Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

1 Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

Stock number: 35768
CAS Number:
7697-37-2
Relevant identified uses of the substance or mixture and uses advised against.
Sector of Use SU24 Scientific research and development

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency telephone number:
During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

2 Hazards identification

Classification of the substance or mixture

GHS06 Skull and crossbones

H301 Toxic if swallowed.
H311 Toxic in contact with skin.

GHS05 Corrosion

H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

GHS07

H332 Harmful if inhaled.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

C; Corrosive

R34: Causes burns.

Xn; Harmful

R20/21/22: Harmful by inhalation, in contact with skin and if swallowed.

Label elements

Labelling according to EU guidelines:

Code letter and hazard designation of product:
C Corrosive

Risk phrases:
20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
34 Causes burns.

Safety phrases:
23 Do not breathe fumes
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37 Wear suitable protective clothing and gloves.
45 In case of accident or if you feel unwell, seek medical advice immediately.

(Contd. on page 2)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

(Contd. of page 1)

Hazard description:
WHMIS classification

Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

HEALTH	2
FIRE	0
REACTIVITY	0

Health (acute effects) = 2
Flammability = 0
Reactivity = 0

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances
(CAS#) Description:
Nitric acid (CAS#7697-37-2), 5%
Hydrofluoric acid (CAS#7664- 39-3), trace
Additional information:
Elements and concentrations in micrograms/milliliter are as follows (balance is water):
Ti 1000

4 First aid measures

Description of first aid measures
General information Immediately remove any clothing soiled by the product.
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
After skin contact
Immediately wash with water and soap and rinse thoroughly.
Rub in calcium gluconate solution or calcium gluconate gel immediately.
Seek immediate medical advice.
After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing Seek immediate medical advice.

5 Firefighting measures

Extinguishing media
Suitable extinguishing agents
Product is not flammable. Use fire fighting measures that suit the surrounding fire.
Special hazards arising from the substance or mixture
Nitrogen oxides (NOx)
Hydrogen fluoride (HF)
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.

(Contd. on page 3)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

(Contd. of page 2)

Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Information about protection against explosions and fires: The product is not flammable

Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility:
Do not store together with alkalies (caustic solutions).
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters
Components with limit values that require monitoring at the workplace:

Hydrofluoric acid/nitric acid

Hydrogen fluoride (as F)

	ppm
ACGIH TLV	3-Ceiling
Belgium TWA	3-STEL
France TWA	3-STEL
Germany TWA	3
Netherlands TWA	3.3-STEL
Switzerland TWA	1.8, 3.6-STEL
United Kingdom TWA	3-STEL
Russia TWA	3, 0.5 mg/m3-STEL
Denmark	2
Finland	6-STEL (skin)
Hungary TWA	0.5 mg/m3, 1 mg/m3-STEL
Poland TWA	0.5 mg/m3
Ireland	3-STEL
Sweden	2-STEL
USA PEL	3

Nitric acid

	ppm
ACGIH TLV	2, 4-STEL
Belgium TWA	2, 4-STEL
France TWA	2, 4-STEL
Germany TWA	10
Netherlands TWA	2
Switzerland TWA	2, 4-STEL
United Kingdom TWA	2, 4-STEL
Russia TWA	2-STEL
Denmark	2
Finland	2, 5-STEL
Hungary TWA	5 mg/m3-STEL
Poland TWA	10 mg/m3
Ireland	2, 4-STEL
Sweden	2, 5-STEL
USA PEL	2

Additional information: No data

(Contd. on page 4)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

(Contd. of page 3)

Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Breathing equipment: Use suitable respirator when high concentrations are present.
Protection of hands: Impervious gloves
Eye protection:
Safety glasses
Tightly sealed goggles
Full face protection
Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties	
General Information	
Appearance:	
Form:	Liquid
Odor:	Characteristic
Odour threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined
Flash point:	Not determined
Flammability (solid, gaseous)	Not applicable.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Auto igniting:	Not determined.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not determined
Density:	Not determined
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Segregation coefficient (n-octonol/water):	Not determined.
Viscosity:	
dynamic:	Not determined.
kinematic:	Not determined.
Other information	No further relevant information available.

10 Stability and reactivity

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions No dangerous reactions known
Incompatible materials:
Bases
Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.
Hazardous decomposition products:
Nitrogen oxides

(Contd. on page 5)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

(Contd. of page 4)

Hydrogen fluoride

11 Toxicological information

Information on toxicological effects
Acute toxicity:
LD/LC50 values that are relevant for classification:
ORL-HMN LDLo: 430 mg/kg (HNO3)
UNR-MAN LDLo: 110 mg/kg (HNO3)
INH-HMN LCLo: 50 ppm/30M (HF)
IHL-RAT LC50: 1276 ppm/1H (HF)
IHL-MUS LC50: 342 ppm/1H (HF)
Primary irritant effect:
on the skin: Strong corrosive effect on skin and mucous membranes.
on the eye: Strong corrosive effect.
Sensitization: No sensitizing effects known.
Subacute to chronic toxicity:
Nitric acid is a corrosive oxidizing acid. The liquid causes burns on contact. Eye contact may cause blindness. Vapors are irritating and cause upper respiratory irritation which may be severe. Corrosive to the teeth and digestive tract on ingestion. Dilute solutions have reduced effects.
Hydrofluoric acid is extremely irritating and corrosive. It is destructive of tissues it comes in contact with, either as a vapor or as a liquid. Skin burns caused by hydrofluoric acid may appear to be stable only to get much worse several hours after exposure. Skin contact with hydrofluoric acid has led to industrial fatalities. Dilute solutions have a reduced effect.
Titanium compounds are considered physiologically inert. There are no reported cases in the literature where titanium as such has caused human intoxication.
Additional toxicological information:
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information

Toxicity
Acquatic toxicity: No further relevant information available.
Persistence and degradability No further relevant information available.
Behavior in environmental systems:
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.
Additional ecological information:
General notes:
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Do not allow material to be released to the environment without proper governmental permits.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

(Contd. on page 6)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

(Contd. of page 5)

14 Transport information

DOT regulations:

Hazard class:	8
Identification number:	UN3264
Packing group:	III
Proper shipping name (technical name):	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid/hydrofluoric acid)
Label	8

Land transport ADR/RID (cross-border)

ADR/RID class:	8 (C1) Corrosive substances
Danger code (Kemler):	80
UN-Number:	3264
Packaging group:	III
UN proper shipping name:	3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid/hydrofluoric acid)

Maritime transport IMDG:

IMDG Class:	8
UN Number:	3264
Label	8
Packaging group:	III
Marine pollutant:	No
Segregation groups	Acids
Proper shipping name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid/hydrofluoric acid)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:	8
UN/ID Number:	3264
Label	8
Packaging group:	III
Proper shipping name:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid/hydrofluoric acid)

UN "Model Regulation": UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S., 8, III
Special precautions for user Warning: Corrosive substances
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Product related hazard informations:

Hazard symbols:
C Corrosive

Risk phrases:
20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

(Contd. on page 7)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/28/2011 Reviewed on 03/09/2010

Product name: Titanium, plasma standard solution, Specpure ®, Ti 1000 µg/ml

(Contd. of page 6)

34 Causes burns.

Safety phrases:
23 Do not breathe fumes
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37 Wear suitable protective clothing and gloves.
45 In case of accident or if you feel unwell, seek medical advice immediately.

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use:
For use only by technically qualified individuals.
This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.
Contact:
Zachariah C. Holt
Global EHS Manager
Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent