

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 09/10/2016 Revision date: 09/10/2016 Version: 1.1

## **SECTION 1: Identification**

Identification 1.1.

Product form : Mixture

Multi-element calibration standard-3: 10 components; 10ug/ml each of Sb; Au; Hf; Ir; Pd; Pt; Name

Rh; Ru; Te; Sn in HCl 10 % / HNO3 1% Equivalent to Agilent Ref: 8500-6948

Product code : EQ0031

Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Certified reference material for laboratory use

#### Details of the supplier of the safety data sheet

Spectracer UK Ltd.

Second Floor. 27 Gloucester Place.

London, W1U 8HU, United Kingdom.

Tel: +44 (0) 207 193 9114 Fax:+44 (0) 203 432 4686 Email: contact@spectracer.co.uk Web: www.spectracer.com

#### **Emergency telephone number** 1.4.

Emergency number : Tel: +44(0)1933445260 Option 1. Language: English only.

> For Chemical Emergencies Only Llewellyn (Safety Advisors) Europe Ltd

## SECTION 2: Hazard(s) identification

## Classification of the substance or mixture

### **GHS-US** classification

Corrosive to metals H290

Category 1

Skin corrosion/irritation H314

Category 1B

Full text of H statements : see section 16

#### Label elements

#### **GHS-US** labeling

Hazard pictograms (GHS-US)



Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H290 - May be corrosive to metals

H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) : P234 - Keep only in original container

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

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 - IF INHALED: Remove person to fresh air and keep comfortable for breathing P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact

09/11/2016 EN (English US) Page 1

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

lenses, if present and easy to do. Continue rinsing P310 - Immediately call a poison center/doctor/... P363 - Wash contaminated clothing before reuse P390 - Absorb spillage to prevent material damage

P405 - Store locked up

P501 - Dispose of contents/container to ..

#### 2.3. Other hazards

No additional information available

#### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

#### 3.1. Substance

Not applicable

#### 3.2. Mixture

Name	Product identifier	%	GHS-US classification
hydrochloric acid	(CAS No) 7647-01-0	5 - 15	Met. Corr. 1, H290 Skin Corr. 1B, H314 STOT SE 3, H335
nitric acid	(CAS No) 7697-37-2	1 - 5	Ox. Liq. 3, H272 Met. Corr. 1, H290 Skin Corr. 1A, H314
telluric acid	(CAS No) 7803-68-1	< 0.1	Not classified
rhodium trichloride	(CAS No) 10049-07-7	< 0.1	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Carc. 2, H351 STOT SE 3, H335
hexafluoroantimonyic acid	(CAS No) 16950-06-4	< 0.1	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314 Aquatic Chronic 2, H411
iridium(III) chloride	(CAS No) 10025-83-9	< 0.1	Not classified
Hafnium oxide	(CAS No) 12055-23-1	< 0.1	Not classified

Full text of hazard classes and H-statements : see section 16

## **SECTION 4: First aid measures**

## 4.1. Description of first aid measures

First-aid measures general : Call a physician immediately.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Call a poison

center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Call a

physician immediately.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to

do. Continue rinsing. Call a physician immediately.

First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a physician immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Irritation. Burns.

Symptoms/injuries after eye contact : Eye irritation. Serious damage to eyes.

Symptoms/injuries after ingestion : Burns.

## 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

#### **SECTION 5: Firefighting measures**

#### 5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

09/11/2016 EN (English US) 2/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

#### 5.2. Special hazards arising from the substance or mixture

Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

#### 5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

## **SECTION 6: Accidental release measures**

#### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe

dust/fume/gas/mist/vapors/spray.

#### 6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information

refer to section 8: "Exposure controls/personal protection".

#### 6.2. Environmental precautions

Avoid release to the environment.

#### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material.

Other information : Dispose of materials or solid residues at an authorized site.

#### 6.4. Reference to other sections

For further information refer to section 13.

#### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling : Use only outdoors or in a well-ventilated area. Avoid contact with skin and eyes. Wear personal

 $protective\ equipment.\ Do\ not\ breathe\ dust/fume/gas/mist/vapors/spray.$ 

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product.

Always wash hands after handling the product.

#### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in corrosive resistant container with a resistant inner liner. Keep only in original container.

Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Incompatible materials : Metals.

