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SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG #: 46084

NAME: 2,3,4,5-Tetrafluorobenzonitrile

SYNONYMS:

24 HOUR EMERGENCY TELEPHONE: (800) 535-5053(USA)
352-323-3500 (INTERNATIONAL)

TO REQUEST AN MSDS: (800) 869-9290

CUSTOMER SERVICE: (630) 766-2112

SECTION 2. HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

GHS CLASSIFICATION IN ACCORDANCE WITH 29 CFR 1910 (OSHA HCS)

FLAMMABLE LIQUIDS (CATEGORY 4), H227
ACUTE TOXICITY, ORAL (CATEGORY 3), H301
ACUTE TOXICITY, DERMAL (CATEGORY 3), H311
SKIN CORROSION/IRRITATION (CATEGORY 2), H315
EYE DAMAGE/IRRITATION (CATEGORY 2A), H319
ACUTE TOXICITY, INHALATION (CATEGORY 3), H331

FOR THE FULL TEXT OF THE H-STATEMENTS MENTIONED IN THIS SECTION, SEE SECTION 16.

**GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS
PICTOGRAM**



SIGNAL WORD DANGER

HAZARD STATEMENT(S)

H227 COMBUSTIBLE LIQUID.
H301 + H311 + H331 TOXIC IF SWALLOWED, IN CONTACT WITH SKIN OR IF
INHALED.
H315 CAUSES SKIN IRRITATION.
H319 CAUSES SERIOUS EYE IRRITATION.

PRECAUTIONARY STATEMENT(S)

P210 KEEP AWAY FROM HEAT/SPARKS/OPEN FLAMES/HOT SURFACES. NO SMOKING.
P261 AVOID BREATHING DUST/ FUME/ GAS/ MIST/ VAPOURS/ SPRAY.
P264 WASH SKIN THOROUGHLY AFTER HANDLING.
P270 DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT.
P271 USE ONLY OUTDOORS OR IN A WELL-VENTILATED AREA.
P280 WEAR PROTECTIVE GLOVES/ EYE PROTECTION/ FACE PROTECTION.
P301 + P310 + P330 IF SWALLOWED: IMMEDIATELY CALL A POISON CENTER/DOCTOR. RINSE MOUTH.
P304 + P340 + P311 IF INHALED: REMOVE PERSON TO FRESH AIR AND KEEP COMFORTABLE FOR BREATHING. CALL A POISON CENTER/DOCTOR.
P305 + P351 + P338 IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING.
P337 + P313 IF EYE IRRITATION PERSISTS: GET MEDICAL ADVICE/ ATTENTION.
P362 TAKE OFF CONTAMINATED CLOTHING AND WASH BEFORE REUSE.
P405 STORE LOCKED UP.
P403 + P233 STORE IN A WELL VENTILATED PLACE. KEEP CONTAINER TIGHTLY CLOSED.
P501 DISPOSE OF CONTENTS/ CONTAINER TO AN APPROVED WASTE DISPOSAL PLANT.

HAZARDS NOT OTHERWISE CLASSIFIED (HNOC) OR NOT COVERED BY GHS NONE

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

MF: C₇HF₄N
MW: 175.09
CAS-NO. 16582-93-7
PURITY: ≥ 97% (GC)

HAZARDOUS COMPONENTS

COMPONENT	CLASSIFICATION	CONCENTRATION
2,3,4,5-Tetrafluorobenzonitrile		
	-	-

FOR THE FULL TEXT OF THE H-STATEMENTS MENTIONED IN THIS SECTION, SEE SECTION 16.

