



January, 30<sup>th</sup> 2014

**MSDS, Blue Manometer Fluid (p/n 68091).**

The blue manometer fluid used in the RadonAway U Tube Manometer contains approximately 0.1 fluid ounces of Multitherm 503 Heat Transfer Fluid with Sandy Brae Liquid Blue AHF dye using approximately 1.28ml of dye per 1 gallon of Heat Transfer Fluid. Sandy Brae Liquid Blue AHF Dye is manufactured by Sandy Brae Laboratories Inc, of Newark, DE 19713, phone 302-456-446. The Material Safety Data Sheets of the Multitherm 503 Heat Transfer Fluid and the Sandy Brae Liquid Blue AHF Dye are attached.

A handwritten signature in black ink, appearing to read "T.R. Stevens", is written over a horizontal line.

T.R.Stevens  
Senior Mechanical Engineer.



## MATERIAL SAFETY DATA SHEET



# MultiTherm 503<sup>®</sup> Heat Transfer Fluid

Spruce P/N 68082

<b>I. PRODUCT IDENTIFICATION</b>		EFFECTIVE DATE: January 1, 2009	
TRADE NAME:	<b>MultiTherm<sup>®</sup> 503</b>	CAS Number: 68649-11-6	
MANUFACTURER'S NAME:	MultiTherm LLC	<b>NFPA Hazard Identification</b> Degree of Hazard   Hazard Rating 0 - Least 1 - Slight 2 - Moderate 3 - High 4 - Extreme	
ADDRESS:	3223 Phoenixville Pike-Ste B Malvern, PA 19355 (USA)		
EMERGENCY PHONE NO.	(610) 408-8361	Health: 0	
		Fire: 1	
		Reactivity: 0	

## II. INGREDIENTS

COMPONENT NAME	HAZARDOUS IN BLEND	PERCENTAGE		COMPONENT EXPOSURE LIMITS AS OIL MIST	UNITS
		MIN	MAX		
I-DECENE, DIMER, HYDROGENATED	NO		100	OSHA PEL ACGIH TLV	5mg/M3 5mg/M3

## III. HEALTH EFFECT INFORMATION

EYE CONTACT	MAY BE MINIMALLY IRRITATING TO EYES ON DIRECT CONTACT.
SKIN CONTACT	MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT.
INHALATION	NOT EXPECTED TO PRESENT AN INHALATION HAZARD AT AMBIENT CONDITIONS. AEROSOLIZATION OR MISTING SHOULD BE AVOIDED. INHALATION OF A LARGE SINGLE DOSE OR REPEATED SMALL DOSES OF MIST MAY RESULT IN RESPIRATORY IRRITATION, DIZZINESS, OR NAUSEA.
INGESTION	PRACTICALLY NON-TOXIC (LD50>2G/KG) UNLESS ASPIRATION OCCURS. ASPIRATION MAY CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.
CAUTION	PULMONARY ASPIRATION HAZARD - CAN CAUSE SEVERE OR FATAL LUNG DAMAGE IF ASPIRATED.

## IV. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT	IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER. IF IRRITATION OCCURS, SEEK MEDICAL ATTENTION.
SKIN CONTACT	WASH AREA WITH SOAP AND WATER. WASH CLOTHING BEFORE REUSE.
INHALATION	REMOVE FROM FURTHER EXPOSURE. IF RESPIRATORY IRRITATION, DIZZINESS, NAUSEA OR UNCONSCIOUSNESS OCCURS, SEEK MEDICAL ATTENTION IMMEDIATELY.
INGESTION	IMMEDIATELY GIVE 1-2 GLASSES OF WATER AND OBTAIN MEDICAL ATTENTION. DO NOT INDUCE VOMITING. IF VOMITING OCCURS, LOWER HEAD BETWEEN KNEES TO AVOID ASPIRATION.

## V. PERSONAL HEALTH PROTECTION INFORMATION

EYE PROTECTION	SPLASH PROOF GOGGLES RECOMMENDED.
SKIN PROTECTION	NO SKIN PROTECTION IS REQUIRED FOR SINGLE, SHORT DURATION EXPOSURES. FOR PROLONGED OR REPEATED EXPOSURES, USE IMPERVIOUS SYNTHETIC RUBBER CLOTHING (BOOTS, GLOVES, APRONS, ETC.) OVER PARTS OF THE BODY SUBJECT TO EXPOSURE.
RESPIRATORY PROTECTION	RESPIRATORY PROTECTION IS NOT REQUIRED UNDER CONDITIONS OF NORMAL USE. IF VAPOR OR MIST IS GENERATED, USE NIOSH CERTIFIED ORGANIC VAPOR RESPIRATOR WITH DUST/MIST FILTER.
VENTILATION	IF VAPOR OR MIST IS GENERATED, ADEQUATE VENTILATION IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE MUST BE PROVIDED TO MAINTAIN CONCENTRATION BELOW THE SPECIFIED EXPOSURE LIMITS.

# MATERIAL SAFETY DATA SHEET

MSDS Spruce P/N 68091 Blue Manometer Fluid Date 01/31/14 By:TRS ECO:0712 Sheet 3 of 8

## MultiTherm 503<sup>®</sup> Heat Transfer Fluid

### VI. FIRE PROTECTION INFORMATION

FLASH POINT	310°F / 154°C	TEST METHOD	C.O.C, ASTM D-92
AUTOIGNITION TEMPERATURE	615°F / 324°C	TEST METHOD	ASTM D-2155
FLAMMABLE LIMITS IN AIR % VOL.	LOWER NO DATA	UPPER	NO DATA
EXTINGUISHING MEDIA	USE DRY CHEMICAL, FOAM, CARBON DIOXIDE, OR WATER FOG.		
SPECIAL FIRE FIGHTING PROCEDURES	WATER OR FOAM MAY CAUSE FROTHING. USE WATER TO KEEP EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE USED TO FLUSH SPILL AWAY FROM EXPOSURE. PREVENT RUNOFF FROM ENTERING STEAM, SEWER OR DRINKING WATER SUPPLY.		

### VII. REACTIVITY DATA

STABILITY	STABLE	CONDITIONS TO AVOID	EXTREME HEAT
HAZARDOUS POLYMERIZATION	WILL NOT OCCUR		
INCOMPATIBILITY, MATERIALS TO AVOID	STRONG OXIDIZING AGENTS		
HAZARDOUS DECOMPOSITION PRODUCTS	NONE		

### VIII. ENVIRONMENTAL

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	CONTAIN SPILL IMMEDIATELY. REMOVE ALL SOURCES OF IGNITION. ABSORB WITH APPROPRIATE INERT MATERIAL SUCH AS SAND, CLAY, ETC. DO NOT ALLOW SPILL TO ENTER SEWERS OR WATERCOURSES. NOTIFY APPROPRIATE AUTHORITIES OF SPILL.		
WASTE DISPOSAL METHOD	UNCONTAMINATED PRODUCT IS SUITABLE FOR BURNING IN APPROVED FACILITY FOR FUEL VALUE OR FOR REPROCESSING INTO LUBRICATING OIL BY A LICENSED WASTE OIL RECYCLER. USE OF THESE METHODS IS SUBJECT TO PRODUCT CONDITION AT TIME OF DISPOSAL AND APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.		
	<b>TEST</b>	<b>SPECIES</b>	<b>CONCLUSION</b>
AQUATIC TOXICITY	96 HR LC 50	WATER FLEA	NON-TOXIC
	96 HR LC 50	FATHEAD MINNOW	NON-TOXIC
	96 HR LC/EC 50	MYSID SHRIMP	VIRTUALLY NON-TOXIC
	96 HR LC/EC 50	SHEEPSHEAD MINNOW	VIRTUALLY NON-TOXIC

### IX. HANDLING AND STORAGE

STORE IN CLOSED AND LABELED CONTAINERS AWAY FROM HEAT, SPARKS, OPEN FLAME, OR OXIDIZING MATERIALS NFPA CLASS IIIIB STORAGE.

### X. PHYSICAL PROPERTIES

BOILING POINT	616°F / 324°C (10% Fraction)	PERCENT VOLATILE	NIL
MELTING POINT	N/A	VAPOR DENSITY (AIR=1)	N/A
APPEARANCE	CLEAR FLUID	EVAPORATION RATE (EE=1)	N/A
ODOR	ODORLESS.	SPECIFIC GRAVITY	0.796 @ 60°F / 15°C
VAPOR PRESSURE	< .01mm HG @ 70°F / 21°C	SOLUBILITY	SOLUBLE IN HYDRO-CARBONS, MIL IN WATER

### XI. REGULATORY INFORMATION

DOT HAZARD CLASS - NOT REGULATED.

US OSHA COMMUNICATION STANDARD - PRODUCT COMPLIES WITH 29CFR 1910.1200 AND IS NOT HAZARDOUS.

SARA TITLE III (302) (304) (311) (312) (313) - NO REPORTABLE SUBSTANCES.

ALL COMPONENTS LISTED ON THE US TSCA INVENTORY.

RCRA INFORMATION: THE UNUSED PRODUCT IS NOT LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 2610), SHOULD NOT FAIL THE CHARACTERISTICS TEST UNLESS MIXED WITH OTHER PRODUCTS WHICH WOULD CAUSE IT TO FAIL THE TEST AND IS NOT FORMULATED WITH PCB'S OR THE METALS CITED IN THE TOXICITY TEST. MSDS MultiTherm 503 (4/10/02)

WHIMIS CLASSIFICATION - NOT CONTROLLED.

**MATERIAL SAFETY DATA SHEET**

Revised 10/16/06

For Chemicals, Coatings and Related Materials  
"Essentially similar" to form OSHA-20

Liquid Blue AHF

**MANUFACTURER**Sandy Brae Laboratories, Inc.  
119A Sandy Drive  
Newark, DE 19713  
ph: 302-456-0446  
fx: 302-456-0441**EMERGENCY TELEPHONE NUMBERS:**Medical or Transportation  
CHEMTREC (24 hrs): 800-424-9300  
Date: 1/15/03**SECTION I - PRODUCT INFORMATION**PRODUCT NAME: Liquid Blue AHF  
DESCRIPTION: Blue dye concentrate  
CLASS: Liquid  
  
Spruce P/N 68021**H M I S HAZARD CODES**Health: 1 (Slight)  
Flammability: 1 (Slight)  
Reactivity: 0 (Minimal)  
Personal Protective Equipment: B**SECTION II - INGREDIENTS**

<u>INGREDIENT</u> <u>MATERIAL DESCRIPTION</u>	<u>PERCENT*</u> <u>BY WEIGHT</u>	<u>C.A.S.</u> <u>REGISTRY NO.</u>	<u>LEL</u>	<u>VAPOR PRESSURE</u> <u>mmHg @ 100°F</u>
Petroleum Hydrocarbon	50.0	64742-94-5	1.8	1.6
Naphthalene	0.5% Max	91-20-3	N/A	N/A
Colorant*	50.0	Proprietary	N/A	N/A

\* Percentages are approximate and do not constitute a specification.  
This product is not hazardous as defined by 29 CFR 1910.1200**SECTION III PHYSICAL DATA**

BOILING RANGE:	N/A	FREEZING POINT:	< 10°F
VAPOR PRESSURE:	< 0.1 mm @ 68°F	VAPOR DENSITY:	4.7
SPECIFIC GRAVITY:	0.95 - 1.05	H <sub>2</sub> O SOLUBILITY:	Insoluble
EVAPORATION RATE:	< 0.1	% VOLATILE BY VOLUME:	Zero
(relative to n-butyl acetate)		POUR POINT ASTM D97:	< -50°F
APPEARANCE AND COLOR:	Dark blue, almost odorless liquid		
N-OCTANOL/WATER PARTITION COEFFICIENT:	Log P <sub>ow</sub> expected to be greater than 4		

## SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: >200°F EXPLOSIVE LIMITS: LEL UEL (%Vv IN AIR)  
METHOD USED: Pensky-Martens ASTM D 93 1.8 11.8

### FLAMMABILITY CLASSIFICATION:

OSHA: Non-Combustible Liquid  
DOT: Non-Combustible Liquid

### EXTINGUISHING MEDIA:

Use water spray to cool fire exposed surfaces and to protect personnel. ISOLATE "Fuel" supply from fire. Use foam, dry chemical or water spray to extinguish fire. Avoid spraying water directly into storage containers due to danger of boiling over.

### SPECIAL FIRE FIGHTING PROCEDURES:

- Wear NIOSH-MSHA approved self-contained breathing apparatus.
- Wear impervious clothing
- Use water spray to cool and protect exposed material or overheated containers.
- Take care not to spread fire with water.

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## SECTION V - TOXICOLOGICAL INFORMATION

See Section VI - No additional information is available

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## SECTION VI - HEALTH HAZARD DATA

### EFFECTS OF OVEREXPOSURE:

PRIMARY ROUTE(S) OF EXPOSURE/ENTRY: Eye contact, skin contact, inhalation, ingestion.

EYES	Vapors may irritate the eyes. Liquid is irritating and potentially damaging to the eyes.
SKIN	Liquid may irritate and dry the skin. Prolonged contact may lead to burns and blisters and may aggravate dermatitis.
INHALATION	Vapors may irritate the respiratory tract. May lead to headache, dizziness, nausea, vomiting and unconsciousness. High vapor concentrations are anesthetic and may have other central nervous system effects including death.
INGESTION	May lead to headache, dizziness, nausea and abdominal pain.

## SECTION VI - HEALTH HAZARD DATA

CHRONIC EFFECTS	This product contains naphthalene. The International Agency for Research on Cancer evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human Carcinogen (Group 2B).
ECOLOGICAL INFORMATION	Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.
MOBILITY	Liquid under most environmental conditions. Floats on water. If it enters soil, it will absorb to soil particles and will not be mobile.
DEGRADABILITY	Not established
BIOACCUMULATION	Has the potential to bioaccumulate.
ECOTOXICITY	Not established. Insoluble in water.