### SECTION 8: Exposure controls/personal protection

## 8.1. Control parameters

nitric acid (7697-37-2)		
ACGIH	ACGIH TWA (ppm)	2 ppm
ACGIH	ACGIH STEL (ppm)	4 ppm
ACGIH	Remark (ACGIH)	URT & eye irr; dental erosion
OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	2 ppm

hydrochloric acid (7647-01-0)		
ACGIH	ACGIH Ceiling (ppm)	2 ppm
ACGIH	Remark (ACGIH)	URT irr
OSHA	OSHA PEL (Ceiling) (mg/m³)	7 mg/m³
OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm

09/11/2016 EN (English US) 3/10

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

hexafluoroantimonyic acid (16950-06-4)		
ACGIH	ACGIH TWA (mg/m³)	0.5 mg/m³
ACGIH	Remark (ACGIH)	Skin & URT irr
OSHA	OSHA PEL (TWA) (mg/m³)	0.5 mg/m³
Hafnium oxide (12055-23-1)		
ACGIH	ACGIH TWA (mg/m³)	0.5 mg/m³
ACGIH	Remark (ACGIH)	URT & eye irr; liver dam
OSHA	OSHA PEL (TWA) (mg/m³)	0.5 mg/m³
iridium(III) chloride (10025-83	3-9)	
ACGIH	ACGIH TWA (mg/m³)	0.1 mg/m³
ACGIH	Remark (ACGIH)	Pulm edema; pneumonitis
rhodium trichloride (10049-0	7-7)	
ACGIH	ACGIH TWA (mg/m³)	0.01 mg/m³ (Rhodium, Soluble compounds, as Rh; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		
telluric acid (7803-68-1)		
ACGIH	ACGIH TWA (mg/m³)	0.1 mg/m³ (Tellurium compounds (NOS) ,as Te(except hydrogen telluride); USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		

#### 8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Personal protective equipment : Avoid all unnecessary exposure. Gloves. Safety glasses. Protective clothing.







Hand protection : Protective gloves. Eye protection : Safety glasses.

Skin and body protection : Wear suitable protective clothing.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Environmental exposure controls : Avoid release to the environment.

## **SECTION 9: Physical and chemical properties**

## 9.1. Information on basic physical and chemical properties

Physical state : Liquid

Color : Mixture contains one or more component(s) which have the following colour(s):

colorless to yellow On exposure to light: red-brown Colourless to light yellow Colourless to light brown Golden-yellow to red-yellow white Dark brown to grey Brown No data available on colour

Colourless or white White

Odor : There may be no odour warning properties, odour is subjective and inadequate to warn of

overexposure

Mixture contains one or more component(s) which have the following odour(s): irritating/pungent odor asphyxiating odor No data available on odour Odorless No data

available

Odor threshold : No data available pH : No data available

09/11/2016 EN (English US) 4/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Melting point : Not applicable Freezing point : No data available Boiling point : No data available Flash point : No data available Relative evaporation rate (butyl acetate=1) : No data available Flammability (solid, gas) : Not applicable. Vapor pressure : No data available Relative vapor density at 20 °C : No data available

Relative density : 1.07

Solubility : Miscible with water. Log Pow : No data available Auto-ignition temperature : No data available : No data available Decomposition temperature Viscosity, kinematic : No data available : No data available Viscosity, dynamic **Explosion limits** : No data available Explosive properties : No data available Oxidizing properties : No data available

#### 9.2. Other information

No additional information available

#### **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

## 10.2. Chemical stability

Stable under normal conditions.

## 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

## 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

## 10.5. Incompatible materials

metals.

## 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## **SECTION 11: Toxicological information**

#### 11.1. Information on toxicological effects

Acute toxicity : Not classified

hexafluoroantimonyic acid (16950-06-4)	
ATE US (oral)	500.000 mg/kg body weight
ATE US (gases)	4500.000 ppmV/4h
ATE US (vapors)	11.000 mg/l/4h
ATE US (dust, mist)	1.500 mg/l/4h

rhodium trichloride (10049-07-7)	
LD50 oral rat	1302 mg/kg (Rat)
ATE US (oral)	1302.000 mg/kg body weight

09/11/2016 EN (English US) 5/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

#### hydrochloric acid (7647-01-0)

IARC group 3 - Not classifiable

Reproductive toxicity : Not classified Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated

exposure)

: Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Irritation. Burns.

Symptoms/injuries after eye contact : Eye irritation. Serious damage to eyes.

Symptoms/injuries after ingestion : Burns.

## **SECTION 12: Ecological information**

#### 12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment. Before neutralisation, the product may represent a danger to aquatic

organisms.

nitric acid (7697-37-2)	
EC50 Daphnia 1	180 mg/l (EC50; 48 h)
LC50 fish 2	72 ppm (LC50; 96 h)
Threshold limit algae 1	> 19 mg/l (EC0)
hydrochloric acid (7647-01-0)	
LC50 other aquatic organisms 2	250 (240 - 260) mg/l (48h) Crustaceans; Portmann, J.E., and K.W. Wilson 1971. The Toxicity of 140 Substances to the Brown Shrimp and Other Marine Animals. Shellfish Information Leaflet No.22 (2nd Ed.), Ministry of Agric.Fish.Food, Fish.Lab.Burnham-on-Crouch, Essex, and Fish Exp.Station Conway, North Wales :12 p.

## 12.2. Persistence and degradability

nitric acid (7697-37-2)	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

hexafluoroantimonyic acid (16950-06-4)	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

09/11/2016 EN (English US) 6/10

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hafnium oxide (12055-23-1)	
Persistence and degradability	Not established.
iridium(III) chloride (10025-83-9)	
Persistence and degradability	Biodegradability in soil: Not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
rhodium trichloride (10049-07-7)	
Persistence and degradability	Biodegradability in soil: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
telluric acid (7803-68-1)	
Persistence and degradability	Biodegradability: Not applicable. Biodegradability in soil: Not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

## 12.3. Bioaccumulative potential

nitric acid (7697-37-2)		
BCF fish 1	<= 1 (BCF)	
Log Pow	-2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)	
Bioaccumulative potential	Bioaccumulation: Not applicable.	
hexafluoroantimonyic acid (16950-06-4)		
Bioaccumulative potential	Bioaccumulation: No data available.	
Hafnium oxide (12055-23-1)		
Bioaccumulative potential	Not established.	
iridium(III) chloride (10025-83-9)		
Bioaccumulative potential	Bioaccumulation: No data available.	
rhodium trichloride (10049-07-7)		
Bioaccumulative potential	Bioaccumulation: No data available.	
telluric acid (7803-68-1)		
Bioaccumulative potential	Bioaccumulation: No data available.	

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

## **SECTION 13: Disposal considerations**

## 13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

09/11/2016 EN (English US) 7/10

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### **SECTION 14: Transport information**

## **Department of Transportation (DOT)**

In accordance with DOT

Transport document description : UN1789 Hydrochloric acid, 8, III

UN-No.(DOT) : UN1789

Proper Shipping Name (DOT) : Hydrochloric acid

Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : III - Minor Danger Hazard labels (DOT) : 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx) DOT Packaging Bulk (49 CFR 173.xxx) DOT Special Provisions (49 CFR 172.102)

: 203 : 241

: A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in

outer packaging

IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table

2 for UN2672)

T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)

TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / 1 + a (tr - tf) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling

TP12 - This material is considered highly corrosive to steel

DOT Packaging Exceptions (49 CFR 173.xxx) DOT Quantity Limitations Passenger aircraft/rail : 5 L

(49 CFR 173.27)

**DOT Vessel Stowage Location** 

DOT Quantity Limitations Cargo aircraft only (49 : 60 L

CFR 175.75)

: C - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel

**DOT Vessel Stowage Other** : 8 - Glass carboys not permitted on passenger vessels

Emergency Response Guide (ERG) Number : 157

Other information : No supplementary information available.

Transport document description : UN1789 HYDROCHLORIC ACID, 8, III

UN-No. (TDG) : UN1789

Proper Shipping Name (TDG) : HYDROCHLORIC ACID TDG Primary Hazard Classes : 8 - Class 8 - Corrosives Packing group : III - Minor Danger

**Explosive Limit and Limited Quantity Index** Passenger Carrying Road Vehicle or Passenger : 5 L

Carrying Railway Vehicle Index

Transport by sea

UN-No. (IMDG) : 1789

Proper Shipping Name (IMDG) : HYDROCHLORIC ACID Class (IMDG) : 8 - Corrosive substances

Packing group (IMDG) : III - substances presenting low danger

09/11/2016 EN (English US) 8/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Limited quantities (IMDG) : 5 L

#### Air transport

UN-No. (IATA) : 1789

Proper Shipping Name (IATA) : Hydrochloric acid Class (IATA) : 8 - Corrosives
Packing group (IATA) : III - Minor Danger

#### **SECTION 15: Regulatory information**

## 15.1. US Federal regulations

nitric acid (7697-37-2)		
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313		
CERCLA RQ 1000 lb		
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb	
hydrochloric acid (7647-01-0)		
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not subject to reporing requirements of the United States SARA Section 313 Subject to reporting requirements of United States SARA Section 313		
EPA TSCA Regulatory Flag T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA		
LI A 100A Negalatory Flag		

## hexafluoroantimonyic acid (16950-06-4)

SARA Section 302 Threshold Planning

Listed on the United States TSCA (Toxic Substances Control Act) inventory

5000 lb

500 lb

## Hafnium oxide (12055-23-1)

**CERCLA RQ** 

Quantity (TPQ)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### iridium(III) chloride (10025-83-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### rhodium trichloride (10049-07-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

## telluric acid (7803-68-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

#### **CANADA**

No additional information available

#### **EU-Regulations**

No additional information available

#### **National regulations**

No additional information available

#### 15.3. US State regulations

No additional information available

09/11/2016 EN (English US) 9/10

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>SECTION 16: Other inform</b>	ation
Revision date	: 09/10/2016
Full text of H-phrases:	
H272	May intensify fire; oxidizer
H290	May be corrosive to metals
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H411	Toxic to aquatic life with long lasting effects
NFPA health hazard	: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
NFPA fire hazard	: 0 - Materials that will not burn.
NFPA reactivity	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
HMIS III Rating	
Health	: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability	: 0 Minimal Hazard - Materials that will not burn
Physical	: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

## SDS US (GHS HazCom 2012)

Personal protection

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

C - Safety glasses, Gloves, Synthetic apron

: C

09/11/2016 EN (English US) 10/10