



IC-4

High-Purity Standards

Catalogue number: IC-4
Version No: 2.2
Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Chemwatch Hazard Alert Code: 0

Issue Date: 08/27/2016
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S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier

Product name	IC-4
Synonyms	100µg/mL Ammonium, Calcium, Magnesium, Potassium, Sodium in H2O
Other means of identification	IC-4

Recommended use of the chemical and restrictions on use

Relevant identified uses	Use according to manufacturer's directions.
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Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	High-Purity Standards
Address	PO Box 41727 SC 29423 United States
Telephone	843-767-7900
Fax	843-767-7906
Website	highpuritystandards.com
Email	Not Available

Emergency phone number

Association / Organisation	INFOTRAC
Emergency telephone numbers	1-800-535-5053
Other emergency telephone numbers	1-352-323-3500

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

Classification	Not Applicable
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Label elements

GHS label elements	Not Applicable
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SIGNAL WORD	NOT APPLICABLE
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Hazard statement(s)

Not Applicable

Hazard(s) not otherwise specified

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Continued...

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**Substances**

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
12125-02-9	0.01	<u>ammonium chloride</u>
22691-02-7	0.01	<u>calcium chloride, hydrated</u>
7791-18-6	0.01	<u>magnesium chloride</u>
7447-40-7	0.01	<u>potassium chloride</u>
7647-14-5	0.01	<u>sodium chloride</u>
7732-18-5	balance	<u>water</u>

SECTION 4 FIRST-AID MEASURES**Description of first aid measures**

Eye Contact	<p>If this product comes in contact with eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with water. ▶ If irritation continues, seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> ▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▶ Other measures are usually unnecessary.
Ingestion	<ul style="list-style-type: none"> ▶ Immediately give a glass of water. ▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIRE-FIGHTING MEASURES**Extinguishing media**

- ▶ There is no restriction on the type of extinguisher which may be used.
- ▶ Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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Special protective equipment and precautions for fire-fighters

Fire Fighting	▶ Use water delivered as a fine spray to control fire and cool adjacent area.
Fire/Explosion Hazard	▶ Non combustible.

SECTION 6 ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	▶ Clean up all spills immediately.
Major Spills	▶ Clear area of personnel and move upwind.

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

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	▶ Limit all unnecessary personal contact.
Other information	

Conditions for safe storage, including any incompatibilities

Suitable container	▶ Polyethylene or polypropylene container.
Storage incompatibility	Avoid contamination of water, foodstuffs, feed or seed. None known

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA


Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US ACGIH Threshold Limit Values (TLV)	ammonium chloride	Ammonium chloride, fume	10 mg/m3	20 mg/m3	Not Available	TLV® Basis: Eye & URT irr
US NIOSH Recommended Exposure Limits (RELs)	ammonium chloride	Ammonium chloride, Ammonium muriate fume, Sal ammoniac fume	10 mg/m3	20 mg/m3	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
ammonium chloride	Ammonium chloride	20 mg/m3	41 mg/m3	330 mg/m3
calcium chloride, hydrated	Calcium chloride dihydrate	7.4 mg/m3	81 mg/m3	490 mg/m3
calcium chloride, hydrated	Calcium chloride	3 mg/m3	33 mg/m3	200 mg/m3
calcium chloride, hydrated	Calcium chloride hydrate	4.9 mg/m3	54 mg/m3	330 mg/m3
calcium chloride, hydrated	Calcium chloride hexahydrate	5 mg/m3	55 mg/m3	330 mg/m3
magnesium chloride	Magnesium chloride	4.1 mg/m3	45 mg/m3	550 mg/m3
magnesium chloride	Magnesium chloride hexahydrate	12 mg/m3	130 mg/m3	1600 mg/m3
potassium chloride	Potassium chloride	1.1 mg/m3	12 mg/m3	22 mg/m3
sodium chloride	Chloride; (Chloride(1-); Chloride ions)	1 ppm	2.52 ppm	30 ppm
sodium chloride	Sodium chloride	11 mg/m3	120 mg/m3	1100 mg/m3

Ingredient	Original IDLH	Revised IDLH
ammonium chloride	Not Available	Not Available
calcium chloride, hydrated	Not Available	Not Available
magnesium chloride	Not Available	Not Available
potassium chloride	Not Available	Not Available
sodium chloride	Not Available	Not Available
water	Not Available	Not Available

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard.
Personal protection	
Eye and face protection	▶ Safety glasses with side shields ▶ Chemical goggles.
Skin protection	See Hand protection below
Hands/feet protection	Wear general protective gloves, eg. light weight rubber gloves. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer.
Body protection	See Other protection below
Other protection	No special equipment needed when handling small quantities.
Thermal hazards	Not Available

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	colorless
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Physical state	Liquid	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Available	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Available
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Available	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water (g/L)	Miscible	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	Product is considered stable and hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models).
Ingestion	The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion".
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models).
Eye	Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

IC-4	TOXICITY	IRRITATION
	Not Available	Not Available
ammonium chloride	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1]	Eye (rabbit): 100 mg SEVERE
	Oral (rat) LD50: 1410 mg/kg ^[1]	Eye (rabbit): 500 mg/24h SEVERE
calcium chloride, hydrated	TOXICITY	IRRITATION
	Oral (rat) LD50: 1000 mg/kg ^[2]	Nil reported
magnesium chloride	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1]	Nil reported
	Oral (rat) LD50: 2800 mg/kg ^[2]	
potassium chloride	TOXICITY	IRRITATION
	Oral (rat) LD50: 2600 mg/kg ^[2]	Eye (rabbit): 500 mg/24h - mild

sodium chloride	TOXICITY		IRRITATION	
	Dermal (rabbit) LD50: >10000 mg/kg ^[1]		Eye (rabbit): 10 mg - moderate	
	Oral (rat) LD50: 3000 mg/kg ^[2]		Eye (rabbit):100 mg/24h - moderate	
			Skin (rabbit): 500 mg/24h - mild	
water	TOXICITY		IRRITATION	
	Oral (rat) LD50: >90000 mg/kg ^[2]		Not Available	

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

AMMONIUM CHLORIDE	The material may produce severe irritation to the eye causing pronounced inflammation.
POTASSIUM CHLORIDE	The material may be irritating to the eye, with prolonged contact causing inflammation.
SODIUM CHLORIDE	The material may produce moderate eye irritation leading to inflammation. 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.
CALCIUM CHLORIDE, HYDRATED & MAGNESIUM CHLORIDE & SODIUM CHLORIDE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases.

Acute Toxicity	☒	Carcinogenicity	☒
Skin Irritation/Corrosion	☒	Reproductivity	☒
Serious Eye Damage/Irritation	☒	STOT - Single Exposure	☒
Respiratory or Skin sensitisation	☒	STOT - Repeated Exposure	☒
Mutagenicity	☒	Aspiration Hazard	☒

Legend: ✗ - Data available but does not fill the criteria for classification
✔ - Data required to make classification available
☒ - Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
ammonium chloride	LC50	96	Fish	0.08mg/L	4
ammonium chloride	EC50	48	Crustacea	0.261mg/L	4
ammonium chloride	EC50	72	Algae or other aquatic plants	166.5mg/L	4
ammonium chloride	EC0	168	Crustacea	=0.025mg/L	1
ammonium chloride	NOEC	0.25	Fish	0.0049000mg/L	4
calcium chloride, hydrated	LC50	96	Fish	=3mg/L	1
calcium chloride, hydrated	EC50	48	Crustacea	52mg/L	4
calcium chloride, hydrated	EC50	72	Algae or other aquatic plants	2900mg/L	2
calcium chloride, hydrated	BCFD	48	Crustacea	0.0832425mg/L	4
calcium chloride, hydrated	EC50	48	Crustacea	=52mg/L	1
calcium chloride, hydrated	NOEC	336	Algae or other aquatic plants	5.5495000mg/L	4
magnesium chloride	LC50	96	Fish	428.733mg/L	3
magnesium chloride	EC50	48	Crustacea	140mg/L	4
magnesium chloride	EC50	72	Algae or other aquatic plants	>100mg/L	2
magnesium chloride	EC50	384	Crustacea	98.330mg/L	3
magnesium chloride	NOEC	72	Algae or other aquatic plants	100mg/L	2
potassium chloride	LC50	96	Fish	29.8000mg/L	4
potassium chloride	EC50	48	Crustacea	83mg/L	4
potassium chloride	EC50	72	Algae or other aquatic plants	>100mg/L	2
potassium chloride	EC50	24	Crustacea	7.35mg/L	4
potassium chloride	NOEC	72	Algae or other aquatic plants	>=100mg/L	2
sodium chloride	LC50	96	Fish	620.199mg/L	3
sodium chloride	EC50	48	Crustacea	402.6mg/L	4
sodium chloride	EC50	96	Algae or other aquatic plants	2430mg/L	4

sodium chloride	EC50	384	Crustacea	140.582mg/L	3
sodium chloride	NOEC	6	Fish	0.001mg/L	4
water	LC50	96	Fish	897.520mg/L	3
water	EC50	96	Algae or other aquatic plants	8768.874mg/L	3
water	EC50	384	Crustacea	199.179mg/L	3

Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
magnesium chloride	HIGH	HIGH
potassium chloride	HIGH	HIGH
sodium chloride	LOW	LOW
water	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
magnesium chloride	LOW (LogKOW = 0.0494)
potassium chloride	LOW (LogKOW = -0.4608)
sodium chloride	LOW (LogKOW = 0.5392)
water	LOW (LogKOW = -1.38)

Mobility in soil

Ingredient	Mobility
magnesium chloride	LOW (KOC = 23.74)
potassium chloride	LOW (KOC = 14.3)
sodium chloride	LOW (KOC = 14.3)
water	LOW (KOC = 14.3)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ Recycle wherever possible.
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SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
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Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

AMMONIUM CHLORIDE(12125-02-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Alaska Limits for Air Contaminants	US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants
US - California Permissible Exposure Limits for Chemical Contaminants	US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Hawaii Air Contaminant Limits	US - Washington Permissible exposure limits of air contaminants
US - Michigan Exposure Limits for Air Contaminants	US ACGIH Threshold Limit Values (TLV)
US - Minnesota Permissible Exposure Limits (PELs)	US NIOSH Recommended Exposure Limits (RELs)
US - Oregon Permissible Exposure Limits (Z-1)	US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	

CALCIUM CHLORIDE, HYDRATED(22691-02-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

MAGNESIUM CHLORIDE(7791-18-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

POTASSIUM CHLORIDE(7447-40-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

SODIUM CHLORIDE(7647-14-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

WATER(7732-18-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SECTION 311/312 HAZARD CATEGORIES

Immediate (acute) health hazard	No
Delayed (chronic) health hazard	No
Fire hazard	No
Pressure hazard	No
Reactivity hazard	No

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

Name	Reportable Quantity in Pounds (lb)	Reportable Quantity in kg
Ammonium chloride	5000	2270

State Regulations

US. CALIFORNIA PROPOSITION 65

None Reported

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (magnesium chloride; ammonium chloride; calcium chloride, hydrated; potassium chloride; water; sodium chloride)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (water)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

Name	CAS No
ammonium chloride	12125-02-9, 152128-19-3
calcium chloride, hydrated	10035-04-8, 7774-34-7, 22691-02-7
magnesium chloride	7786-30-3, 7791-18-6, 14989-29-8
sodium chloride	7647-14-5, 14762-51-7, 16887-00-6

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment.

Definitions and abbreviations

- PC— TWA: Permissible Concentration-Time Weighted Average
- PC—STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit.

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

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