SECTION 4. FIRST-AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

GENERAL ADVICE	CONSULT A PHYSICIAN. SHOW THIS SAFETY DATA SHEET TO THE DOCTOR IN ATTENDANCE.MOVE OUT OF DANGEROUS AREA.
IF INHALED	REMOVE VICTIM TO FRESH AIR AND KEEP AT REST IN A POSITION COMFORTABLE FOR BREATHING. CALL A POISON CENTER OR DOCTOR/PHYSICIAN.
IN CASE OF SKIN CONTACT	REMOVE/TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING. GENTLY WASH WITH PLENTY OF SOAP AND WATER. CALL A POISON CENTER OR DOCTOR/PHYSICIAN.
IN CASE OF EYE CONTACT	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 SWALLOWED	IMMEDIATELY CALL A POISON CENTER OR DOCTOR/PHYSICIAN. RINSE MOUTH.
MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED	ACUTE: REDNESS. THE MOST IMPORTANT KNOWN SYMPTOMS AND EFFECTS ARE DESCRIBED IN THE LABELLING (SEE SECTION 2.2) AND/OR IN SECTION 11.
INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED	NO DATA AVAILABLE

SECTION 5. FIRE AND EXPLOSION DATA

EXTINGUISHING MEDIA**SUITABLE
EXTINGUISHING MEDIA**

SUITABLE EXTINGUISHING MEDIA:
DRY CHEMICAL, FOAM, WATER SPRAY, CARBON
DIOXIDE.

UNSUITABLE EXTINGUISHING MEDIA:
SOLID STREAMS OF WATER

**SPECIAL HAZARDS
ARISING FROM THE
SUBSTANCE OR MIXTURE**

CARBON OXIDES NITROGEN OXIDES HALOGENATED
COMPOUNDS

**ADVICE FOR
FIREFIGHTERS**

WEAR SELF-CONTAINED BREATHING APPARATUS IF
POSSIBLE.

FURTHER INFORMATION

WARNING: HIGHLY TOXIC HF GAS IS PRODUCED
DURING COMBUSTION.
TAKE CARE AS IT MAY DECOMPOSE UPON
COMBUSTION OR IN HIGH TEMPERATURES TO
GENERATE POISONOUS FUME.

SECTION 6. ACCIDENTAL RELEASE MEASURES

**PERSONAL
PRECAUTIONS,
PROTECTIVE
EQUIPMENT AND
EMERGENCY
PROCEDURES**

USE PERSONAL PROTECTIVE EQUIPMENT. KEEP PEOPLE
AWAY FROM AND UPWIND OF SPILL/LEAK. ENSURE
ADEQUATE VENTILATION. ENTRY TO NON-INVOLVED
PERSONNEL SHOULD BE CONTROLLED AROUND THE
LEAKAGE AREA BY ROPING OFF, ETC.

**ENVIRONMENTAL
PRECAUTIONS**

PREVENT PRODUCT FROM ENTERING DRAINS.

**METHODS AND
MATERIALS FOR
CONTAINMENT AND
CLEANING UP**

ABSORB SPILLED MATERIAL IN A SUITABLE
ABSORBENT (E.G. RAG, DRY SAND, EARTH, SAW-DUST).
IN CASE OF LARGE AMOUNT OF SPILLAGE, CONTAIN A
SPILL BY BUNDING. ADHERED OR COLLECTED
MATERIAL SHOULD BE PROMPTLY DISPOSED OF, IN
ACCORDANCE WITH APPROPRIATE LAWS AND
REGULATIONS.

**REFERENCE TO OTHER
SECTIONS**

FOR DISPOSAL SEE SECTION 13.

SECTION 7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING	HANDLING IS PERFORMED IN A WELL VENTILATED PLACE. WEAR SUITABLE PROTECTIVE EQUIPMENT. PREVENT GENERATION OF VAPOUR OR MIST. KEEP AWAY FROM FLAMES AND HOT SURFACES. TAKE MEASURES TO PREVENT THE BUILD UP OF ELECTROSTATIC CHARGE. USE EXPLOSION-PROOF EQUIPMENT. WASH HANDS AND FACE THOROUGHLY AFTER HANDLING. USE A CLOSED SYSTEM IF POSSIBLE. USE A VENTILATION, LOCAL EXHAUST IF VAPOUR OR AEROSOL WILL BE GENERATED. AVOID CONTACT WITH SKIN, EYES AND CLOTHING.
CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES	KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DARK AND WELL-VENTILATED PLACE. STORE LOCKED UP. STORE AWAY FROM INCOMPATIBLE MATERIALS SUCH AS OXIDIZING AGENTS. Store at 2 - 8 °C
SPECIFIC END USE(S)	APART FROM THE USES MENTIONED IN SECTION 1.2 NO OTHER SPECIFIC USES ARE STIPULATED.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

CONTAINS NO SUBSTANCES WITH OCCUPATIONAL EXPOSURE LIMIT VALUES.