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## SECTION VII - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:	Immediately flush with large amounts of water for 10 - 15 minutes. SEEK PROMPT MEDICAL ATTENTION!!!
SKIN CONTACT:	Promptly remove all contaminated clothing, shower if necessary. Remove from skin with proprietary water less hand cleaner or cold cream. Discard contaminated clothing and shoes.
INHALATION:	If dizzy, drowsy or overcome, remove to fresh air. If breathing has stopped, apply artificial respiration. GET MEDICAL ATTENTION AS SOON AS POSSIBLE!!!
INGESTION:	DO NOT INDUCE VOMITING!! GET MEDICAL ATTENTION IMMEDIATELY!!

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## SECTION VIII -REACTIVITY DATA

STABILITY:	Stable
CONDITIONS TO AVOID:	Extreme heat. Open flames or sparks
INCOMPATIBILITY (MATERIALS TO AVOID):	Strong oxidizing agents. Strong reducing agents. Acids.
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxides of Carbon, Oxides of Nitrogen
HAZARDOUS POLYMERIZATION:	Will not occur
POLYMERIZATION CONDITIONS TO AVOID:	Material not known to polymerize

## SECTION IX - REGULATORY INFORMATION

This MSDS is in compliance with OSHA Hazard Communication Standard 29CFR1910.1200.

This MSDS has also been prepared to be in compliance with the Commonwealth of Pennsylvania's Right-To-Know regulations for chemical manufacturers and should satisfy many other state Right-To-Know laws.

The chemical ingredient reporting rules for Pennsylvania are more detailed than OSHA regulations and this MSDS lists the common chemical name and CAS number in Section II for:

Specifically hazardous ingredient	>0.01% (OSHA is >0.1%)
Nonhazardous ingredient	>3.0% (OSHA does not regulate)

PROPRIETARY entered in the CAS number column declares that the exact identity of the ingredient(s) listed is proprietary information to United Color Manufacturing, Inc. and/or to our suppliers. Percentages of ingredients are approximate values for the purpose of hazard and SARA determination by the product's uses and are not necessarily exact specifications.

### DEPARTMENT OF TRANSPORTATION (DOT):

DOT Shipping Description: Non Regulated

TSCA:	All components are listed on the TSCA Inventory.
CERCLA:	If <20,000 lbs of this product is accidentally spilled, the incident is not subject to the provisions of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).
EINECS:	All components in compliance.
EC CLASSIFICATION:	Classified as non-combustible under EC criteria as per DOT Regulations in Section IV.
SARA TITLE III:	This product does not contain any section 313 reportable ingredients.

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## SECTION X - SPILL OR LEAK PROCEDURES

### STEPS FOR MATERIAL SPILLAGE:

Remove all sources of ignition (flame, hot surfaces and any producers of electrical, static, or frictional sparks). Wear appropriate protective clothing (See Section XI). Ventilate area and try to contain spill by diking with sand or other absorbent material. Collect spill for disposal by scooping up liquids (if a large spill) and absorbing with sand or other approved absorbent materials and dispose of in accordance with local, state and federal regulations.

### WASTE DISPOSAL METHODS:

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

## SECTION XI - SPECIAL PROTECTION INFORMATION

### RESPIRATORY PROTECTION:

OSHA/NIOSH approved self-contained breathing apparatus or vapor cartridge respirator.  
(Must be worn if PEL & TLV levels are exceeded).

### VENTILATION:

Provide adequate cross air ventilation to keep dust and/or vapor levels below PEL & TLV values. (See Section V).

### PROTECTIVE GLOVES:

Impervious gloves (rubber or neoprene) to avoid direct skin contact.

### EYE PROTECTION:

Splash proof safety goggles.

### OTHER PROTECTIVE EQUIPMENT:

Eyewash station, emergency shower.

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## SECTION XII - SPECIAL PRECAUTIONS

### HANDLING AND SPECIAL PRECAUTIONS:

Overheating may cause container to rupture.  
Use Explosion-proof electrical equipment.  
Container must be kept closed and ventilation provided to prevent vapor concentration buildup.  
Store in a cool dry place.  
Do not breath vapor or get liquid in eyes or on skin or clothing.  
Keep away from heat or sources of ignition.

### OTHER PRECAUTIONS:

Check all containers for leaks.  
Wear protective clothing as in Section XI.  
Avoid prolonged breathing of vapors or contact with skin.  
Ensure that all equipment is grounded tp prevent static discharge.  
Containers of this material may be hazardous when emptied due to solid or vapor residue.  
All hazard precautions given in this data sheet must be observed for empty containers.

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## SECTION XIII - CONTACT INFORMATION

TECHNICAL CONTACT PERSON: Dr. Michael P. Hinton  
TECHNICAL CONTACT NUMBER: Telephone 215-860-2165  
Fax 215-860-8560

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## SECTION XIV - Transportation

This material is not a DOT hazardous material. See section IX, "DOT Shipping Description".