

The following list contains the Material Safety Data Sheets you requested. Please scroll down to view the requested MSDS(s).

<u>Product</u>	<u>MSDS</u>	<u>Distributor</u>	<u>Format</u>	<u>Language</u>	<u>Quantity</u>
TNT822	N/A	Hach Company	OSHA	English	1

Total Enclosures: 1

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00485

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: COD TNTPlus™ ,HR (20-1500 MG/L)

Catalog Number: TNT822

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00485

Chemical Name: Not applicable

CAS No.: Not applicable

Chemical Formula: Not applicable

Chemical Family: Not applicable

Hazard: Toxic. Causes severe burns. Cumulative poison. Causes damage to the nasal epithelia and skin Causes asthma
Causes lung cancer Contains a substance of very high concern (EU REACH) Chromic acid

Date of MSDS Preparation:

Day: 01

Month: August

Year: 2013

2. COMPOSITION / INFORMATION ON INGREDIENTS

Mercuric Sulfate

CAS No.: 7783-35-9 Contains Mercury. Dispose Per Local, State or Federal Laws.

TSCA CAS Number: 7783-35-9

Percent Range: 0.1 - 1.0

Percent Range Units: weight / weight

LD50: Oral rat LD₅₀ = 57 mg/kg; Oral mouse LD₅₀ = 25 mg/kg.

LC50: None reported

TLV: Skin: 0.025 mg Hg/m³

PEL: 2 mg Hg/m³

Hazard: Poison.Cumulative poison.Causes burns.Experimental teratogen.

Demineralized Water

CAS No.: 7732-18-57732-18-5

TSCA CAS Number: 7732-18-5

Percent Range: 10.0 - 20.0

Percent Range Units: weight / weight

LD50: LD50 oral rat = >89,800 mg/kg

LC50: None reported

TLV: Not established

PEL: Not established

Hazard: No effects anticipated.

Chromic Acid

CAS No.: 13530-68-2

TSCA CAS Number: 13530-68-2

Percent Range: 0.1 - 1.0

Percent Range Units: weight / weight

LD50: Oral rat = 80 mg/kg

LC50: Inhalation human TClO = 110 µg/m³

TLV: 0.05 mg/m³ (0.0235 ppm as Cr⁺⁶)

PEL: 5 µg/m³ (0.00235 ppm Cr⁺⁶), 8 Hr TWA; Action Level is 2.5 µg/m³ (0.00117 ppm), 8 Hr TWA

Hazard: Highly toxic. Causes severe burns. Oxidizer. Causes asthma. Causes damage to the nasal epithelia and skin. Causes lung cancer

Silver Sulfate

CAS No.: 10294-26-5

TSCA CAS Number: 10294-26-5

Percent Range: 0.5 - 2

Percent Range Units: weight / weight

LD50: Oral Rat = 1280 mg/kg/bw

LC50: None reported

TLV: 0.01 mg/m³ (Ag)

PEL: 0.01 mg/m³ (Ag)

Hazard: Toxic properties unknown. May cause irritation.

Sulfuric Acid

CAS No.: 7664-93-9

TSCA CAS Number: 7664-93-9

Percent Range: 80.0 - 90.0

Percent Range Units: weight / weight

LD50: Oral rat LD50 = 2140 mg/kg

LC50: Inhalation rat LC50 = 87 ppm/4 hr

TLV: 1 mg/m³

PEL: 1 mg/m³

Hazard: Causes severe burns. Harmful if inhaled. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER

3. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance: Turbid, light orange liquid

Odor: Not determined

MAY BE FATAL IF SWALLOWED CAUSES SEVERE BURNS HARMFUL IF INHALED OR ABSORBED THROUGH SKIN

CANCER HAZARD CONTAINS MATERIAL WHICH CAN CAUSE CANCER CAN CAUSE KIDNEY AND CENTRAL NERVOUS SYSTEM EFFECTS

HMIS:

Health: 3*

Flammability: 0

Reactivity: 2

Protective Equipment: X - See protective equipment, Section 8.

NFPA:

Health: 3

Flammability: 0

Reactivity: 2

Symbol: Water Reactive

Potential Health Effects:

Eye Contact: Causes severe burns

Skin Contact: Causes severe burns

Skin Absorption: Toxic. Will be absorbed through the skin. Effects similar to those of ingestion

Target Organs: Central nervous system Kidneys

Ingestion: Harmful Causes: severe burns May cause: abdominal pain circulatory disturbances diarrhea loosening of the teeth nausea vomiting rapid pulse and respirations toxic nephritis (inflammation of the kidneys) shock collapse kidney damage death

Target Organs: Central nervous system Kidneys

Inhalation: Causes: severe burns May cause: difficult breathing mouth soreness teeth erosion Effects similar to those of ingestion. Inhalation of mists / sprays: Causes asthma Causes damage to the nasal epithelia Causes lung cancer

Target Organs: Central nervous system Kidneys Lungs Teeth Nasal cavity

Medical Conditions Aggravated: Pre-existing: Respiratory conditions Eye conditions Skin conditions Allergies or sensitivity to chromates or chromic acid. Allergies or sensitivity to mercury.