EXPOSURE CONTROLS

APPROPRIATE ENGINEERING CONTROLS

FOLLOW SAFE INDUSTRIAL ENGINEERING/LABORATORY PRACTICES WHEN HANDLING ANY CHEMICAL. INSTALL A CLOSED SYSTEM OR LOCAL EXHAUST. ALSO INSTALL SAFETY SHOWER AND EYE BATH.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION

FACE SHIELD AND SAFETY GLASSES USE EQUIPMENT FOR EYE PROTECTION TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR EN 166(EU).

SKIN PROTECTION	HANDLE WITH GLOVES. GLOVES MUST BE INSPECTED PRIOR TO USE. USE PROPER GLOVE REMOVAL TECHNIQUE (WITHOUT TOUCHING GLOVE'S OUTER SURFACE) TO AVOID SKIN CONTACT WITH THIS PRODUCT. DISPOSE OF CONTAMINATED GLOVES AFTER USE IN ACCORDANCE WITH APPLICABLE LAWS AND GOOD LABORATORY PRACTICES. WASH AND DRY HANDS.
BODY PROTECTION	IMPERVIOUS CLOTHING, FLAME RETARDANT ANTISTATIC PROTECTIVE CLOTHING. THE TYPE OF PROTECTIVE EQUIPMENT MUST BE SELECTED ACCORDING TO THE CONCENTRATION AND AMOUNT OF THE DANGEROUS SUBSTANCE AT THE SPECIFIC WORKPLACE.
RESPIRATORY PROTECTION	HALF OR FULL FACEPIECE RESPIRATOR, SELF-CONTAINED BREATHING APPARATUS(SCBA), SUPPLIED AIR RESPIRATOR, ETC. USE RESPIRATORS APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS AND FOLLOW LOCAL AND NATIONAL REGULATIONS.
CONTROL OF ENVIRONMENTAL EXPOSURE	PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Colorless to light yellow clear liquid
ODOUR	NO DATA AVAILABLE
ODOUR THRESHOLD	NO DATA AVAILABLE
PH	NO DATA AVAILABLE
MELTING POINT/FREEZING POINT	
INITIAL BOILING POINT AND BOILING RANGE	165 °C
FLASH POINT	70 °C
EVAPORATION RATE	NO DATA AVAILABLE
FLAMMABILITY (SOLID, GAS)	NO DATA AVAILABLE
UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS	NO DATA AVAILABLE
VAPOUR PRESSURE	NO DATA AVAILABLE
VAPOUR DENSITY	NO DATA AVAILABLE
RELATIVE DENSITY	1.48
WATER SOLUBILITY	NO DATA AVAILABLE
PARTITION COEFFICIENT: N- OCTANOL/WATER	NO DATA AVAILABLE
AUTO-IGNITION TEMPERATURE	NO DATA AVAILABLE

DECOMPOSITION TEMPERATURE	NO DATA AVAILABLE
VISCOSITY	NO DATA AVAILABLE
EXPLOSIVE PROPERTIES	NO DATA AVAILABLE
OXIDIZING PROPERTIES	NO DATA AVAILABLE

OTHER SAFETY INFORMATION

NO DATA AVAILABLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY	NO DATA AVAILABLE
CHEMICAL STABILITY	STABLE UNDER RECOMMENDED STORAGE CONDITIONS.
POSSIBILITY OF HAZARDOUS REACTIONS	NO SPECIAL REACTIVITY HAS BEEN REPORTED.
CONDITIONS TO AVOID	OPEN FLAME
INCOMPATIBLE MATERIALS	OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS	CARBON DIOXIDE, CARBON MONOXIDE, NITROGEN OXIDES (NOX), HYDROGEN FLUORIDE

