Material Name: No.2 Fuel Oil, B2-B20
(Biodiesel) Blend

Synonyms: Bioheat; #2 Heating Oil (Biodiesel Blend); the specific Biodiesel blend may be abbreviated “B-%” where % is the percentage of biodiesel in the blend, such as Biodiesel B-2, B-5, B-10, B-20

*** Section 1 - Product and Company Identification ***

Manufacturer Information
Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC

*** Section 2 - Hazards Identification ***

GHS Classification:
- Flammable Liquids - Category 3
- Acute Toxicity, Inhalation - Category 4
- Skin Corrosion/Irritation – Category 2
- Eye Damage/Irritation – Category 2B
- Carcinogenicity - Category 2
- Specific Target Organ Toxicity (Single Exposure) – Category 3 (respiratory irritation, narcosis)
- Aspiration Hazard – Category 1
- Hazardous to the Aquatic Environment, Acute Hazard – Category 3

GHS LABEL ELEMENTS

Symbol(s)

![Symbol(s)]

Signal Word
DANGER

Hazard Statements
- Flammable liquid and vapor.
- Harmful if inhaled.
- Causes skin irritation.
- Causes eye irritation.
- Suspected of causing cancer.
- Suspected of causing genetic defects.
- May cause respiratory irritation.
- May cause drowsiness or dizziness.
- May be fatal if swallowed and enters airways.
- Harmful to aquatic life.
Precautionary Statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Avoid breathing fume/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wash hands and forearms thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.

Response
In case of fire: Use water spray, fog or foam.
If on skin (or hair): Wash with plenty of soap and water. Take off immediately all contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If exposed or concerned: Get medical advice/attention.
If swallowed: Immediately all a poison center or doctor/physician if you feel unwell. Do NOT induce vomiting.

Storage
Store in a well-ventilated place.
Keep cool. Store locked up.
Keep container tightly closed.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

*** Section 3 - Composition / Information on Ingredients ***

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>68476-30-2</td>
<td>Fuel oil No. 2</td>
<td>100</td>
</tr>
<tr>
<td>61788-61-2</td>
<td>Fatty acids, tallow, methyl esters</td>
<td>1-20</td>
</tr>
<tr>
<td>67784-80-9</td>
<td>Soybean oil, methyl ester</td>
<td>1-20</td>
</tr>
<tr>
<td>91-20-3</td>
<td>Naphthalene</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>
This product is a blend of Biodiesel B-100 and petroleum-derived No. 2 fuel oil where the percentage of biodiesel blended into the final product is indicated as B-% - for example, B-5 is 5% biodiesel and 95% petroleum diesel. Biodiesel consists of plant-derived fatty acid methyl esters. Petroleum No. 2 Fuel Oil is a complex mixture of hydrocarbons with carbon numbers in the range C9 and higher produced from the distillation of petroleum crude oil. Because of its predominating percentage in these biodiesel fuel blends, this SDS for Biodiesel Fuel Oil Blend reflects the characteristics of petroleum-derived No. 2 Fuel Oil. A complex combination of hydrocarbons with carbon numbers in the range C9 and higher

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### Section 4 - First Aid Measures

**First Aid: Eyes**

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

**First Aid: Skin**

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops.

**First Aid: Ingestion**

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

**First Aid: Inhalation**

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

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### Section 5 - Fire Fighting Measures

**General Fire Hazards**

See Section 9 for Flammability Properties.

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

**Hazardous Combustion Products**

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

**Extinguishing Media**

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, and other gaseous agents.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

**Unsuitable Extinguishing Media**

None
Fire Fighting Equipment/Instructions
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH-approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

*** Section 6 - Accidental Release Measures ***

Recovery and Neutralization
Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up
Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures
Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Personal Precautions and Protective Equipment
Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions
Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards
None

*** Section 7 - Handling and Storage ***

Handling Procedures
Handle as a combustible liquid. Keep away from heat, sparks, excessive temperatures and open flame! No smoking or open flame in storage, use or handling areas. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."
Storage Procedures

Keep containers closed and clearly labeled. Use approved vented storage containers. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks."

Incompatibilities

Keep away from strong oxidizers.

