



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I

What is the material and what do I need to know in an emergency?

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): FHTFHI High Temperature Bath Fluid

CHEMICAL NAME/CLASS: Heat Transfer Fluid

SYNONYMS: Mixture: None applicable.

DISTRIBUTOR'S NAME: Bibby Scientific Ltd

ADDRESS: Beacon Road, Stone, Staffordshire
ST15 0SA, United Kingdom

EMERGENCY PHONE: 1-800-424-9300 (CHEMTREC)

BUSINESS PHONE: +44 -1785-812121

DATE OF PREPARATION: April 21, 2009.

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	% v/v	EXPOSURE LIMITS IN AIR					
		ACGIH		OSHA			OTHER
		TLV mg/m ³	STEL mg/m ³	PEL mg/m ³	STEL mg/m ³	IDLH mg/m ³	
Hydrocarbon Mixture	> 95%	NE	NE	NE	NE	NE	NE
Other components present in less than 1% concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).	Balance	None of the other ingredients has established exposure limits or contributes any significant, additional hazard to this product. All pertinent hazard information has been provided in this Material Data Sheet, per the requirements of the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200), U.S. State equivalent standards, and the requirements of the Canadian Workplace Hazardous Materials Information System.					

NE = Not Established C = Ceiling Level (See Section 16 for Definitions of Terms Used.)

NOTE (1): All WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1993 format.

NOTE (2): Information on this product is being claimed as proprietary. All Pertinent hazard information has been provided, per the Trade Secret requirements of U.S. Federal Occupational Safety and Health Administration Standards (29 CFR 1910.1200) and Canadian WHMIS (CPR 12 and 19). Information on this mixture will be released when the conditions specified in these Standards are met.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a light brown, oily liquid, with a slight, hydrocarbon odor. Mists from this product may be slightly irritating if inhaled. The product may also be slightly irritating to contaminated eyes. The product must be substantially preheated before ignition can occur. If involved in a fire, this liquid will released toxic gases (e.g., carbon monoxide and carbon dioxide). This product is not reactive under typical emergency response conditions. Emergency responders must wear proper personal protective equipment for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of exposure to this product are by inhalation of mists from product and contact with skin and eyes. The symptoms of overexposure are as follows.

INHALATION: This product has negligible vapor pressure and does not present a significant inhalation hazard under normal circumstances of use. Inhalation of the mists from this product may be slightly irritating to the nose, throat, mucous membranes, and other tissues of the respiratory system especially in a heated vapor form. Symptoms of such exposure may include coughing, sneezing, and nasal congestion.

CONTACT WITH SKIN or EYES: No hazard expected under normal use. Contact with eyes may cause slight irritation, redness, and watering. Repeated or prolonged contact of skin may cause redness, irritation, and scaling of the skin (dermatitis). Symptoms are generally alleviated when overexposure of this ends.

SKIN ABSORPTION: Skin absorption is not known to be a potential route of overexposure for the components of this product.

INGESTION: Ingestion of this product, while not likely in an industrial setting, may cause irritation of the mouth and throat, gastric upset and nausea. Vomiting may occur. Additionally, aspiration of this product can result in severe, life-threatening lung damage.

INJECTION: Though not an expected rout of occupational exposure for this product, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling and discomfort.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. Symptoms associated with overexposure to this product are as follows:

ACUTE: The chief health hazards associated with this product would be potential for slight irritation of contaminated eyes. Ingestion may cause gastric distress and lung damage as a result of aspiration.

CHRONIC: No health effects are currently reported for chronic exposure to the components of this product. Refer to Section 11 (Toxicological Information) for additional information.

TARGET ORGANS: Eyes

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	0
FLAMMABILITY		(RED)	1
REACTIVITY		yellow	0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		
For routine industrial applications			

PART II

What should I do if a hazardous situation occurs?

4. FIRST-AID MEASURES

SKIN EXPOSURE: If the product is spilled the skin, immediately begin decontamination with running water. Contaminated individual must seek immediate medical attention, especially if irritation or redness develops.

EYE EXPOSURE: If the product enter the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Contaminated individual must seek immediate medical attention, especially if symptoms persist.