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

ACUTE TOXICITY	NO DATA AVAILABLE
	INHALATION: NO DATA AVAILABLE
	DERMAL: NO DATA AVAILABLE
	NO DATA AVAILABLE
SKIN CORROSION/IRRITATION	NO DATA AVAILABLE
SERIOUS EYE DAMAGE/EYE IRRITATION	NO DATA AVAILABLE
RESPIRATORY OR SKIN SENSITISATION	NO DATA AVAILABLE

GERM CELL MUTAGENICITY	NO DATA AVAILABLE
CARCINOGENICITY	
IARC:	NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC.
NTP:	NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS A KNOWN OR ANTICIPATED CARCINOGEN BY NTP.
OSHA:	NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS ON OSHA S LIST OF REGULATED CARCINOGENS.
REPRODUCTIVE TOXICITY	NO DATA AVAILABLE
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	NO DATA AVAILABLE
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	NO DATA AVAILABLE
ASPIRATION HAZARD	NO DATA AVAILABLE
ADDITIONAL INFORMATION	RTECS: NOT AVAILABLE TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY	NO DATA AVAILABLE
PERSISTENCE AND DEGRADABILITY	NO DATA AVAILABLE
BIOACCUMULATIVE POTENTIAL	NO DATA AVAILABLE
MOBILITY IN SOIL	NO DATA AVAILABLE
RESULTS OF PBT AND VPVB ASSESSMENT	NO DATA AVAILABLE

OTHER ADVERSE EFFECTS NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

PRODUCT	OFFER SURPLUS AND NON-RECYCLABLE SOLUTIONS TO A LICENSED DISPOSAL COMPANY. BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL.
CONTAMINATED PACKAGING	DISPOSE OF AS UNUSED PRODUCT.

SECTION 14. TRANSPORT INFORMATION

DOT (US)

PROPER SHIPPING NAME:	NITRILES, LIQUID, TOXIC, N.O.S (2,3,4,5-Tetrafluorobenzonitrile)
UN NUMBER:	3276
CLASS:	6.1
PACKING GROUP:	III

IMDG

PROPER SHIPPING NAME:	NITRILES, LIQUID, TOXIC, N.O.S (2,3,4,5-Tetrafluorobenzonitrile)
UN NUMBER:	3276
CLASS:	6.1
PACKING GROUP:	III
EMS-NO:	F-A, S-A

IATA

PROPER SHIPPING NAME:	NITRILES, LIQUID, TOXIC, N.O.S (2,3,4,5-Tetrafluorobenzonitrile)
UN NUMBER:	3276
CLASS:	6.1
PACKING GROUP:	III

SECTION 15. REGULATORY INFORMATION

SARA 302 COMPONENTS NO CHEMICALS IN THIS MATERIAL ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 302.

SARA 313 COMPONENTS THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

MASSACHUSETTS RIGHT TO KNOW COMPONENTS
NO COMPONENTS ARE SUBJECT TO THE MASSACHUSETTS RIGHT TO KNOW ACT.

PENNSYLVANIA RIGHT TO KNOW COMPONENTS

	CAS-NO.	REVISION DATE
2,3,4,5-Tetrafluorobenzonitrile	16582-93-7	

NEW JERSEY RIGHT TO KNOW COMPONENTS

	CAS-NO.	REVISION DATE
2,3,4,5-Tetrafluorobenzonitrile	16582-93-7	

SECTION 16. OTHER INFORMATION

FULL TEXT OF H-STATEMENTS REFERRED TO UNDER SECTIONS 2 AND 3.

H227	COMBUSTIBLE LIQUID.
H301 + H311 + H331	TOXIC IF SWALLOWED, IN CONTACT WITH SKIN OR IF INHALED.
H315	CAUSES SKIN IRRITATION.
H319	CAUSES SERIOUS EYE IRRITATION.

MSDS LEGEND

MW:	MOLECULAR WEIGHT
MF:	MOLECULAR FORMULA
VOC:	VOLATILE ORGANIC COMPOUNDS
ACGIH:	AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGINISTS
CAS:	CHEMICAL ABSTRACTS SERIVE REGISTRY NUMBER
OSHA:	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PEL:	PERMISSIBLE EXPOSURE LIMIT (OSHA)
TLV:	THRESHOLD LIMIT VALUE (ACGIH)

IMPORTANT:

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