

Extinguishing Media: WATER SPRAY IN CASE OF FIRE CAUSED BY SPILLAGE. DO NOT USE ORGANIC FIRE EXTINGUISHING AGENTS.

Special Fire Fighting Procedures: WEAR NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS AND APPROPRIATE PROTECTIVE APPAREL

Unusual Fire and Explosion Hazards: SPILLAGE MAY CAUSE FIRE OR LIBERATE DANGEROUS GAS. INCREASES FLAMMABILITY OF COMBUSTIBLE ORGANICS AND DEADLY OXIDIZABLE MATERIALS. MAY CAUSE IGNITION.

Section 6. Accidental Release Measures

ISOLATE OR ENCLOSE THE AREA OF SPILL OR LEAK. NEUTRALIZE WITH CALCIUM CARBONATE, WASH WITH EXCESS WATER. PICK UP WITH ABSORBENT MATERIAL (SAND OR VERMICULITE) AND DISPOSE IN A RCRA APPROVED WASTE FACILITY.

Section 7. Handling and Storage

Precautions to Be Taken in Handling and Storing: STORE IN WELL-VENTILATED AREA. ROOM TEMPERATURE STORAGE-SEALED BOTTLES.

Other Precautions: STORE AWAY FROM INCOMPATIBLE MATERIALS. PROTECT FROM PHYSICAL DAMAGE AND DIRECT SUNLIGHT.

Section 8. Exposure Control/Personal Protection

Respiratory Protection (Specify Type)

IF TLV IS EXCEEDED WEAR A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS.

Ventilation: Local Exhaust: MAINTAIN ADEQUATE VENTILATION

Mechanical (general): EXPOSURE TO LIMITS BELOW AIRBORNE EXPOSURE LIMITS

Special: EYE BATH AND SHOWER FACILITIES WORK AREA.

Protective Gloves: RUBBER

Eye Protection: CHEMICAL SAFETY GOGGLES OR FACE SHEILD.

Other Protective Clothing or Equipment:

PROTECTIVE CLOTHING, RUBBER APRON / USE APPROPRIATE INDUSTRIAL PRACTICES FOR HANDLING ACIDS.

Work / Hygienic Practices: USE APPROPRIATE INDUSTRIAL PRACTICES FOR HANDLING ACIDS.

Section 9. Physical and Chemical Properties

Boiling Point (100⁰C)	212 ⁰ F	Specific Gravity (H₂O=1) @ 25⁰C	1.16
Vapor Pressure (mm Hg.)	N/A	Melting Point % VOLATILES:	85 %
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	Similar to water

Solubility in Water: COMPLETE

Appearance and Odor: ORANGE LIQUID WITH PRACTICALLY NO ODOR.

Section 10. Stability and Reactivity

Stability: Unstable **Conditions to Avoid**

Stable X ORGANIC MATERIALS, STRONG OXIDANTS, HEAT

Incompatibility (Materials to Avoid): METALLIC POWDERS, CARBIDES, HYDROGEN SULFIDE AND EASILY OXIDIZED MATERIALS

Hazardous Decomposition or Byproducts:

OXIDES OF NITROGEN, STRONG BASES, AND METALS

Hazardous Polymerization **May Occur**

Will Not Occur X

Conditions to Avoid
EXCESSIVE HEAT

Section 11. Toxicological Information

MATERIAL SAFETY DATA SHEET

Section 1. Product and Company Identification

IDENTITY (As Used on Label and List)

CHROMIUM ETCHANT TYPE 1020
NICHROME ETCH TFN

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Manufacturers Name
TRANSENE COMPANY INC.

Address
10 ELECTRONICS AVENUE
DANVERS MA 01923

Emergency Telephone Number
CHEMTREC 24HR# 1-800-424-9300

Telephone Number for Information
(978)777-7860 fax: (978)739-5640 www.transene.com

Date Prepared
REVISED September 2007

Section 2. Composition/Information on Ingredients

Hazardous Components (Specific Chemical Identity Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
CERIC AMMONIUM NITRATE CAS# 16774-21-3	oral rat LD ₅₀	244ppm *		10-20
NITRIC ACID (HNO ₃) CAS# 7697-37-2		2ppm		5-6
NON-HAZARDOUS AQUEOUS SOLUTION				

* AS NITRATE

(THIS PRODUCT CONTAINS NO MORE THAN 6% BY WT. NITRIC ACID, WHICH IS CONSIDERED TO BE A TOXIC CHEMICAL UNDER TITLE III. EMISSIONS DATA MUST BE SUBMITTED ANNUALLY TO THE EPA FOR COMPANIES WHO MANUFACTURE, PROCESS OR OTHERWISE USE THIS PRODUCT IN EXCESS OF CERTAIN QUANTITIES ESTABLISHED BY THE EPA. THIS INFORMATION MUST BE INCLUDED IN ALL MSDS THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.)

