OTHER: 0
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

2. COMPOSITION/INFORMATION ON INGREDIENTS

Based on our hazard evaluation, none of the substances in this product are hazardous.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

May cause irritation with prolonged contact.
Do not get in eyes, on skin, on clothing. Do not take internally. Wear suitable protective clothing. Keep container tightly closed. Flush affected area with water.
May evolve oxides of carbon (COx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
No adverse effects expected.

SKIN CONTACT :
No adverse effects expected.

INGESTION :
Not a likely route of exposure. No adverse effects expected.

INHALATION :
Not a likely route of exposure. No adverse effects expected.

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**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SYMPTOMS OF EXPOSURE :****Acute :**

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

4. FIRST AID MEASURES**EYE CONTACT :**

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. If symptoms develop, seek medical advice.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES**FLASH POINT :** > 200 °F / > 93 °C (PMCC)**EXTINGUISHING MEDIA :**

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of carbon (COx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****6. ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Stop or reduce any leaks if it is safe to do so. Do not touch spilled material. Ventilate spill area if possible. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE**HANDLING :**

Avoid eye and skin contact. Do not take internally. Ensure all containers are labelled. Keep the containers closed when not in use.

STORAGE CONDITIONS :

Store the containers tightly closed. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**OCCUPATIONAL EXPOSURE LIMITS :**

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :

General ventilation is recommended.

RESPIRATORY PROTECTION :

Respiratory protection is not normally needed.

HAND PROTECTION :

Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCOAL® 9838

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

HYGIENE RECOMMENDATIONS :

Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Milky
ODOR	Slight, Vinegar
SPECIFIC GRAVITY	1.07 @ 60 °F / 15.6 °C
DENSITY	8.9 lb/gal
SOLUBILITY IN WATER	Dispersible
pH (100 %)	4.5 - 5.5
VISCOSITY	39.8 cps @ 77 °F / 25 °C
VAPOR PRESSURE	Same as water
EVAPORATION RATE	Same as water
VOC CONTENT	0.00 %

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Freezing temperatures.

MATERIALS TO AVOID :

None known

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.


MATERIAL SAFETY DATA SHEET
PRODUCT
NALCOAL® 9838
EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC
SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION
ECOTOXICOLOGICAL EFFECTS :

The following results are for a similar product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	92.22 g/l	Similar Product

Rating : Essentially non-toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs		13.68 g/l	Similar Product

Rating : Essentially non-toxic

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Low

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are:

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(630)305-1000

5 / 8

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****LAND TRANSPORT :**

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING TRANSPORTATION**AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING TRANSPORTATION**MARINE TRANSPORT (IMDG/IMO) :**

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING TRANSPORTATION**15. REGULATORY INFORMATION****NATIONAL REGULATIONS, USA :****OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, none of the substances in this product are hazardous.

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :**SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :**

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR / formerly Sec. 311 :

None of the substances are specifically listed in the regulation.

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6 / 8

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :
None of the substances are specifically listed in the regulation.

CALIFORNIA PROPOSITION 65 :

This product does not contain substances which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS :

None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :

None of the substances are specifically listed in the regulation.

NATIONAL REGULATIONS, CANADA :**WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

Not considered a WHMIS controlled product.

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

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7/8

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCOAL® 9838****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department
Date issued : 10/09/2001

Nalcoal® 9838 Product Information¹
Trace Element and Halogen Analyses:

Element	"Wet" (As Received) Analysis (p.p.m.)	Post Ignition Analysis % by wt. in ash (0.24% of dry solids ^{**})
Alumina		0.12
Arsenic	0.038	
Barium oxide		0.01
Beryllium	< 0.001	
Cadmium	< 0.001	
Calcium oxide		0.04
Chromium	0.058	
Cobalt	0.029	
Copper	0.779	
Iron oxide		7.62
Lead	0.026	
Manganese oxide		0.04
Magnesium oxide		2.8
Mercury	0.02	
Molybdenum	0.036	
Nickel	<0.001	
Phosphorus pentoxide		21.90
Potassium oxide		0.01
Selenium	< 0.006	
Silica		8.35
Sodium oxide		56.61
Strontium oxide		0.01
Sulfur trioxide		1.74
Titania		0.01
Vanadium	0.004	
Zinc	0.317	
Total Halogens*(See Below)	<168	
Bromine	<20	
Chlorine	105	
Fluorine	39	
Iodine	4	
Extractable Organic Halides	NOT DETECTABLE	

^{**}Total Halogens: SW 846 Method 9253

ATTACHMENT C

**COAL BINDER
COMPARSION TABLE**

Attachment C. Comparison of Binder Characteristics

Characteristic (as received)	Units	Binder		
		Dow Chemical COVOL 298, 298-1	ONDEO Nalco Nalcoal® 7898	ONDEO Nalco Nalcoal® 9838, 9838-1
Binder Type	N/A	Organic (Latex) Liquid Polymer	Organic (Latex) Liquid Polymer	Organic (Latex) Liquid Polymer
Composition	N/A	Carboxylated styrene/butadiene/ acrylate/acetate polymers	Vinyl acetate/ethylene polymers	Vinyl acetate/ethylene /polyvinyl acetate polymers
Appearance	NA	Milky white liquid	Light blue liquid	Milky white liquid
Vapor Pressure	mm Hg	17.5 @ 20°C	18.5 @ 21°C	Same as water
Boiling Point	°F	212	221	> 221
Specific Gravity	N/A	0.980 – 1.040	1.10	1.07
Density	lb/gal	8.18 – 8.68	9.16	8.9
Solids Content	weight %	40 – 62	52 – 55	40
Water Content	weight %	38 – 60	45 – 48	60
VOC Content (per EPA RM 24)	weight %	-	0	0
Sulfur	weight %	-	0.01	<0.05
Caloric Value	Btu/lb	-	6,516	>3,900
Ash	weight %	-	0.20	< 0.25