Chronic Effects: Chronic overexposure may cause destruction of any tissue contacted difficult breathing mouth soreness erosion of the teeth accumulation of silver in body tissues which causes a slate-gray to bluish discoloration. cancer Chromate and dichromate salts may cause ulceration and perforation of the nasal septum, severe liver damage, central nervous system effects, and lung cancer. Mercury is a general protoplasmic poison; it circulates in the blood and is stored in the liver, kidneys, spleen and bones. Main symptoms are sore mouth, tremors and psychic disturbances.

Cancer / Reproductive Toxicity Information:

An ingredient of this product is an OSHA listed carcinogen.

Hexavalent chromium (Cr⁶) compounds

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen

Hexavalent Chromium Compounds Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.

An ingredient of this mixture is: NTP Listed Group 1: Recognized Carcinogen

Hexavalent Chromium Compounds Sulfuric Acid Mist or Vapor

Additional Cancer / Reproductive Toxicity Information: Contains: a recognized carcinogen a recognized teratogen.
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.

Skin Contact (First Aid): Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

Ingestion (First Aid): Do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call physician immediately.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. Call physician.

5. FIRE FIGHTING MEASURES

Flammable Properties: Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

Flash Point: Not applicable

Method: Not applicable

Flammability Limits:

Lower Explosion Limits: Not applicable

Upper Explosion Limits: Not applicable

Autoignition Temperature: Not applicable

Hazardous Combustion Products: This material will not burn.

Fire / Explosion Hazards: Contact with metals gives off hydrogen gas which is flammable May react violently with: strong bases water

Static Discharge: None reported.

Mechanical Impact: None reported

Extinguishing Media: Use media appropriate to surrounding fire conditions

Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance. Water runoff can cause environmental damage. Dike and collect water used to fight fire.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Containment Technique: Releases of this material may contaminate the environment. Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment. Dike the spill to contain material for later disposal.

Clean-up Technique: Mercury and its compounds are extremely toxic! Be extremely careful not to contact the spill or breathe any vapors. If permitted by regulation, Absorb spilled liquid with non-reactive sorbent material. Dispose of all mercury contaminated material at a government approved hazardous waste facility. Dispose of material in government approved hazardous waste facility. Decontaminate area with commercially available mercury absorbing compounds. Otherwise, Pick up spill for disposal and place in a closed container Dispose of in accordance with local, state and federal regulations or laws.

Evacuation Procedure: Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. Deny access to unnecessary and unprotected personnel. Remain up-wind from spilled material. If conditions warrant, increase the size of the evacuation.

Special Instructions (for accidental release): Product is regulated as RCRA hazardous waste in the U.S. Product is regulated as a hazardous air pollutant in the U.S. Product is regulated as a hazardous water pollutant in the U.S.

304 EHS RQ (40 CFR 355): Sulfuric Acid - RQ 1000 lbs.

D.O.T. Emergency Response Guide Number: 137

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin clothing Do not breathe mist or vapors. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

Storage: Protect from: light contamination by organic materials (will affect product stability) heat

Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Refer to the OSHA Standard at 29CFR1910.1026 for Cr (VI) (See Federal Register 28 February 2006 Page 10100.)

Personal Protective Equipment:

Eye Protection: chemical splash goggles

Skin Protection: disposable latex gloves lab coat

Inhalation Protection: laboratory fume hood and / or adequate ventilation

Precautionary Measures: Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat light organic materials Keep away from: alkalies metals other combustible materials oxidizers reducers

TLV: Chromic acid (as Cr(VI)): 0.025 mg/m³. Mercuric sulfate (as Hg vapor): 0.05 mg/m³ (skin). Sulfuric acid: 1 mg/m³.

PEL: Chromic acid (as Cr(VI)): 0.005 mg/m³. Mercuric sulfate (as Hg vapor): 0.05 mg/m³. Sulfuric acid: 1 mg/m³.

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Turbid, light orange liquid

Physical State: Liquid

Molecular Weight: Not applicable

Odor: Not determined

pH: < 0.5

Vapor Pressure: Not determined

Vapor Density (air = 1): Not determined

Boiling Point: > 100 °C (> 212 °F)

Melting Point: < 0 °C (< 32 °F)

Specific Gravity/ Relative Density (water = 1; air =1): > 1.0

Evaporation Rate (water = 1): Not determined

Volatile Organic Compounds Content: Not applicable

Partition Coefficient (n-octanol / water): Not determined

Solubility:

Water: Miscible

Acid: Not determined

Other: Not determined

Metal Corrosivity:

Steel: Corrosive

Aluminum: Corrosive

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.

Conditions to Avoid: Exposure to light or contamination by organic materials will affect this product's stability.

Reactivity / Incompatibility: May react violently in contact with: caustics

Hazardous Decomposition: Heating to decomposition releases toxic and/or corrosive fumes of: mercury compounds
sulfur oxides

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:

LD50: Oral rat (male) LD₅₀ = 428 mg/kg; Oral rat (female) LD₅₀ = 360 mg/kg.

LC50: None reported

Dermal Toxicity Data: None reported

Skin and Eye Irritation Data: None reported

Mutation Data: None reported

Reproductive Effects Data: None reported

Ingredient Toxicological Data: Chromic acid: Oral Rat LD50 = 80 mg/kg. Silver sulfate: Oral Rat LD50 = 1280 mg/kg;
Mercuric sulfate: Oral Rat LD50 = 57 mg/kg; Dermal Rat LD50 = 625 mg/kg. Sulfuric acid: Oral Rat LD50 = 2140 mg/kg;
Inhalation Rat LC50 = 100 mg/L/4 hr.

12. ECOLOGICAL INFORMATION

Product Ecological Information: Aquatic Toxicity Estimation - Additive Method: 48 hr Crustacea EC50 = 0.0045 mg/L.
Do not place in landfill. Recycle appropriately. Do not release into the environment.

Ingredient Ecological Information: Silver sulfate: 48 hr Crustacea EC50 = 0.0045 mg/L. Mercuric sulfate: 14 d
Pseudokirchneriella subcapitata = 0.033 mg/L. Chromic acid: 48 hr Daphnia magna EC50 = 0.8 mg/L.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D002, D007, D009, D011

Special Instructions (Disposal): Dispose of all mercury contaminated material at an E.P.A. hazardous waste facility.
Dispose of material in an E.P.A. approved hazardous waste facility.

Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate
from empty containers may contain sufficient product to require disposal as hazardous waste in countries other than the US.

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent
state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Sulphuric Acid

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DOT Hazard Class: 8

DOT Subsidiary Risk: NA

DOT ID Number: UN1830

DOT Packing Group: II

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Sulphuric Acid

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ICAO Hazard Class: 8

ICAO Subsidiary Risk: NA

ICAO ID Number: UN1830

ICAO Packing Group: II

I.M.O.:

I.M.O. Proper Shipping Name: Sulphuric Acid

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I.M.O. Hazard Class: 8

I.M.O. Subsidiary Risk: NA

I.M.O. ID Number: UN1830

I.M.O. Packing Group: II

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of
various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS

part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Reactive

S.A.R.A. Title III Section 313 (40 CFR 372): This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Mercury compounds, Silver compounds, Chromium Compounds, Sulfuric acid (acid aerosols including mists, vapors, gas, fog and other airborne forms).

302 (EHS) TPQ (40 CFR 355): Sulfuric Acid 1000 lbs.

304 CERCLA RQ (40 CFR 302.4): Chromic acid and Mercuric sulfate (each) = 10 lbs. Sulfuric Acid 1000 lbs.

304 EHS RQ (40 CFR 355): Sulfuric Acid - RQ 1000 lbs.

Clean Water Act (40 CFR 116.4): Chromic acid - RQ 10 lbs. Mercuric sulfate - RQ = 10 lbs. (4.54 kgs.) Sulfuric acid - RQ 1000 lbs.

RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

C.P.S.C.: The label for this product bears the signal word "POISON" because the concentration of Sulfuric Acid in the product is greater than/equal to 10%.

State Regulations:

California Prop. 65: WARNING - This product contains a chemical known to the State of California to cause cancer.

WARNING - This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Identification of Prop. 65 Ingredient(s): Chromium (hexavalent compounds); Mercury and mercury compounds.

California Perchlorate Rule CCR Title 22 Chap 33: Not applicable

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Use Determination of Chemical Oxygen Demand

References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Outside Testing. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. Verschuere, Karel. Handbook of Environmental Data on Organic Chemicals. New York: Van Nostrand Reinhold Co., 1977.

Revision Summary: Format update(s) to comply with Directive 2001/58/EC Substantially Revised MSDS Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE.
HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA
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