Section 3. Health Hazard Identification

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Health Hazards (Acute and Chronic)

MAY CAUSE IRRITATION TO LUNGS AND RESPIRATORY SYSTEM.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	YES

Signs and Symptoms of Exposure:

MAY CAUSE IRRITATION AND BURNS.

Medical Conditions Generally Aggravated by Exposure:

MAY CAUSE IRRITATION AND BURNS. VAPOR OR SPRAYS CAN BE HAZARDOUS TO THE LUNGS AND RESPIRATORY SYSTEM. MATERIAL IS CORROSIVE TO EYES, SKIN, AND MUCOUS MEMBRANES.

Section 4. First Aid Measures

Emergency and First Aid Procedures:

EYE CONTACT: IMMEDIATELY GET MEDICAL ATTENTION.

SKIN: REMOVE CONTAMINATED CLOTHING AND SHOES. WASH EXPOSED ARE WITH SOAP AND WATER. GET MEDICAL ATTENTION.

INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION

INGESTION: DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION!

Section 5. Fire Fighting Measures

Flash Point (Method Used) NON- FLAMMABLE	Flammable Limits	LEL	UEL
	N/A	---	---

Acute Eye Irritation: The following data is for similar or related products. No test data found for product.
 Acute Skin Irritation: The following data is for similar or related products. No test data found for product.
 Acute Dermal Toxicity: No test data found for product.
 Acute Respiratory Irritation: No test data found for product.
 Acute Inhalation Toxicity: No test data found for product.
 Acute Oral Toxicity: No test data found for product.
 Chronic Toxicity: This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens.
 No additional test data found for product.

Section 12. Ecological Information

Ecotoxicological Information: No data found for product.
 Chemical Fate Information: No data found for product.

Section 13. Disposal Considerations

Waste Disposal Method: CLEAN UP PERSONNEL SHOULD WEAR PROTECTIVE CLOTHING AND RESPIRATORY EQUIPMENT SUITABLE FOR TOXIC FUMES. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE OR FEDERAL ENVIRONMENTAL REGULATIONS.

Section 14. Transportation Information

Nitric Acid Solution, UN2031, Class 8, PGII

Section 15. Regulatory Information

Inventory Status

Inventory	Status
United States (TSCA)	Y
Canada (DSL)	Y
Europe (EINECS / ELINCS)	Y
Australia (AICS)	Y
Japan (MITI)	N
South Korea (KECL)	Y

Y = All ingredients are on the inventory.

E = All ingredients are on the inventory or exempt from listing.

P = One or more ingredients fall under the polymer exemption or are on the no longer polymer list. All other ingredients are on the inventory or exempt from listing.

N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing.

Federal Regulations

Inventory Issues: The hydrated components of this product are listed on the TSCA Inventory under their parent anhydrous compounds.

SARA Title III Hazard Classes:

Fire Hazard - Yes

Reactive Hazard - No

Release of Pressure - No

Acute Health Hazard - Yes

Chronic Health Hazard - No

SARA Extremely Hazardous Substances (EHS)/ CERCLA Hazardous Substances

Ingredient CERCLA / SARA RQ SARA EHS TPQ

Nitric Acid

1000 lbs

1000 lbs

State Regulations: This product does not contain any components that are regulated under California Proposition 65.

Section 16. Other Information

ADDENDUM TO MATERIAL SAFETY DATA SHEET

REGULATORY STATUS

THIS ADDENDUM MUST NOT BE
DETACHED FROM THE MSDS
IDENTIFIES SARA 313 SUBSTANCE(S)

Any copying or redistribution of the MSDS
must include a copy of this addendum
(Chem.Key: PHACD)

HAZARD CATEGORIES FOR SARA

Section 311/312 Reporting

Acute Chronic Fire Pressure Reactive

Product or Components Of Products	SARA EHS Sect. 302		SARA Section 313 Chemicals		CERCLA Sec. 103	RCRA
	RQ (lbs.)	TPQ (lbs.)	Name List	Chemical Category	RQ (lbs.)	Section 261.33
NITRIC ACID (7697-37-2)	No	No	Yes	No	No	No

Applicable Products:

Reagent Semiconductor Etchants (RSE 100- RSE 1155),
Nitric Acid 70%, Wright Etchant, TFB, TFD, TFC,
TFN / 1020, Chromium Mask Etchant

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity + 10,000 LBS.

SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center (800-424-8802); Listed at 40 CFR 302.4

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

Effective Date 02-17-87 Supersedes 04-30-86

NITRIC ACID