*** Section 8 - Exposure Controls / Personal Protection ***

Component Exposure Limits

Fuel oil No. 2 (270-671-4)

- ACGIH: 100 mg/m3 TWA (inhalable fraction and vapor, as total hydrocarbons, listed under Diesel fuel)
  - Skin - potential significant contribution to overall exposure by the cutaneous route (listed under Diesel fuel)
- Belgium: 100 mg/m3 TWA (as total hydrocarbon, aerosol and vapor)
  - Skin (listed under Gas oil)
- Portugal: 100 mg/m3 TWA [VLE-MP] (aerosol and vapor, as total Hydrocarbons, listed under Fuel diesel)

Naphthalene (202-049-5)

- ACGIH: 15 ppm STEL
  - 10 ppm TWA
  - Skin - potential significant contribution to overall exposure by the cutaneous route
- Austria: 10 ppm TWA [TMW]; 50 mg/m3 TWA [TMW]
  - skin notation
- Belgium: 15 ppm STEL; 80 mg/m3 STEL
  - 10 ppm TWA; 53 mg/m3 TWA
  - Skin
- Denmark: 10 ppm TWA; 50 mg/m3 TWA
- Finland: 2 ppm STEL; 10 mg/m3 STEL
  - 1 ppm TWA; 5 mg/m3 TWA
- France: 10 ppm TWA [VME]; 50 mg/m3 TWA [VME]
- Germany: 0.1 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when MAK and BAT values are observed, inhalable fraction, exposure factor 1); 0.5 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when MAK and BAT values are observed, inhalable fraction, exposure factor 1)
  - Greece: 10 ppm TWA; 50 mg/m3 TWA
  - Ireland: 15 ppm STEL; 75 mg/m3 STEL
  - 10 ppm TWA; 50 mg/m3 TWA
- Netherlands: 80 mg/m3 STEL
  - 50 mg/m3 TWA
- Portugal: 10 ppm TWA [VLE-MP]
  - Spain: 15 ppm STEL [VLA-EC]; 80 mg/m3 STEL [VLA-EC]
  - 10 ppm TWA [VLA-ED]; 53 mg/m3 TWA [VLA-ED]
  - skin - potential for cutaneous exposure
- Sweden: 10 ppm LLV; 50 mg/m3 LLV
  - 15 ppm STV; 80 mg/m3 STV
Engineering Measures
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory
A NIOSH-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands
Gloves constructed of nitrile, neoprene, or PVC are recommended.

Personal Protective Equipment: Eyes
Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body
Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

*** Section 9 - Physical & Chemical Properties ***

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Red or reddish/orange colored (dyed)</td>
</tr>
<tr>
<td>Odor:</td>
<td>Mild, petroleum distillate odor</td>
</tr>
<tr>
<td>Physical State:</td>
<td>Liquid</td>
</tr>
<tr>
<td>pH:</td>
<td>ND</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>0.009 psia @ 70 °F (21 °C)</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>&gt;1.0</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>340 to 700 °F (171 to 371 °C)</td>
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<tr>
<td>Melting Point:</td>
<td>ND</td>
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<tr>
<td>Solubility (H2O):</td>
<td>Negligible</td>
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<tr>
<td>Specific Gravity:</td>
<td>AP 0.83-0.876</td>
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<tr>
<td>Evaporation Rate:</td>
<td>Slow; varies with conditions</td>
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<tr>
<td>VOC:</td>
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<tr>
<td>Percent Volatile:</td>
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<tr>
<td>Octanol/H2O Coeff.:</td>
<td>ND</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>100°F (38 °C) minimum</td>
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<td>Flash Point Method:</td>
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<tr>
<td>Upper Flammability Limit</td>
<td>7.5</td>
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<tr>
<td>Lower Flammability Limit</td>
<td>0.6</td>
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<tr>
<td>(UFL):</td>
<td></td>
</tr>
<tr>
<td>(LFL):</td>
<td></td>
</tr>
<tr>
<td>Burning Rate:</td>
<td>ND</td>
</tr>
<tr>
<td>Auto Ignition:</td>
<td>494°F (257°C)</td>
</tr>
</tbody>
</table>

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability
This is a stable material.

Hazardous Reaction Potential
Will not occur.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products
Keep away from strong oxidizers.
Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

*** Section 11 - Toxicological Information ***

Acute Toxicity
A: General Product Information
Harmful if swallowed.

