

Material Safety Data Sheet

Millon's Reagent

ACC# 45366

Section 1 - Chemical Product and Company Identification

MSDS Name: Millon's Reagent

Catalog Numbers: S71971, S719711

Synonyms: Millon's Protein Test Reagent

Company Identification:

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	82.2	231-791-2
10415-75-5	Mercurous nitrate	16.8	233-886-4
7697-37-2	Nitric acid	1.0	231-714-2

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear colorless to yellow liquid.

Warning! Harmful if swallowed. Possible risks of irreversible effects. May cause liver and kidney damage. May cause central nervous system effects. May cause adverse reproductive effects based upon animal studies.

Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye: May cause eye irritation. Exposure to mercury or mercury compounds can cause discoloration on the front surface of the lens, which does not interfere with vision.

Skin: May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Skin absorption is slight. May cause severe irritation and possible burns.

Ingestion: Harmful if swallowed. May cause severe and permanent damage to the digestive tract. May cause muscle tremor and impaired motor function. Causes severe pain, nausea, vomiting, diarrhea, and shock. Can cause nervous system damage.

Inhalation: May cause gastrointestinal effects including gum and mouth inflammation, jaw necrosis, and loosening of the teeth. May cause effects similar to those described for ingestion. May cause lung damage.

Chronic: Prolonged or repeated skin contact may cause sensitization dermatitis and possible destruction and/or ulceration. Chronic inhalation and ingestion may cause effects similar to those of acute inhalation and ingestion. May cause liver and kidney damage. May cause reproductive and fetal effects. Repeated exposure may cause central nervous system damage.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Destroy contaminated shoes.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately. Call a poison control center.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: The most effective means to eliminate inorganic mercury is by using chelators. The chelators of choice are BAL penicillamine and N-acetylcysteine. (Principles of Clinical Toxicology, 3rd edition, 1994).

Section 5 - Fire Fighting Measures

General Information: Evacuate area and fight fire from a safe distance. Oxidizer. Greatly increases the burning rate of combustible materials.

Extinguishing Media: Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: ; Flammability: ; Instability:

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale. Keep from contact with clothing and other combustible materials. Discard contaminated shoes.

Storage: Store in a cool, dry place. Store in a tightly closed container. Keep away from food and drinking water. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Mercurous nitrate	none listed	none listed	none listed
Nitric acid	2 ppm TWA; 4 ppm STEL	2 ppm TWA; 5 mg/m ³ TWA 25 ppm IDLH	2 ppm TWA; 5 mg/m ³ TWA

OSHA Vacated PELs: Water: No OSHA Vacated PELs are listed for this chemical. Mercurous nitrate: No OSHA Vacated PELs are listed for this chemical. Nitric acid: 2 ppm TWA; 5 mg/m³ TWA

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear colorless to yellow

Odor: Odorless.

pH: Not available.

Vapor Pressure: 14 mm Hg

Vapor Density: 0.7

Evaporation Rate:>1

Viscosity: Not available.

Boiling Point: 100 deg C

Freezing/Melting Point:0 deg C

Decomposition Temperature:Not available.

Solubility: Soluble in water.

Specific Gravity/Density:1.0

Molecular Formula:HgNO₃, HNO₃

Molecular Weight:Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials.

Incompatibilities with Other Materials: Metals, combustible materials, phosphorous, hypophosphites, formates, alkalies, sulfites, red hot carbon, reducing agents. See also nitric acid.

Hazardous Decomposition Products: Nitrogen oxides (NO_x) and ammonia (NH₃), nitrogen, mercury/mercury oxides.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 7732-18-5: ZC0110000

CAS# 10415-75-5: OW8000000

CAS# 7697-37-2: QU5775000; QU5900000

LD50/LC50:

CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;

CAS# 10415-75-5:
Oral, mouse: LD50 = 49300 ug/kg;
Oral, rat: LD50 = 170 mg/kg;
Skin, rat: LD50 = 2330 mg/kg;

CAS# 7697-37-2:
Inhalation, rat: LC50 = 260 mg/m³/30M;
Inhalation, rat: LC50 = 130 mg/m³/4H;
Inhalation, rat: LC50 = 67 ppm(NO₂)/4H;

Carcinogenicity:

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 10415-75-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 7697-37-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.

Teratogenicity: Mercury can cause developmental abnormalities of the central nervous, musculoskeletal, central nervous, urogenital, and hepatobiliary systems.

Reproductive Effects: Mercury compounds are known to cause reproductive effects such as fetotoxicity and post-implantation mortality. They also cause abortion and effects on spermatogenesis. Placental transfer can occur and mercury can accumulate in the fetus.

Mutagenicity: Mercury compounds can cause chromosomal aberrations.

Neurotoxicity: Prolonged exposure to mercury compounds can cause irreversible neurological damage.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.

Environmental: Mercury can accumulate in aquatic life and travel up the food chain.

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	CORROSIVE LIQUID NOS (NITRIC ACID)
Hazard Class:	8	8
UN Number:	UN3264	UN1760
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.
CAS# 10415-75-5 is listed on the TSCA inventory.
CAS# 7697-37-2 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 10415-75-5: 10 lb final RQ; 4.54 kg final RQ CAS# 7697-37-2: 1000 lb final RQ; 454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

CAS# 7697-37-2: 1000 lb TPQ

SARA Codes

CAS # 7697-37-2: immediate, delayed, fire.

Section 313

This material contains Mercurous nitrate (listed as Water Dissociable Nitrate Compounds), 16.8%, (CAS# 10415-75-5) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

This material contains Nitric acid (CAS# 7697-37-2, 1.0%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 10415-75-5 is listed as a Hazardous Substance under the CWA. CAS# 7697-37-2 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

CAS# 7697-37-2 is considered highly hazardous by OSHA.

STATE

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 10415-75-5 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

CAS# 7697-37-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

C

Risk Phrases:

R 27/28 Very toxic in contact with skin and if swallowed.

R 33 Danger of cumulative effects.

R 34 Causes burns.

R 8 Contact with combustible material may cause fire.

Safety Phrases:**WGK (Water Danger/Protection)**

CAS# 7732-18-5: No information available.

CAS# 10415-75-5: 3

CAS# 7697-37-2: 1

Canada - DSL/NDSL

CAS# 7732-18-5 is listed on Canada's DSL List.

CAS# 10415-75-5 is listed on Canada's DSL List.

CAS# 7697-37-2 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of C, D2A, E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 10415-75-5 is listed on the Canadian Ingredient Disclosure List.

CAS# 7697-37-2 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #4 Date: 3/22/2006

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.