PLATINUM STANDARD SOLUTION (1000MG/L)

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
PLATINUM STANDARD SOLUTION (1000MG/L)

OTHER NAMES
"standard solution of platinum (II) ion", "AAS standard solution", "ICP standard for platinum", "spectrometric standard solution", "laboratory reagent", "platinous chloride standard solution", "hydrochloric acid solution"

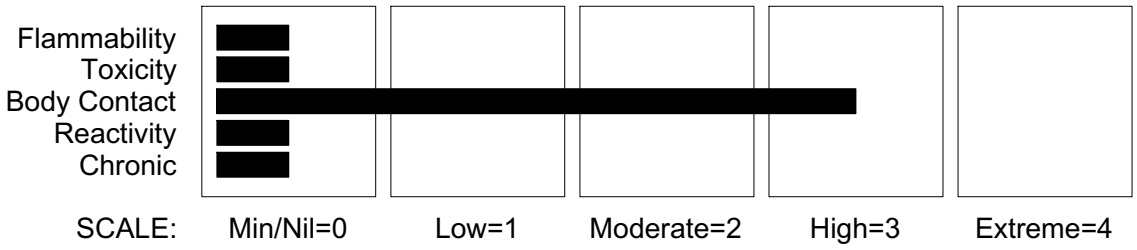
PROPER SHIPPING NAME
HYDROCHLORIC ACID

PRODUCT USE
Laboratory reagent, standard solution of known ionic concentration.
Further diluted before use as calibration solution.

SUPPLIER
Company: S D FINE - CHEM LIMITED
Address:
315- 317, T.V.IND.ESTATE,
248 WORLI ROAD,
MUMBAI- 400 030, INDIA
technical@sdfine.com
Telephone: 91- 22 24959898
Telephone: 91- 22 24959899
Fax: 91- 22 24937232

Section 2 - HAZARDS IDENTIFICATION

HAZARD RATINGS



GHS Classification
Metal Corrosion Category 1
Serious Eye Damage Category 1
Skin Corrosion/Irritation Category 1C

continued...

EMERGENCY OVERVIEW

HAZARD
DANGER
Determined by using GHS criteria:
H290 H314 H318 H318
May be corrosive to metals
Causes severe skin burns and eye damage
Causes serious eye damage
Causes serious eye damage

PRECAUTIONARY STATEMENTS

Prevention
Keep only in original container.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wash thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.

Response
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.

Storage
Store locked up.
Store in corrosive resistant container or with a resistant inner liner.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
hydrochloric acid	7647-01-0	NOT SPEC
platinic chloride	16941-12-1	0.1
water	7732-18-5	NOT SPEC

Section 4 - FIRST AID MEASURES

SWALLOWED
• Immediately give a glass of water.
• First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

continued...

EYE
■ If this product comes in contact with the eyes:
• Immediately hold eyelids apart and flush the eye continuously with running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
• Transport to hospital or doctor without delay.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin or hair contact occurs:
• Flush skin and hair with running water (and soap if available).
• Seek medical attention in event of irritation.

INHALED
• If fumes or combustion products are inhaled remove from contaminated area.
• Other measures are usually unnecessary.

NOTES TO PHYSICIAN
■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
• There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear full body protective clothing with breathing apparatus.
• Prevent, by any means available, spillage from entering drains or water course.
• Use fire fighting procedures suitable for surrounding area.
• Do not approach containers suspected to be hot.
• Cool fire exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
• Non combustible.
• Not considered to be a significant fire risk.
• Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.
• Heating may cause expansion or decomposition leading to violent rupture of containers.
• May emit corrosive, poisonous fumes. May emit acrid smoke.
Decomposes on heating and produces toxic fumes of: hydrogen chloride and chlorides.
• Reacts with metals producing flammable / explosive hydrogen gas.

FIRE INCOMPATIBILITY
• Segregate from alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.

PERSONAL PROTECTION

Glasses:	Gloves:	Respirator:
Not normally required.	When handling larger quantities:	Type B- P Filter of sufficient capacity

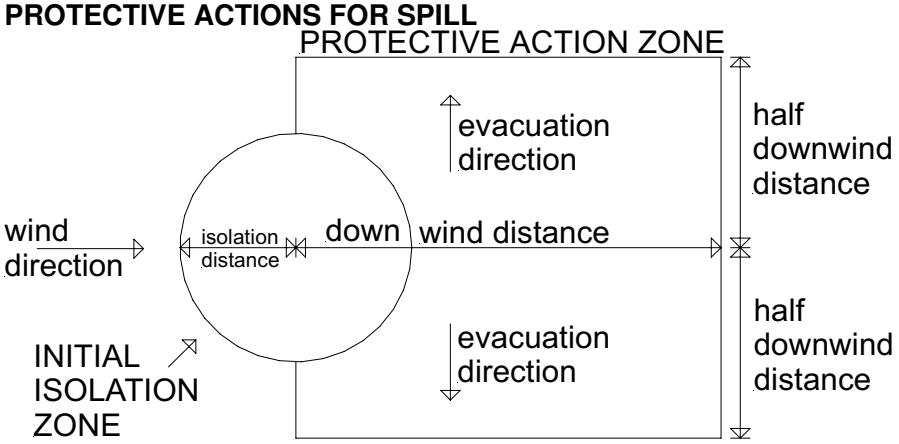
continued...

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
• Clean up all spills immediately.
• Avoid breathing vapours and contact with skin and eyes.
• Control personal contact by using protective equipment.
• Contain and absorb spill with sand, earth, inert material or vermiculite.
• Wipe up.
• Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS
• Clear area of personnel and move upwind.
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or water course.
• Stop leak if safe to do so.
• Contain spill with sand, earth or vermiculite.
• Collect recoverable product into labelled containers for recycling.
• Neutralise/decontaminate residue.
• Collect solid residue and seal in labelled drums for disposal.
• Wash area and prevent runoff into drains.
• After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
• If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance	25 metres
Downwind Protection Distance	250 metres
IERG Number	40

FOOTNOTES
1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

continued...

4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".

LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 157 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

SUITABLE CONTAINER

- Packaging as recommended by manufacturer.
- Check that containers are clearly labelled.
- Glass container is suitable for laboratory quantities.

STORAGE INCOMPATIBILITY

- Segregate from alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.

Reacts with zinc, brass, galvanised iron, aluminium, copper and copper alloys.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+	+	+	+	X	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	Peak ppm	Peak mg/m³
Australia Exposure Standards	hydrochloric acid (Hydrogen chloride)	5	7.5

The following materials had no OELs on our records
• water: CAS:7732- 18- 5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
hydrochloric acid		50
platinic chloride	4	

ODOUR SAFETY FACTOR (OSF)
OSF=1.3 (hydrochloric acid)
■ Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.
Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.
The Odour Safety Factor (OSF) is defined as:
OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm
Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

.

MATERIAL DATA
PLATINUM STANDARD SOLUTION (1000MG/L)
■ None assigned. Refer to individual constituents.

HYDROCHLORIC ACID:
■ for hydrogen chloride:
Odour Threshold Value: 0.262 ppm (detection), 10.06 ppm (recognition)
NOTE: Detector tubes for hydrochloric acid, measuring in excess of 1 ppm, are available comme
Hydrogen chloride is a strong irritant to the eyes, mucous membranes and skin. Chronic exposure produces a corrosive action on the teeth. Reports of respiratory irritation following short-term exposure at 5 ppm have lead to the recommended TLV-C. There is no indication that skin contact with hydrogen chloride elicits systemic poisoning and a skin designation has not been applied.
Exposure of humans to hydrogen chloride at 50 to 100 ppm for 1 hour is reported to be barely tolerable; 35 ppm caused irritation of the throat on short exposure and 10 ppm was the maximal concentration for prolonged exposure. It has been stated that hydrogen chloride at concentrations of 5 ppm is immediately irritating.
Odour Safety Factor(OSF)

continued...

OSF=1.3 (HYDROGEN CHLORIDE).

PLATINIC CHLORIDE:

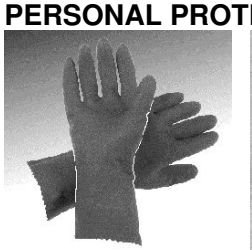
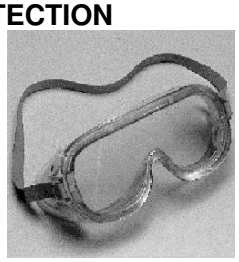
■ Occupational exposure to soluble complex salts of platinum (such as the chloroplatinates, e.g. diamminedichloroplatinum) but not platinum, have caused progressive allergic reactions that may lead to pronounced asthmatic symptoms. The term "salt" may be confusing as in this case it includes covalent compounds of platinum. The TLV-TWA is recommended to minimise the potential for platinum-salt induced asthma and sensitisation.

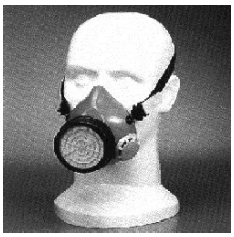
A separate exposure value is recommended for platinum metal dust.

WATER:

■ No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION



EYE

■ No special equipment for minor exposure i.e. when handling small quantities.
• OTHERWISE:
• Safety glasses with side shields.
• Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

■ No special equipment needed when handling small quantities.
OTHERWISE: Wear general protective gloves, eg. light weight rubber gloves.

OTHER

■ Laboratory coat.
• Eyewash unit.

RESPIRATOR

■ Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	B- AUS P	-
1000	50	-	B- AUS P
5000	50	Airline *	-
5000	100	-	B- 2 P
10000	100	-	B- 3 P

continued...

100+	Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
■ None under normal operating conditions.
Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Clear, yellow, odourless liquid; mixes with water.

PHYSICAL PROPERTIES
Liquid.
Mixes with water.
Corrosive.

State	Liquid	Molecular Weight	Not applicable
Melting Range (°C)	Not available	Boiling Range (°C)	Not available
Solubility in water (g/L)	Miscible	Flash Point (°C)	Not applicable
pH (1% solution)	Not available	Decomposition Temp (°C)	Not available
pH (as supplied)	Not available	Autoignition Temp (°C)	Not applicable
Vapour Pressure (kPa)	Not available	Upper Explosive Limit (%)	Not applicable
Specific Gravity (water=1)	Not available	Lower Explosive Limit (%)	Not applicable
Relative Vapour Density (air=1)	Not available	Volatile Component (%vol)	Not available
Evaporation Rate	Not available		

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY
■ Product is considered stable and hazardous polymerisation will not occur.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
■ Considered an unlikely route of entry in commercial/industrial environments.

continued...

EYE
■ The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.
■ If applied to the eyes, this material causes severe eye damage.
■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN
■ The material can produce chemical burns following direct contactwith the skin.
■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

INHALED
■ If inhaled, this material can irritate the throat andlungs of some persons.
■ Not normally a hazard due to non-volatile nature of product.
■ The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.

CHRONIC HEALTH EFFECTS
■ Primary route of exposure is usually by skin contact/eye contact.
As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

TOXICITY AND IRRITATION
■ Not available. Refer to individual constituents.

HYDROCHLORIC ACID:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Unreported (man) LDLo: 81 mg/kg	Eye (rabbit): 5mg/30s - Mild
Inhalation (human) LCLo: 1300 ppm/30 min	
Inhalation (human) LCLo: 3000 ppm/5 min	
Inhalation (rat) LC50: 3124 ppm/1h	
Oral (rat) LD50: 900 mg/kg	

■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.

PLATINIC CHLORIDE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION

continued...

Intravenous (rat) LD50: 49 mg/kg Sensitizer -
may cause asthma or
Intravenous (Rabbit) LD: 125 mg/kg dermatitis.
[Merck]
Intraperitoneal (Mouse) LD50: 82 mg/kg
■ Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms. Allergy causing activity is due to interactions with proteins.
Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema.
Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.
Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

WATER:
■ No significant acute toxicological data identified in literature search.

CARCINOGEN

Hydrochloric acid	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3

continued...

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

PLATINIC CHLORIDE:
HYDROCHLORIC ACID:
■ DO NOT discharge into sewer or waterways.
■ Although inorganic chloride ions are not normally considered toxic they can exist in effluents at acutely toxic levels (chloride >3000 mg/l). the resulting salinity can exceed the tolerances of most freshwater organisms.
Inorganic chlorine eventually finds its way into the aqueous compartment and as such is bioavailable.
Incidental exposure to inorganic chloride may occur in occupational settings where chemicals management policies are improperly applied. The toxicity of chloride salts depends on the counter-ion (cation) present; that of chloride itself is unknown. Chloride toxicity has not been observed in humans except in the special case of impaired sodium chloride metabolism, e.g. in congestive heart failure. Healthy individuals can tolerate the intake of large quantities of chloride provided that there is a concomitant intake of fresh water.
Although excessive intake of drinking-water containing sodium chloride at concentrations.
above 2.5 g/litre has been reported to produce hypertension, this effect is believed to be related to the sodium ion concentration.
Chloride concentrations in excess of about 250 mg/litre can give rise to detectable taste in water, but the threshold depends upon the associated cations. Consumers can, however, become accustomed to concentrations in excess of 250 mg/litre. No health-based guideline value is proposed for chloride in drinking-water.
In humans, 88% of chloride is extracellular and contributes to the osmotic activity of body fluids. The electrolyte balance in the body is maintained by adjusting total dietary intake and by excretion via the kidneys and gastrointestinal tract. Chloride is almost completely absorbed in normal individuals, mostly from the proximal half of the small intestine. Normal fluid loss amounts to about 1.5?2 liters/day, together with about 4 g of chloride per day. Most (90 - 95%) is excreted in the urine, with minor amounts in faeces (4- %) and sweat (2%).
Chloride increases the electrical conductivity of water and thus increases its corrosivity. In metal pipes, chloride reacts with metal ions to form soluble salts thus increasing levels of metals in drinking-water. In lead pipes, a protective oxide layer is built up, but chloride enhances galvanic corrosion. It can also increase the rate of pitting corrosion of metal pipes.

HYDROCHLORIC ACID:
■ Hazardous Air Pollutant: Yes
■ Fish LC50 (96hr.) (mg/l): 0.282

■ Ecotoxicity:
The tolerance of water organisms towards pH margin and variation is diverse. Recommended pH values for test species listed in OECD guidelines are between 6.0 and almost 9. Acute testing with fish showed 96h-LC50 at about pH 3.5.
■ Prevent, by any means available, spillage from entering drains or water courses.
Ecotoxicity
Fish LC100 (24 h): trout 10 mg/l
TLm (96 h): mosquito fish 282 ppm (fresh water)
LC50: goldfish 178 mg/l
Shrimp LC50 (48 h): 100 - 330 ppm (salt water)
Starfish LC50 (48 h): 100 - 330 mg/l
Cockle LC50 (48 h): 330 - 1000 mg/l
[Hach]
Hydrogen chloride in water dissociates almost completely, releasing hydrogen and chloride ions; the hydrogen ions are captured by water to produce hydronium ions.
Hydrochloric acid infiltrates soil, the rate dependent on moisture content. During soil transport, hydrochloric acid dissolves soil components.
Drinking water standard:
chloride: 400 mg/l (UK max.)
250 mg/l (WHO guideline)

continued...

PLATINIC CHLORIDE:
■ Metal-containing inorganic substances generally have negligible vapour pressure and are not expected to partition to air. Once released to surface waters and moist soils their fate depends on solubility and dissociation in water. Environmental processes (such as oxidation and the presence of acids or bases) may transform insoluble metals to more soluble ionic forms. Microbiological processes may also transform insoluble metals to more soluble forms. Such ionic species may bind to dissolved ligands or sorb to solid particles in aquatic or aqueous media. A significant proportion of dissolved/ sorbed metals will end up in sediments through the settling of suspended particles. The remaining metal ions can then be taken up by aquatic organisms.
When released to dry soil most metals will exhibit limited mobility and remain in the upper layer; some will leach locally into ground water and/ or surface water ecosystems when soaked by rain or melt ice.
Environmental processes may also be important in changing solubilities.
Even though many metals show few toxic effects at physiological pHs, transformation may introduce new or magnified effects.
A metal ion is considered infinitely persistent because it cannot degrade further.
The current state of science does not allow for an unambiguous interpretation of various measures of bioaccumulation.
The counter-ion may also create heath and environmental concerns once isolated from the metal. Under normal physiological conditions the counter-ion may be essentially insoluble and may not be bioavailable.
Environmental processes may enhance bioavailability.
■ For platinum and its compounds:
Environmental fate:
Platinum is found as Pt(OH)20 in fresh water or bound to organic matter as Pt(II). In seawater PtCl42- is also seen. Platinum can be assimilated by algae and plankton in the aquatic environment, and is released once the organic material degrades. It is not strongly bound to particles. No volatile Pt-compounds exist, and platinum is predominantly found in soil, sediment and the aquatic environment. Platinum emitted from catalytic converters can be distributed over significant distances and will accumulate in e.g. sediment. It has been shown that platinum emitted from catalytic converters is biologically available.
Platinum is not an essential micro nutrient, and the available information does not give any reason to regard platinum as bioaccumulating.
Ecotoxicity:
The data on the environmental toxicology of platinum is very limited. Hexachloroplatinum acid has an effect concentration on Tubifex tubifex of 61 mg/L and is therefore very toxic to this aquatic organism.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
hydrochloric acid	LOW		LOW	HIGH
platinic chloride	HIGH		LOW	HIGH
water	LOW		LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Treat and neutralise at an effluent treatment plant.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

continued...

Labels Required: CORROSIVE

HAZCHEM:
- 2R

Land Transport UNDG:

Class or division:	8	Subsidiary risk:	None
UN No.:	1789	UN packing group:	III

Shipping Name:HYDROCHLORIC ACID

Air Transport IATA:

ICAO/IATA Class:	8	ICAO/IATA Subrisk:	None
UN/ID Number:	1789	Packing Group:	III
Special provisions:	A3		

Shipping Name: HYDROCHLORIC ACID

Maritime Transport IMDG:

IMDG Class:	8	IMDG Subrisk:	None
UN Number:	1789	Packing Group:	III
EMS Number:	F- A, S- B	Special provisions:	223
Limited Quantities:	5 L		

Shipping Name: HYDROCHLORIC ACID

Section 15 - REGULATORY INFORMATION

REGULATIONS
Regulations for ingredients

hydrochloric acid (CAS: 7647-01-0) is found on the following regulatory lists;
"Australia - Queensland Hazardous Materials and Prescribed Quantities for Major Hazard Facilities","Australia Exposure Standards","Australia Hazardous Substances","Australia High Volume Industrial Chemical List (HVICL)","Australia Illicit Drug Reagents/Essential Chemicals - Category III","Australia Inventory of Chemical Substances (AICS)","Australia National Pollutant Inventory","Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix E (Part 2)","Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix F (Part 3)","Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5","Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6","CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP","GESAMP/EHS Composite List - GESAMP Hazard Profiles","IMO IBC Code Chapter 17: Summary of minimum requirements","IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk","International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs","International Council of Chemical Associations (ICCA) - High Production Volume List","International Maritime Dangerous Goods Requirements (IMDG Code) - Goods Forbidden for Transport","OECD Representative List of High Production Volume (HPV) Chemicals","United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II","United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control - Table II"

platinic chloride (CAS: 16941-12-1,18497-13-7,26023-84-7) is found on the following regulatory lists;
"Australia Hazardous Substances","Australia Inventory of Chemical Substances (AICS)"

water (CAS: 7732-18-5) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)","IMO IBC Code Chapter 18: List of products to which the Code does not apply","OECD Representative List of High Production Volume (HPV) Chemicals"

No data for Platinum Standard Solution (1000MG/L) SpectrosoL (56585)

continued...

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
platinic chloride	16941- 12- 1, 18497- 13- 7, 26023- 84- 7

EXPOSURE STANDARD FOR MIXTURES

■ "Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

■ Composite Exposure Standard for Mixture (TWA) :100 mg/m³.
■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by using available literature references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 29-Jan-2018