B: Component Analysis - LD50/LC50
Fuel oil No. 2 (68476-30-2)
Oral LD50 Rat 12 g/kg; Dermal LD50 Rabbit 4720 µL/kg; Dermal LD50 Rabbit >2000 mg/kg; Inhalation LC50 Rat 4.6 mg/L 4 h

Naphthalene (91-20-3)
Inhalation LC50 Rat >340 mg/m3 1 h; Oral LD50 Rat 490 mg/kg; Dermal LD50 Rat >2500 mg/kg; Dermal LD50 Rabbit >20 g/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness
Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness
Contact with eyes may cause mild irritation.

Potential Health Effects: Ingestion
Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation
Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization
This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity
This material has been positive in a mutagenicity study.

Carcinogenicity
A: General Product Information
Suspected of causing cancer.
Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal’s skin with soap and water between applications reduced tumor formation.

B: Component Carcinogenicity

Fuel oil No. 2 (68476-30-2)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans (listed under Diesel fuel)

Naphthalene (91-20-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)

IARC: Monograph 82 [2002] (Group 2B (possibly carcinogenic to humans))

Reproductive Toxicity

This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Single Exposure

May cause drowsiness or dizziness.

Specified Target Organ General Toxicity: Repeated Exposure

This product is not reported to have any specific target organ general toxicity repeat exposure effects.

Aspiration Respiratory Organs Hazard

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Fuel oil No. 2 (68476-30-2)

<table>
<thead>
<tr>
<th>Test &amp; Species</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>96 Hr LC50 Pimephales promelas</td>
<td>35 mg/L [flow-through]</td>
</tr>
</tbody>
</table>

Naphthalene (91-20-3)

<table>
<thead>
<tr>
<th>Test &amp; Species</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>96 Hr LC50 Pimephales promelas</td>
<td>5.74-6.44 mg/L [flow-through]</td>
</tr>
<tr>
<td>96 Hr LC50 Oncorhynchus mykiss</td>
<td>1.6 mg/L [flow-through]</td>
</tr>
<tr>
<td>96 Hr LC50 Oncorhynchus mykiss</td>
<td>0.91-2.82 mg/L [static]</td>
</tr>
<tr>
<td>96 Hr LC50 Pimephales promelas</td>
<td>1.99 mg/L [static]</td>
</tr>
</tbody>
</table>
96 Hr LC50 Lepomis macrochirus 31.0265 mg/L
72 Hr EC50 Skeletonema costatum 0.4 mg/L
48 Hr LC50 Daphnia magna 2.16 mg/L
48 Hr EC50 Daphnia magna 1.96 mg/L [Flow through]
48 Hr EC50 Daphnia magna 1.09 - 3.4 mg/L [Static]

Persistence/Degradability
No information available.

Bioaccumulation
No information available.

Mobility in Soil
No information available.

** Section 13 - Disposal Considerations **

Waste Disposal Instructions
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging
Dispose of contents/container in accordance with local/regional/national/international regulations.

** Section 14 - Transportation Information **

IATA Information
Shipping Name: Not Regulated

ICAO Information
Shipping Name: Not Regulated

IMDG Information
Shipping Name: Not Regulated

** Section 15 - Regulatory Information **

Component Analysis – Inventory

<table>
<thead>
<tr>
<th>Component/CAS</th>
<th>EC #</th>
<th>EEC</th>
<th>CAN</th>
<th>TSCA</th>
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</thead>
<tbody>
<tr>
<td>Fuel oil No. 2</td>
<td>270-671-4</td>
<td>EINECS</td>
<td>DSL</td>
<td>Yes</td>
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<tr>
<td>68476-30-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean oil, methyl ester</td>
<td>267-055-2</td>
<td>EINECS</td>
<td>DSL</td>
<td>Yes</td>
</tr>
<tr>
<td>67784-80-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatty acids, tallow, methyl esters</td>
<td>262-989-7</td>
<td>EINECS</td>
<td>DSL</td>
<td>Yes</td>
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<tr>
<td>61788-61-2</td>
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<tr>
<td>Naphthalene</td>
<td>202-049-5</td>
<td>EINECS</td>
<td>DSL</td>
<td>Yes</td>
</tr>
<tr>
<td>91-20-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADG = Australian Code for the Transport of Dangerous Goods by Road and Rail; ADR/RID = European Agreement of Dangerous Goods by Road/Rail; AS = Standards Australia; DFG = Deutsche Forschungsgemeinschaft; DOT = Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; ELINCS = European Inventory of Existing Commercial Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NOHSC = National Occupational Health & Safety Commission; NTP = National Toxicology Program; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet