

MATERIAL SAFETY DATA SHEET

JUNE 1, 2008

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CHLOROFORM
SYNONYMS: TRICHLOROMETHANE; METHANE TRICHLORIDE
PRODUCT CODES: 12540

MANUFACTURER: ELECTRON MICROSCOPY SCIENCES
DIVISION: 1560 INDUSTRY ROAD/P.O. BOX 550
ADDRESS: HATFIELD, PA 19440

EMERGENCY PHONE: 215-412-8400
CHEMTREC PHONE: 800-424-9300

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CHEMICAL NAME: CHLOROFORM
CHEMICAL FAMILY: NOT AVAILABLE
CHEMICAL FORMULA: CHCl₃

PRODUCT USE: LABORATORY REAGENT

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT:
CHLOROFORM

<u>CAS NO.</u>	<u>% WT</u>	<u>% VOL</u>	<u>SARA 313 REPORTABLE</u>
67-66-3	100		
	<u>ppm</u>	<u>mg/m³</u>	
OSHA PEL-TWA:		2	
OSHA PEL STEL :		9.78	
OSHA PEL CEILING:	50PPM		
ACGIH TLV-TWA:	10PPM	2	
ACGIH TLV STEL:		9.78	
ACGIH TLV CEILING:			

SECTION 2 NOTES:

SECTION 3: HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

EYES: IRRITANT, BURNING PAIN, AND REVERSIBLE INJURY TO CORNEAL EPITHELIUM

SKIN: CAUSES SKIN IRRITATION AND MAY CAUSE CHEMICAL BURNS

INGESTION: HAZARDOUS IN CASE OF INGESTION, NAUSEA, VOMITING. MAY AFFECT THE LIVER, URINARY SYSTEM, NERVOUS SYSTEM, HEART.

INHALATION: HAZARDOUS IN CASE OF INHALATION, COULD CAUSE DAMAGE TO LIVER, CENTRAL NERVOUS SYSTEM.

ACUTE HEALTH HAZARDS: HAZARDOUS IN CASE OF SKIN CONTACT (IRRITANT), OF EYE CONTACT (IRRITANT), OF INGESTION, OF INHALATION. SLIGHTLY HAZARDOUS IN CASE OF SKIN CONTACT (PERMEATOR).

CHRONIC HEALTH HAZARDS: REPEATED OR PROLONGED EXPOSURE TO THE SUBSTANCE CAN PRODUCE TARGET ORGANS DAMAGE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: SUBSTANCE MAY BE TOXIC TO KIDNEYS, LIVER, HEART.

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CARCINOGENICITY

OSHA: + ACGIH: A3 NTP: 2 IARC: 2B

SECTION 4: FIRST AID MEASURES

EYES: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. COLD WATER MAY BE USED. WARM WATER MUST BE USED. GET MEDICAL ATTENTION.

SKIN: IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER. COVER THE IRRITATED SKIN WITH AN EMOLLIENT. REMOVE CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE REUSE. THOROUGHLY CLEAN SHOES BEFORE REUSE. GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. IF LARGE QUANTITIES OF THIS MATERIAL ARE SWALLOWED, CALL A PHYSICIAN IMMEDIATELY.

INHALATION: EVACUATE THE VICTIM TO A SAFE AREA. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF THE VICTIM IS NOT BREATHING, PERFORM MOUTH TO MOUTH RESUSCITATION. WARNING; IT MAY BE HAZARDOUS TO THE PERSON PROVIDING AID TO GIVE MOUTH TO MOUTH RESUSCITATION WHEN THE INHALED MATERIAL IS TOXIC, INFECTIOUS OR CORROSIVE. SEEK MEDICAL ATTENTION.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: NOT AVAILABLE

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, UPPER:
(% BY VOLUME) LOWER: NON-FLAMMABLE

FLASH POINT:

F: NOT APPLICABLE

C:

METHOD USED:

AUTOIGNITION TEMPERATURE: NOT APPLICABLE

F:

C:

NFPA HAZARD CLASSIFICATION

HEALTH: 2 FLAMMABILITY: 0 REACTIVITY: 0
OTHER: N/A

HMIS HAZARD CLASSIFICATION

HEALTH: 2 FLAMMABILITY: 0 REACTIVITY: 0
PROTECTION: H

EXTINGUISHING MEDIA: USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES: WEAR FULL PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN THE PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: MAY EXPLODE IF IT COMES IN CONTACT WITH ALUMINUM POWDER, LITHIUM, PERCHLORATE, PENTOXIDE, POTASSIUM-SODIUM ALLOY, AND METHANOL.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CHLORIDE AND PHOSGENE WHEN HEATED TO DECOMPOSITON.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: SMALL SPILL, ABSORB WITH AN INERT MATERIAL AND PUT THE SPILLED MATERIAL IN AN APPROPRIATE WASTE DISPOSAL.

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LARGE SPILL, ABSORB WITH AN INERT MATERIAL AND PUT THE SPILLED MATERIAL IN AN APPROPRIATE WASTE DISPOSAL. BE CAREFUL THAT THE PRODUCT IS NOT PRESENT AT A CONCENTRATION LEVEL ABOVE TLV. CHECK TLV ON THE MSDS AND WITH LOCAL AUTHORITIES.

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: KEEP CONTAINER TIGHTLY CLOSED. KEEP CONTAINER IN A COOL, WELL VENTILATED AREA. SENSITIVE TO LIGHT. STORE IN LIGHT-RESISTANT CONTAINERS.

OTHER PRECAUTIONS: DO NOT INGEST. DO NOT BREATHE GAS/FUMES/VAPOR/SPRAY. WEAR SUITABLE PROTECTIVE CLOTHING. IN CASE OF INSUFFICIENT VENTILATION, WEAR SUITABLE RESPIRATORY EQUIPMENT. IF INGESTED, SEEK MEDICAL ADVICE IMMEDIATELY AND SHOW THE CONTAINER OR LABEL. AVOID CONTACT WITH THE SKIN AND EYES. KEEP AWAY FROM INCOMPATIBLES SUCH AS METALS, ALKALIS.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: PROVIDE EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO KEEP THE AIRBORNE CONCENTRATIONS OF VAPORS BELOW THEIR RESPECTIVE THRESHOLD LIMIT VALUE. ENSURE THAT EYEWASH STATIONS AND SAFETY SHOWERS ARE PROXIMAL TO THE WORK STATION LOCATION.

VENTILATION : A SYSTEM OF LOCAL AND/OR GENERAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE EXPOSURES BELOW THE AIRBORNE EXPOSURE LIMITS. LOCAL EXHAUST VENTILATION IS GENERALLY PREFERRED BECAUSE IT CAN CONTROL THE EMISSIONS OF THE CONTAMINANT AT ITS SOURCE, PREVENTING DISPERSION OF IT INTO THE GENERAL WORK AREA.

RESPIRATORY PROTECTION: VAPOR RESPIRATOR

EYE PROTECTION: SPLASH GOGGLES

SKIN PROTECTION: FULL SUITE, BOOTS, GLOVES

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: SPLASH GOGGLES, FULL SUIT, VAPOR RESPIRATOR, BOOTS, GLOVES.

WORK HYGIENIC PRACTICES: NOT AVAILABLE

EXPOSURE GUIDELINES: SUGGESTED PROTECTIVE CLOTHING MIGHT NOT BE SUFFICIENT IN A LARGE SPILL, CONSULT A SPECIALIST BEFORE HANDLING THIS PRODUCT.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: COLORLESS, CLEAR

ODOR: PLEASANT, ETHERIC

PHYSICAL STATE: LIQUID

pH AS SUPPLIED: NO INFORMATION FOUND

pH (Other):

BOILING POINT:

F: 141.8°F

C: 61°C

MELTING POINT:

F: -82.3°

C: -63.5°

FREEZING POINT: NO INFORMATION FOUND

VAPOR PRESSURE (mmHg):

160 @ 20C (68F)

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VAPOR DENSITY (AIR = 1):

@ 4.36 (AIR-1)

SPECIFIC GRAVITY (H₂O = 1):

@ 1.484 (WATER=1)

EVAPORATION RATE (BuAc=1):

11.6

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (con't)

SOLUBILITY IN WATER: VERY SLIGHTLY SOLUBLE IN COLD WATER.

PERCENT SOLIDS BY WEIGHT: NOT AVAILABLE

PERCENT VOLATILE:

BY WT/ BY VOL @ NOT AVAILABLE

F:

C:

VOLATILE ORGANIC COMPOUNDS (VOC): NOT AVAILABLE

WITH WATER: LBS/GAL

WITHOUT WATER: LBS/GAL

MOLECULAR WEIGHT: 119.38G/MOLE

VISCOSITY : NOT AVAILABLE

SECTION 10: STABILITY AND REACTIVITY

STABLE

UNSTABLE

STABILITY: STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE. PH DECREASES ON PROLONGED EXPOSURE TO LIGHT AND AIR DUE TO FORMATION OF HC1.

CONDITIONS TO AVOID (STABILITY): INCOMPATIBLE MATERIALS, LIGHT

INCOMPATIBILITY (MATERIAL TO AVOID): REACTIVE WITH METALS, ALKALIS

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: NON CORROSIVE IN PRESENCE OF GLASS

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID (POLYMERIZATION): WILL NOT OCCUR

SECTION 10 NOTES: SPECIAL REMARKS ON CORROSIVITY: IT WILL ATTACK SOME FORMS OF PLASTICS RUBBER AND COATINGS.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: MAY AFFECT GENETIC MATERIAL (POSSIBLE MUTAGEN) AND CAUSE ADVERSE REPRODUCTIVE EFFECTS (EMBRYOTOXICITY AND FETOTOXICITY). SUSPECTED CARCINOGEN AND TERATOGEN BASED ON ANIMAL DATA. HUMAN: PASSES THE PLACENTAL BARRIER, DETECTED IN MATERNAL MILK.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: ECOTOXICITY IN WATER (LC50): 43.8 MG/l 96 hours [TROUT]
THE PRODUCTS OF DEGRADATION ARE AS TOXIC AS THE PRODUCT ITSELF.

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SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: WASTE MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS.

RCRA HAZARD CLASS: NOT AVAILABLE

SECTION 13: DISPOSAL CONSIDERATIONS (con't)

SECTION 13 NOTES: WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE HANDLED AS HAZARDOUS WASTE AND SENT TO A RCRA APPROVED WASTE FACILITY. PROCESSING, USE OR CONTAMINATION OF THIS PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS. STATE AND LOCAL DISPOSAL REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL REGULATIONS. DISPOSE CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION	INFORMATION REPORTED FOR PRODUCT/SIZE 52L
PROPER SHIPPING NAME: RQ, CHLOROFORM	
HAZARD CLASS: 6.1	
ID NUMBER: UN1888	
PACKING GROUP: III	
LABEL STATEMENT: POISON	

WATER TRANSPORTATION
PROPER SHIPPING NAME:
HAZARD CLASS:
ID NUMBER: SAME
PACKING GROUP:
LABEL STATEMENTS:
INTERNATIONAL (WATER, I.M.O.)

AIR TRANSPORTATION
PROPER SHIPPING NAME:
HAZARD CLASS:
ID NUMBER: SAME
PACKING GROUP:
LABEL STATEMENTS:

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS
TSCA (TOXIC SUBSTANCE CONTROL ACT): 12 (b): NO

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): NO

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): ACUTE: YES

313 REPORTABLE INGREDIENTS: CHLOROFORM

SECTION 16: OTHER INFORMATION

DISCLAIMER: IN COMPLIANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD, 29 C.F.R. 1910.1200, WE ARE PROVIDING YOU WITH A MSDS FOR THE HAZARDOUS MATERIAL YOU ARE

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PURCHASING.

IT IS YOUR RESPONSIBILITY TO EDUCATE YOUR EMPLOYEES ON THE SAFE USE OF THE HAZARDOUS MATERIAL.

ELECTRON MICROSCOPY SCIENCES MAKES NO PRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. THE INFORMATION IS BELIEVED TO BE CORRECT; HOWEVER, YOU (THE CUSTOMER), SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO FORWARD THE INFORMATION IN THE MSDS TO YOUR CUSTOMER.