

ICP Calibration Standard HCl Soluble Elements (XVII) 7 components; 100mg/l each of Hf ; Ir ; Sb ; Sn ; Ta ; Ti ; Zr in HCl 5% Equivalent to Merck Ref: 109495

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

1.1. Identification

Product form : Mixture
Name : ICP Calibration Standard HCl Soluble Elements (XVII) 7 components; 100mg/l each of Hf ; Ir ; Sb ; Sn ; Ta ; Ti ; Zr in HCl 5% Equivalent to Merck Ref: 109495
Product code : EQ0073

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

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

1.3. 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

1.4. Emergency telephone number

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

2.1. 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

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS05

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

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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
zirconyl nitrate,hydrate	(CAS No) 14985-18-3	< 0.1	Skin Corr. 1B, H314 Resp. Sens. 1, H334 Skin Sens. 1, H317
hexafluoroantimonic 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.
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 skin contact : Burns.
Symptoms/injuries after eye contact : 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.

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.

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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 : Ensure good ventilation of the work station. Wear personal protective equipment. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray.
Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.

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 in a well-ventilated place. Keep cool. Store locked up.
Incompatible materials : Metals.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

hydrochloric acid (7647-01-0)		
ACGIH	ACGIH Ceiling (ppm)	2 ppm
ACGIH	Remark (ACGIH)	URT irr
OSHA	OSHA PEL (Ceiling) (mg/m ³)	7 mg/m ³
OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm
Hafnium oxide (12055-23-1)		
ACGIH	ACGIH TWA (mg/m ³)	0.5 mg/m ³
ACGIH	Remark (ACGIH)	URT & eye irr; liver dam
OSHA	OSHA PEL (TWA) (mg/m ³)	0.5 mg/m ³
Iridium(III) chloride (10025-83-9)		
ACGIH	ACGIH TWA (mg/m ³)	0.1 mg/m ³
ACGIH	Remark (ACGIH)	Pulm edema; pneumonitis
hexafluoroantimonic acid (16950-06-4)		
ACGIH	ACGIH TWA (mg/m ³)	0.5 mg/m ³
ACGIH	Remark (ACGIH)	Skin & URT irr
OSHA	OSHA PEL (TWA) (mg/m ³)	0.5 mg/m ³

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zirconyl nitrate,hydrate (14985-18-3)		
ACGIH	ACGIH TWA (mg/m ³)	5 mg/m ³ (Zirconium compounds, as Zr; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH	ACGIH STEL (mg/m ³)	10 mg/m ³ (Zirconium compounds, as Zr; USA; Short time value; TLV - Adopted Value)

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): Colourless to light yellow white Dark brown to grey Colourless to light brown 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): No data available No data available on odour
 Odor threshold : No data available
 pH : No data available
 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
 Decomposition temperature : No data available
 Viscosity, kinematic : No data available
 Viscosity, dynamic : No data available
 Explosion limits : No data available
 Explosive properties : No data available
 Oxidizing properties : No data available

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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

hexafluoroantimonic 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

zirconyl nitrate,hydrate (14985-18-3)	
LD50 oral rat	> 2000 mg/kg (Rat)
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 skin contact : Burns.

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

Symptoms/injuries after ingestion : Burns.

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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.

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

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

hexafluoroantimonic 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

zirconyl nitrate,hydrate (14985-18-3)

Persistence and degradability

Biodegradability in soil: Not applicable.

Biochemical oxygen demand (BOD)

Not applicable

Chemical oxygen demand (COD)

Not applicable

ThOD

Not applicable

12.3. Bioaccumulative potential

Hafnium oxide (12055-23-1)

Bioaccumulative potential

Not established.

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

Bioaccumulative potential

Bioaccumulation: No data available.

hexafluoroantimonic acid (16950-06-4)

Bioaccumulative potential

Bioaccumulation: No data available.

zirconyl nitrate,hydrate (14985-18-3)

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.

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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.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN3264 Corrosive liquid, acidic, inorganic, n.o.s. (CONTAINS ; hydrochloric acid), 8, III

- UN-No.(DOT) : UN3264
Proper Shipping Name (DOT) : Corrosive liquid, acidic, inorganic, n.o.s.
CONTAINS ; 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) : 203
DOT Packaging Bulk (49 CFR 173.xxx) : 241
DOT Symbols : G - Identifies PSN requiring a technical name
DOT Special Provisions (49 CFR 172.102) : 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)
T7 - 4 178.274(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
TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP
DOT Packaging Exceptions (49 CFR 173.xxx) : 154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 60 L
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel
DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"
Emergency Response Guide (ERG) Number : 154
Other information : No supplementary information available.

TDG

- Transport document description : UN3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ; hydrochloric acid), 8, III
UN-No. (TDG) : UN3264
Proper Shipping Name (TDG) : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
TDG Primary Hazard Classes : 8 - Class 8 - Corrosives
Packing group : III - Minor Danger

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TDG Special Provisions	: 16 - (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks). (2) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a shipping document or on a small means of containment when Canadian law for domestic transport or an international convention for international transport prohibits the disclosure of the technical name: (a)UN1544, ALKALOID SALTS, SOLID, N.O.S. or ALKALOIDS, SOLID, N.O.S; (b)UN1851, MEDICINE, LIQUID, TOXIC, N.O.S; (c)UN3140, ALKALOID SALTS, LIQUID, N.O.S. or ALKALOIDS, LIQUID, N.O.S; (d)UN3248, MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S; or (e)UN3249, MEDICINE, SOLID, TOXIC, N.O.S. An example in Canada is the "Food and Drugs Act". (3) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a small means of containment: (a)UN2814, INFECTIOUS SUBSTANCE, AFFECTING HUMANS; or (b)UN2900, INFECTIOUS SUBSTANCE, AFFECTING ANIMALS. SOR/2014-306
Explosive Limit and Limited Quantity Index	: 5 L
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: 5 L

Transport by sea

UN-No. (IMDG)	: 3264
Proper Shipping Name (IMDG)	: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Class (IMDG)	: 8 - Corrosive substances
Packing group (IMDG)	: III - substances presenting low danger
Limited quantities (IMDG)	: 5 L

Air transport

UN-No. (IATA)	: 3264
Proper Shipping Name (IATA)	: Corrosive liquid, acidic, inorganic, n.o.s.
Class (IATA)	: 8 - Corrosives
Packing group (IATA)	: III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

hydrochloric acid (7647-01-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not subject to reporting 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
CERCLA RQ	5000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb
Hafnium oxide (12055-23-1)	
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	
hexafluoroantimonic acid (16950-06-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
zirconyl nitrate,hydrate (14985-18-3)	
Not listed on the United States TSCA (Toxic Substances Control Act) inventory	

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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

SECTION 16: Other information

Revision date : 09/10/2016

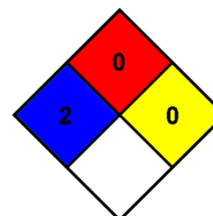
Full text of H-phrases:

H290	May be corrosive to metals
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
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.

Personal protection : C

C - Safety glasses, Gloves, Synthetic apron

SDS US (GHS HazCom 2012)

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.