
S A F E T Y D A T A S H E E T

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG #:	262791
NAME:	Trifluoroacetic acid
SYNONYMS:	TFA
24 HOUR EMERGENCY TELEPHONE:	Within USA/Canada: +1 800-633-8253 Outside USA/Canada: +1 801-629-0667
TO REQUEST AN MSDS:	+1 888-535-2444
CUSTOMER SERVICE:	+1 888-535-2444

SECTION 2. HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE**GHS CLASSIFICATION IN ACCORDANCE WITH 29 CFR 1910 (OSHA HCS)**

ACUTE TOXICITY, INHALATION (CATEGORY 4), H332

SKIN CORROSION (CATEGORY 1A), H314

SERIOUS EYE DAMAGE (CATEGORY 1), H318

ACUTE AQUATIC TOXICITY (CATEGORY 3), H402

CHRONIC AQUATIC TOXICITY (CATEGORY 3), H412

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)

H314 CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.

H318 CAUSES SERIOUS EYE DAMAGE.

H332 HARMFUL IF INHALED.

H412 HARMFUL TO AQUATIC LIFE WITH LONG LASTING EFFECTS.

PRECAUTIONARY STATEMENT(S)

P261	AVOID BREATHING DUST/ FUME/ GAS/ MIST/ VAPOURS/ SPRAY.
P264	WASH SKIN THOROUGHLY AFTER HANDLING.
P271	USE ONLY OUTDOORS OR IN A WELL-VENTILATED AREA.
P273	AVOID RELEASE TO THE ENVIRONMENT.
P280	WEAR PROTECTIVE GLOVES/ PROTECTIVE CLOTHING/ EYE PROTECTION/ FACE PROTECTION.
P301 + P330 + P331	IF SWALLOWED: RINSE MOUTH. DO NOT INDUCE VOMITING.
P303 + P361 + P353	IF ON SKIN (OR HAIR): TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING. RINSE SKIN WITH WATER/SHOWER.
P304 + P340 + P310	IF INHALED: REMOVE PERSON TO FRESH AIR AND KEEP COMFORTABLE FOR BREATHING. IMMEDIATELY CALL A POISON CENTER OR DOCTOR/ PHYSICIAN.
P305 + P351 + P338 + P310	IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING. IMMEDIATELY CALL A POISON CENTER OR DOCTOR/ PHYSICIAN.
P363	WASH CONTAMINATED CLOTHING BEFORE REUSE.
P405	STORE LOCKED UP.
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:	C ₂ HF ₃ O ₂
MW:	114.02
CAS-NO.	76-05-1
PURITY:	≥ 99.9% (Assay)

HAZARDOUS COMPONENTS

COMPONENT	CLASSIFICATION	CONCENTRATION
TRIFLUOROACETIC ACID		
	ACUTE TOX. 4; SKIN CORR. 1A; EYE DAM. 1; AQUATIC ACUTE 3; AQUATIC CHRONIC 3; H314, H318, H332, H412	≤ 100 %

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	IF BREATHED IN, MOVE PERSON INTO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT A PHYSICIAN.
IN CASE OF SKIN CONTACT	TAKE OFF CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH OFF WITH SOAP AND PLENTY OF WATER. CONSULT A PHYSICIAN.
IN CASE OF EYE CONTACT	RINSE THOROUGHLY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND CONSULT A PHYSICIAN.CONTINUE RINSING EYES DURING TRANSPORT TO HOSPITAL.
IF SWALLOWED	DO NOT INDUCE VOMITING. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. RINSE MOUTH WITH WATER. CONSULT A PHYSICIAN.
MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED	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	USE WATER SPRAY, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR CARBON DIOXIDE.
SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE	CARBON OXIDES, HYDROGEN FLUORIDE
ADVICE FOR FIREFIGHTERS	WEAR SELF-CONTAINED BREATHING APPARATUS FOR FIREFIGHTING IF NECESSARY.
FURTHER INFORMATION	NO DATA AVAILABLE

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES	USE PERSONAL PROTECTIVE EQUIPMENT. AVOID BREATHING VAPOURS, MIST OR GAS. ENSURE ADEQUATE VENTILATION. EVACUATE PERSONNEL TO SAFE AREAS. FOR PERSONAL PROTECTION SEE SECTION 8.
ENVIRONMENTAL PRECAUTIONS	PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED.
METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP	SOAK UP WITH INERT ABSORBENT MATERIAL AND DISPOSE OF AS HAZARDOUS WASTE. KEEP IN SUITABLE, CLOSED CONTAINERS FOR DISPOSAL.
REFERENCE TO OTHER SECTIONS	FOR DISPOSAL SEE SECTION 13.