INHALATION: If mists of the product are inhaled, removed victim to fresh air.

INGESTION: If the product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

Contaminated individual must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or health professional with victim.

FLASH POINT (Pensky-Martens Closed Cup): 180°C (356°F)

AUTOIGNITION TEMPERATURE: 330°C (626°F)

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not available.

Upper (UEL): Not Available.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES (cooling only) Carbon Dioxide: YES Foam: YES
Dry Chemical: YES Halon: YES Other: Any "B" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product must be substantially preheated before ignition can occur. When involved in a fire, this material may decompose and produce-irritating vapors, toxic gases (e.g., oxides of carbon), soot and smoke. This product's vapors can accumulate in confined spaces, resulting in a toxicity and flammability hazard.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

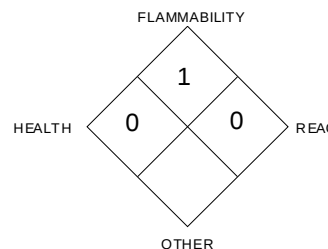
SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally areas. Decontaminate fire-response equipment with soap and water solution if necessary.

SPILL AND LEAK RESPONSE: In case of a spill, clear the affected area, protect people. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used.

For incidental releases, wear appropriate chemical gloves, splash goggles, and appropriate body protection. For large, non-incidental releases in which excessive mists can be generated, the appropriate level of personal protective equipment should be used.

Absorb spilled liquid with polypads or other suitable absorbent materials. Decontaminate the area thoroughly. If necessary, decontaminate spill response equipment with soap solution. Place all spill residue in a double plastic bag and seal. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations).

NEPA RATING



7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling this product. Do not eat or drink while handling this material. Use ventilation and other engineering controls to minimize potential exposure to the aerosols and mists of this product.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open containers slowly, on a stable surface. Empty containers may contain residual amounts of this product, therefore, empty containers should be handled with care. Store containers in a cool, dry location, away from direct sunlight, or sources of intense heat. Storage areas should be made of fire-resistant materials. Keep containers away from incompatible chemicals (See Section 10, Stability and Reactivity). Keep drums and other containers of this product tightly closed when not in use. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate local ventilation to minimize exposure to mists. Prudent practice is to ensure eyewash stations are available near areas where this product is used.

RESPIRATORY PROTECTION: None needed for normal circumstances of use. Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, or applicable State regulations (or the appropriate regulations of Canada and its Provinces) Use supplied air respiration protection if oxygen levels are below 19.5% or are unknown.

EYE PROTECTION: Splash goggles or safety glasses.

HAND PROTECTION: Wear Nitrile, polyvinyl alcohol or Viton™ gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task.

PERSONAL PROTECTIVE EQUIPMENT LEVEL: C

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): > 1.0

SPECIFIC GRAVITY (water = 1): 0.877 g/cm³ @ 20°C

SOLUBILITY IN WATER: Insoluble.

VAPOR PRESSURE, mm Hg @ 20 °C: 3.6 @ 70°F/21°C

ODOR THRESHOLD: Not Available.

COEFFICIENT WATER/OIL DISTRIBUTION: Not Available.

APPEARANCE AND COLOR: This product is light brown, oily liquid.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance may act as a distinguishing characteristic of this product.

EVAPORATION RATE (n-BuAc=1): < 1.0

MELTING POINT or RANGE: Aprox. - 81°F (-63°C)

BOILING POINT: >626°F (>330°C)

pH: Not applicable.

10. STABILITY and REACTIVITY

STABILITY: Stable

DECOMPOSITION PRODUCTS: Ignition of this product can produce carbon dioxide, carbon monoxide and other organic decomposition products.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizers.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with strong oxidizers.

PART IV

Is there any other useful information about this material?

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Additional toxicology information for components greater than 1 percent in concentration is provided below.

Aromatic Hydrocarbon:

LD₅₀ (oral, rat) > 5000 mg/kg

SUSPECTED CANCER AGENT: This product's ingredients are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA, and therefore is not considered to be, nor suspected to be cancer causing agents by these agencies.

IRRITANCY OF PRODUCT: Repeated or prolonged exposure to this product may cause irritation to contaminated tissues.

SENSITIZATION TO THE PRODUCT: No components of this product are reported to be sensitizers.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not reported to produce mutagenic effects in humans.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: This product is not reported to produce teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to cause reproductive in humans.

A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: No medical condition is currently reported to be aggravated by exposure to this substance.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce exposures.

ACGIH BIOLOGICAL EXPOSURE INDICES: Currently, there is no ACGIH biological Indices (BEIs) associated with the components of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product will slowly be degraded over time into organic compounds.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product may be harmful to contaminated plant and animal life (especially if large quantities are released). Refer to Section 11 (Toxicological Information) for specified information regarding effects of this product's components on test animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: This product may be harmful to aquatic life if large quantities are released into bodies of water.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations or those of Canada and its Provinces. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

U.S. EPA WASTE NUMBER: Not applicable to wastes consisting only of this product.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NON- HAZARDOUS , PER 49 CFR 172.101 (THE U.S. DEPARTMENT OF TRANSPORTATION).

PROPER SHIPPING NAME: Not Applicable.

HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable.

UN IDENTIFICATION NUMBER: Not Applicable.

PACKING GROUP: Not Applicable.

DOT LABEL (S) REQUIRED: Not Applicable.

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): Not Applicable.

MARINE POLLUTANT: No component of this product is classified as a Marine Pollutant, as listed in Appendix B to 49 CFR 172.101.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS NOT CONSIDERED AS DANGEROUS GOODS.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows.

SARA Threshold Planning Quantity: Not applicable.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Not Applicable.

OTHER FEDERAL REGULATIONS: No special regulations are applicable.

STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: NO

California - Permissible Exposure Limits for Chemical Contaminants: NO

Florida - Substance List: NO

Illinois - Toxic Substance List: NO

Kansas - Section 302/313 List: NO

Massachusetts - Substance List: NO

Minnesota - List of Hazardous Substances: NO

Missouri - Employer Information/Toxic Substance List: NO

New Jersey - Right to Know Hazardous Substance List: NO

North Dakota - List of Hazardous Chemicals, Reportable Quantities: NO

Pennsylvania - Hazardous Substance List: NO

Rhode Island - Hazardous Substance List: NO

Texas - Hazardous Substance List: NO

West Virginia - Hazardous Substance List: NO

Wisconsin - Toxic and Hazardous Substances: NO

CALIFORNIA PROPOSITION 65: No component of this solution is on the California Proposition 65 lists.

ANSI LABELING (Z129.1): **CAUTION!** MAY CAUSE EYE IRRITATION. HARMFUL IF SWALLOWED-ASPIRATION HAZARD. Avoid breathing mists or sprays. Do not get on skin or in eyes. Avoid prolonged contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, safety goggles, and appropriate body protection when using this product. Use gloves and safety goggles and appropriate body protection. **FIRST_AID:** In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, foam, and dry chemical of CO₂. **IN CASE OF SPILL:** Absorb with inert material and place in suitable container. Flush area with water. Refer to MSDS for additional information.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this product are the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not Applicable.

CANADIAN ENVIRONMENTAL PROTECTION (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this product are not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS: Not Applicable.

16. OTHER INFORMATION

PREPARED BY:

DYNALENE HEAT TRANSFER FLUIDS

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Date of Printing:

June 18, 2009.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Dynalene Heat Transfer Fluids assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Dynalene Heat Transfer Fluids 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 his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association that establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance, which represents conditions under which it is generally believed that nearly all workers, may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous **Ceiling Level**. Skin adsorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - this exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL", is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

FLAMMABILITY LIMITS IN AIR

Much of the information related to fire and explosion is derived from the **National Fire Protection Association (NFPA)**. **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an initiation source. **UEL** - the highest percent of vapor in air, by volume, that

will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION

Possible health hazards as derived from human data, animal's studies or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause death. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REGULATORY INFORMATION

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and Transport Canada, respectively. The following laws are pertinent to the information presented in the MSDS: **Superfund Amendments and Reauthorization Act (SARA)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the **DOT**; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**. This section also includes information on the precautionary warnings, which appear, on the material's package label.