SECTION 7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING	AVOID CONTACT WITH SKIN AND EYES. AVOID INHALATION OF VAPOUR OR MIST. FOR PRECAUTIONS SEE SECTION 2.2.
CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES	KEEP CONTAINER TIGHTLY CLOSED IN A DRY AND WELL-VENTILATED PLACE. CONTAINERS WHICH ARE OPENED MUST BE CAREFULLY RESEALED AND KEPT UPRIGHT TO PREVENT LEAKAGE. HYGROSCOPIC STORE UNDER INERT GAS. STORAGE CLASS (TRGS 510): NON-COMBUSTIBLE, CORROSIVE HAZARDOUS MATERIALS
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.
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EXPOSURE CONTROLS

**APPROPRIATE
ENGINEERING
CONTROLS**

HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICE. WASH HANDS BEFORE BREAKS AND AT THE END OF WORKDAY.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION

TIGHTLY FITTING SAFETY GOGGLES. FACESHIELD (8-INCH MINIMUM). 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.

FULL CONTACT

MATERIAL: CHLOROPRENE
MINIMUM LAYER THICKNESS: 0.6 MM
BREAK THROUGH TIME: 480 MIN
MATERIAL TESTED:CAMAPREN (KCL 722, SIZE M)

SPLASH CONTACT

MATERIAL: NATURE LATEX/CHLOROPRENE MINIMUM LAYER THICKNESS: 0.6 MM BREAK THROUGH TIME: 200 MIN
MATERIAL TESTED:LAPREN (KCL 706 , SIZE M)

IF USED IN SOLUTION, OR MIXED WITH OTHER SUBSTANCES, AND UNDER CONDITIONS WHICH DIFFER FROM EN 374, CONTACT THE SUPPLIER OF THE CE APPROVED GLOVES. THIS RECOMMENDATION IS ADVISORY ONLY AND MUST BE EVALUATED BY AN INDUSTRIAL HYGIENIST AND SAFETY OFFICER FAMILIAR WITH THE SPECIFIC SITUATION OF ANTICIPATED USE BY OUR CUSTOMERS. IT SHOULD NOT BE CONSTRUED AS OFFERING AN APPROVAL FOR ANY SPECIFIC USE SCENARIO.

BODY PROTECTION

COMPLETE SUIT PROTECTING AGAINST CHEMICALS, THE TYPE OF PROTECTIVE EQUIPMENT MUST BE SELECTED ACCORDING TO THE CONCENTRATION AND AMOUNT OF THE DANGEROUS SUBSTANCE AT THE SPECIFIC WORKPLACE.

**RESPIRATORY
PROTECTION**

WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE APPROPRIATE USE A FULL-FACE RESPIRATOR WITH MULTI- PURPOSE COMBINATION (US) OR TYPE ABEK (EN 14387) RESPIRATOR CARTRIDGES AS A BACKUP TO ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR. USE RESPIRATORS AND COMPONENTS TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR CEN (EU).

CONTROL OF ENVIRONMENTAL EXPOSURE

PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Clear colorless liquid
ODOUR	PUNGENT
ODOUR THRESHOLD	NO DATA AVAILABLE
PH	1.0 AT 1 G/L AT 20 °C
MELTING POINT/FREEZING POINT	-15.4 °C
INITIAL BOILING POINT AND BOILING RANGE	72.4 °C
FLASH POINT	
EVAPORATION RATE	NO DATA AVAILABLE
FLAMMABILITY (SOLID, GAS)	NO DATA AVAILABLE
UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS	NO DATA AVAILABLE
VAPOUR PRESSURE	130.0 HPA (97.5 MMHG) AT 20.0 °C, 142.7 HPA (107.0 MMHG) AT 25.0 °C
VAPOUR DENSITY	NO DATA AVAILABLE
RELATIVE DENSITY	1.489 g/mL at 20 °C
WATER SOLUBILITY	SOLUBLE
PARTITION COEFFICIENT: N- OCTANOL/WATER	LOG POW: -2.10
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 DATA AVAILABLE

CONDITIONS TO AVOID	NO DATA AVAILABLE
INCOMPATIBLE MATERIALS	STRONG BASES, METALS, OXIDIZING AGENTS, ALCOHOLS, EPOXIDES, STEEL (ALL TYPES AND SURFACE TREATMENTS), ALUMINUM, EXOTHERMIC IN CONTACT WITH WATER, REACTS VIOLENTLY WITH:, ALKALI METALS
HAZARDOUS DECOMPOSITION PRODUCTS	OTHER DECOMPOSITION PRODUCTS - NO DATA AVAILABLE IN THE EVENT OF FIRE: SEE SECTION 5

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

ACUTE TOXICITY	LC50 INHALATION - RAT - 10,000 MG/M3 REMARKS: SENSE ORGANS AND SPECIAL SENSES (NOSE, EYE, EAR, AND TASTE):EYE:CONJUNCTIVE IRRITATION. BEHAVIORAL:SOMNOLENCE (GENERAL DEPRESSED ACTIVITY). LUNGS, THORAX, OR RESPIRATION:DYSPNEA. DERMAL: 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	
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.
ACGIH:	NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS A CARCINOGEN OR POTENTIAL CARCINOGEN BY ACGIH.
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 IDENTIFIED AS A CARCINOGEN OR POTENTIAL CARCINOGEN BY OSHA.
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: AJ9625000 MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES, AND SKIN., SPASM, INFLAMMATION AND EDEMA OF THE LARYNX, SPASM, INFLAMMATION AND EDEMA OF THE BRONCHI, PNEUMONITIS, PULMONARY EDEMA, BURNING SENSATION, COUGH, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA, VOMITING LIVER - IRREGULARITIES - BASED ON HUMAN EVIDENCE

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY

TOXICITY TO FISH	LC50 - DANIO RERIO (ZEBRA FISH) - > 1,000 MG/L - 96 H
TOXICITY TO DAPHNIA AND OTHER AQUATIC INVERTEBRATES	EC50 - DAPHNIA MAGNA (WATER FLEA) - 55.00 MG/L - 24 H
TOXICITY TO ALGAE	- DESMODESMUS SUBSPICATUS (SCENEDESMUS SUBSPICATUS) - > 100 MG/L - 72 H

PERSISTENCE AND DEGRADABILITY

BIODEGRADABILITY	RESULT: - NOT READILY BIODEGRADABLE. (OECD TEST GUIDELINE 301D)
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BIOACCUMULATIVE POTENTIAL

NO BIOACCUMULATION IS TO BE EXPECTED (LOG POW <= 4).

MOBILITY IN SOIL

NO DATA AVAILABLE

RESULTS OF PBT AND VPVB ASSESSMENT

PBT/VPVB ASSESSMENT NOT AVAILABLE AS CHEMICAL SAFETY ASSESSMENT NOT REQUIRED/NOT CONDUCTED

OTHER ADVERSE EFFECTS

AN ENVIRONMENTAL HAZARD CANNOT BE EXCLUDED IN THE EVENT OF UNPROFESSIONAL HANDLING OR DISPOSAL. HARMFUL TO AQUATIC LIFE WITH LONG LASTING EFFECTS.

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

PRODUCT	OFFER SURPLUS AND NON-RECYCLABLE SOLUTIONS TO A LICENSED DISPOSAL COMPANY. CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
CONTAMINATED PACKAGING	DISPOSE OF AS UNUSED PRODUCT.

SECTION 14. TRANSPORT INFORMATION

DOT (US)

PROPER SHIPPING NAME:	TRIFLUOROACETIC ACID
UN NUMBER:	2699
CLASS:	8
PACKING GROUP:	I
REPORTABLE QUANTITY (RQ):	
POISON INHALATION HAZARD:	NO

IMDG

PROPER SHIPPING NAME:	TRIFLUOROACETIC ACID
UN NUMBER:	2699
CLASS:	8
PACKING GROUP:	I
EMS-NO:	F-A, S-B

IATA

PROPER SHIPPING NAME:	TRIFLUOROACETIC ACID
UN NUMBER:	2699
CLASS:	8
PACKING GROUP:	I

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 (DEMINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS ACUTE HEALTH HAZARD, CHRONIC HEALTH HAZARD

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
Trifluoroacetic acid	76-05-1	3/1/2007

NEW JERSEY RIGHT TO KNOW COMPONENTS

	CAS-NO.	REVISION DATE
Trifluoroacetic acid	76-05-1	3/1/2007

CALIFORNIA PROP. 65 COMPONENTS THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

SECTION 16. OTHER INFORMATION

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

ACUTE TOX.	ACUTE TOXICITY
AQUATIC ACUTE	ACUTE AQUATIC TOXICITY
AQUATIC CHRONIC	CHRONIC AQUATIC TOXICITY
EYE DAM.	SERIOUS EYE DAMAGE
H314	CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.
H318	CAUSES SERIOUS EYE DAMAGE.
H332	HARMFUL IF INHALED.
H402	HARMFUL TO AQUATIC LIFE.

HMIS RATING

HEALTH HAZARD:	3
CHRONIC HEALTH HAZARD:	*
FLAMMABILITY:	0
PHYSICAL HAZARD	0

NFPA RATING

HEALTH HAZARD:	3
FIRE HAZARD:	0
REACTIVITY HAZARD:	0

MSDS LEGEND

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

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