Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

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

· **1.1 Product identifier**
· **Trade name: Barium chloride**
· **SDS number:** CH0031
· **CAS Number:**
10326-27-9

· **EC number:**
233-788-1
· **Index number:**
056-002-00-7
· **Registration number** 01-2119502547-42-0001
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Life cycle stages**
IS Use at industrial Sites
F Formulation or re-packing
· **Sector of Use**
SU9 Manufacture of fine chemicals
SU24 Scientific research and development
· **Product category**
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals
PC29 Pharmaceuticals
PC40 Extraction agents
· **Process category**
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC15 Use as laboratory reagent
· **Environmental release category**
ERC1 Manufacture of the substance
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a Use of an intermediary
· **Application of the substance / the mixture** Chemicals products for laboratory

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
CARLO ERBA REAGENTS
Chaussée du Vexin
Parc d'Affaires des Portes - BP616
27106 VAL DE REUIL Cedex
Téléphone: +33 (0)2 32 09 20 00
Télécopie: +33 (0)2 32 09 20 20
· **Further information obtainable from:**
Q.A / Normative
email: MSDS_CER-SDS@cer.dgroup.it

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· ***1.4 Emergency telephone number:***
Ireland - Tel : 00 353 1 8092568 - 00 353 1 8379964 (24h/24)
EU Tel : 112

SECTION 2: Hazards identification

· ***2.1 Classification of the substance or mixture***
· ***Classification according to Regulation (EC) No 1272/2008***



GHS06 skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.
Eye Irrit. 2 H319 Causes serious eye irritation.

· ***2.2 Label elements***
· ***Labelling according to Regulation (EC) No 1272/2008***
The substance is classified and labelled according to the CLP regulation.
· ***Hazard pictograms***



GHS06

· ***Signal word*** *Danger*
· ***Hazard statements***
H301 Toxic if swallowed.
H332 Harmful if inhaled.
H319 Causes serious eye irritation.
· ***Precautionary statements***

P261	*Avoid breathing dust/fume/gas/mist/vapours/spray.*
P271	*Use only outdoors or in a well-ventilated area.*
P280	*Wear eye protection / face protection.*
P301+P310	*IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*
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 lenses, if present and easy to do. Continue rinsing.*

· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*
· ***Determination of endocrine-disrupting properties*** *Not applicable*

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SECTION 3: Composition/information on ingredients

· ***3.1 Substances***

· ***CAS No. Description***
CAS: 10326-27-9 Barium chloride dihydrate

· ***Identification number(s)***

· ***EC number:*** *233-788-1*

· ***Index number:*** *056-002-00-7*

SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***General information:***
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· ***After inhalation:***
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
· ***After skin contact:***
Immediately wash with water and soap and rinse thoroughly. Wash contaminated clothing before reuse.
If skin irritation continues, consult a doctor.
· ***After eye contact:***
Rinse opened eye for several minutes under running water. Then consult a doctor.
Seek immediate medical advice.
· ***After swallowing:***
Rinse mouth.
Call for a doctor immediately.
· ***Information for doctor:*** *Show the doctor this Material Safety Data Sheet.*
· ***4.2 Most important symptoms and effects, both acute and delayed*** *Nausea*
· ***4.3 Indication of any immediate medical attention and special treatment needed***
No further relevant information available.

SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents:***
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Use fire extinguishing methods suitable to surrounding conditions.
· ***5.2 Special hazards arising from the substance or mixture*** *Hydrogen chloride (HCl)*
· ***5.3 Advice for firefighters***
· ***Protective equipment:***
In closed rooms wear a self contained breathing apparatus.
Do not inhale gases in case or fire or combustion.
· ***Additional information*** *Keep receptacles cool with water spray.*

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SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Avoid formation of dust.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Ensure adequate ventilation
· **6.2 Environmental precautions:**
Do not allow to penetrate the ground/soil.
Do not allow to enter sewers/ surface or ground water.
· **6.3 Methods and material for containment and cleaning up:**
Pick up mechanically.
Ensure adequate ventilation.
Dispose contaminated material as waste according to section 13.
Provide suction extractors if dust is formed.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of dust.
Provide suction extractors if dust is formed.
Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
Keep unused containers tightly sealed.
· **Information about fire - and explosion protection:**
The product is not flammable.
Keep respiratory protective device available.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Store in a well-ventilated place. Keep container tightly closed.
Use only receptacles specifically permitted for this substance/product.
· **Information about storage in one common storage facility:** *Not required*
· **Further information about storage conditions:** *Keep receptacle tightly sealed.*
· **7.3 Specific end use(s)** *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**	
CAS: 10326-27-9 Barium chloride dihydrate	
IOELV	Long-term value: 0.5 mg/m³ as Ba

· **Additional information:** *The lists valid during the making were used as basis.*

· **8.2 Exposure controls**
· **Appropriate engineering controls** *No further data; see section 7.*

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· ***Individual protection measures, such as personal protective equipment***
· ***General protective and hygienic measures:***
The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Store protective clothing separately.
Vacuum clean contaminated clothing. Do not blow or brush off contamination.
Avoid contact with the eyes.
· ***Respiratory protection:***
Use suitable respiratory protective device only when aerosol or mist is formed.



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Filter P3, in case of dust-producing handlings.
Use suitable respiratory protective device in case of insufficient ventilation.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
· ***Hand protection*** *Rubber gloves*
· ***Material of gloves***
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Thin, disposable gloves in PVC or PE
· ***Penetration time of glove material***
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
· ***For the permanent contact gloves made of the following materials are suitable:***
The penetration time has to be at least 480 minutes
Butyl rubber, BR
Recommended thickness of the material: ≥ 0.5 mm
Fluorocarbon rubber (Viton)
Recommended thickness of the material: ≥ 0.5 mm
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.35 mm
Natural rubber, NR
Recommended thickness of the material: ≥ 0.5 mm
Chloroprene rubber, CR
Recommended thickness of the material: ≥ 0.5 mm
PVC gloves
Recommended thickness of the material: ≥ 0.5 mm
· ***Eye/face protection***



Tightly sealed goggles

· ***Environmental exposure controls***
In case of unintended release of the product: See section 6 of the Safety Data Sheet.
· ***Risk management measures*** *Keep good industrial hygiene.*

SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***
· ***Molecular weight*** *224.27 g*

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· **Physical state**	Solid
· **Colour:**	White
· **Odour:**	Odourless
· **Odour threshold:**	Not determined
· **Melting point/freezing point:**	962 °C
· **Boiling point or initial boiling point and boiling range**	Undetermined
· **Flammability**	Product is not flammable.
· **Lower and upper explosion limit**	
· **Lower:**	Not determined
· **Upper:**	Not determined
· **Flash point:**	Not applicable
· **Decomposition temperature:**	Not determined
· **pH**	Not applicable
· **Viscosity:**	
· **Kinematic viscosity**	Not applicable
· **Dynamic:**	Not applicable
· **Solubility**	
· **water at 20 °C:**	357 g/l
· **Partition coefficient n-octanol/water (log value)**	Not determined
· **Vapour pressure:**	Not applicable
· **Density and/or relative density**	
· **Density at 20 °C:**	3.097 g/cm³
· **Relative density**	Not determined
· **Bulk density:**	1,300 kg/m³
· **Vapour density**	Not applicable
· **Particle characteristics**	See section 3.

· **9.2 Other information**	
· **Appearance:**	
· **Form:**	Crystalline powder
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Not determined
· **Explosive properties:**	Product does not present an explosion hazard.
· **Molecular formula**	Ba Cl2 . 2 H2 O
· **Molecular weight**	224.27 g/mol
· **Change in condition**	
· **Evaporation rate**	Not applicable.

· **Information with regard to physical hazard classes**	
· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Void
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **Pyrophoric liquids**	Void
· **Pyrophoric solids**	Void
· **Self-heating substances and mixtures**	Void
· **Substances and mixtures, which emit flammable gases in contact with water**	Void
· **Oxidising liquids**	Void

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· ***Oxidising solids***	*Void*
· ***Organic peroxides***	*Void*
· ***Corrosive to metals***	*Void*
· ***Desensitised explosives***	*Void*

SECTION 10: Stability and reactivity

· ***10.1 Reactivity*** *See 10.3*
· ***10.2 Chemical stability***
· ***Thermal decomposition / conditions to be avoided:*** *No decomposition if used according to specifications.*
· ***10.3 Possibility of hazardous reactions*** *No dangerous reactions known.*
· ***10.4 Conditions to avoid*** *No further relevant information available.*
· ***10.5 Incompatible materials:*** *No further relevant information available.*
· ***10.6 Hazardous decomposition products:*** *Hydrogen chloride (HCl)*

SECTION 11: Toxicological information

· ***11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008***
· ***Acute toxicity***
Toxic if swallowed.
Harmful if inhaled.

· ***LD/LC50 values relevant for classification:***

Oral	*LD50*	*118 mg/kg (rat)*
Inhalative	*LC50/4 h*	*1.5 ppm (ATE)*

· ***Primary irritant effect:***
· ***Skin corrosion/irritation*** *Based on available data, the classification criteria are not met.*
· ***Serious eye damage/irritation***
Strong irritant with the danger of severe eye injury.
Causes serious eye irritation.
· ***Ingestion:*** *Toxic if swallowed.*
· ***Inhalation:*** *Harmful if inhaled.*
· ***Respiratory or skin sensitisation*** *Based on available data, the classification criteria are not met.*
· ***Germ cell mutagenicity*** *Based on available data, the classification criteria are not met.*
· ***Carcinogenicity*** *Based on available data, the classification criteria are not met.*
· ***Reproductive toxicity*** *Based on available data, the classification criteria are not met.*
· ***STOT-single exposure*** *Based on available data, the classification criteria are not met.*
· ***STOT-repeated exposure*** *Based on available data, the classification criteria are not met.*
· ***Aspiration hazard*** *Based on available data, the classification criteria are not met.*
· ***Other information (about experimental toxicology):*** *No further relevant information available.*
· ***11.2 Information on other hazards***
· ***Endocrine disrupting properties*** *Substance is not listed.*

SECTION 12: Ecological information

· ***12.1 Toxicity***

· ***Aquatic toxicity:***

LC50	*326 mg/l (Crustaceans) (48H)*

· ***12.2 Persistence and degradability*** *No further relevant information available.*

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· **Method**
· **Ecological information** Not available
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable
· **vPvB:** Not applicable
· **12.6 Endocrine disrupting properties**
The product does not contain substances with endocrine disrupting properties.
· **12.7 Other adverse effects**
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

*
SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Reutilise if possible or contact a waste processors for recycling or safe disposal.
· **Waste disposal key:**
The European Union does not establish uniform rules for the disposal of chemical waste, which are special waste. Their treatment and elimination of the domestic legislation of each country. So, in each case, you should contact the relevant authorities, or those companies legally authorized for elimination of waste.
2014/955/UE: Council Decision of 18 December 2014 amending the list of wastes contained in Decision 2000/532/EC.
Directive 2008/98/EC of the european parliament and of the council of 18 November 2008, in ist latest valid version.

· **European waste catalogue**	
06 00 00	WASTES FROM INORGANIC CHEMICAL PROCESSES
06 03 00	wastes from the MFSU of salts and their solutions and metallic oxides
06 03 14	solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13
HP4	Irritant - skin irritation and eye damage
HP6	Acute Toxicity

· **Uncleaned packaging:**
The containers and packaging materials contaminated with dangerous substances or preparations, have the same treatment of products.
Directive 94/62/EC of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste.
· **Recommendation:**
Disposal must be made according to official regulations.
Packagings that may not be cleansed are to be disposed of in the same manner as the product.
Chemical treatment of contaminated water.

SECTION 14: Transport information

· **14.1 UN number or ID number**
· **ADR/RID, IMDG, IATA** UN1564

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· ***14.2 UN proper shipping name***

· ***ADR/RID***	*1564 BARIUM COMPOUND, N.O.S. (Barium chloride dihydrate)*
· ***IMDG***	*BARIUM COMPOUND, N.O.S. (Barium chloride dihydrate)*
· ***IATA***	*Barium compound, n.o.s. (Barium chloride dihydrate)*

· ***14.3 Transport hazard class(es)***

· ***ADR/RID***



· ***Class***	*6.1 (T5) Toxic substances.*
· ***Label***	*6.1*

· ***IMDG, IATA***



· ***Class***	*6.1 Toxic substances.*
· ***Label***	*6.1*

· ***14.4 Packing group***

· ***ADR/RID, IMDG, IATA***	*III*

· ***14.5 Environmental hazards:***

· ***Marine pollutant:***	*No*

· ***14.6 Special precautions for user***	*Warning: Toxic substances.*
· ***Hazard identification number (Kemler code):***	*60*
· ***EMS Number:***	*F-A,S-A*
· ***Stowage Category***	*A*

· ***14.7 Maritime transport in bulk according to IMO instruments*** *Not applicable*

· ***Transport/Additional information:***

· ***ADR/RID***

· ***Excepted quantities (EQ):***	*E1*
· ***Limited quantities (LQ)***	*5 kg*
· ***Excepted quantities (EQ)***	*Code: E1* *Maximum net quantity per inner packaging: 30 g* *Maximum net quantity per outer packaging: 1000 g*
· ***Transport category***	*2*
· ***Tunnel restriction code***	*E*

· ***IMDG***

· ***Limited quantities (LQ)***	*5 kg*
· ***Excepted quantities (EQ)***	*Code: E1* *Maximum net quantity per inner packaging: 30 g* *Maximum net quantity per outer packaging: 1000 g*

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· ***UN "Model Regulation":*** *UN 1564 BARIUM COMPOUND, N.O.S. (BARIUM CHLORIDE DIHYDRATE), 6.1, III*

SECTION 15: Regulatory information

· ***15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture***
· ***SARA Section 355 (extremely hazardous substances)*** *Substance is not listed.*
· ***SARA Section 313 (specific toxic chemical listings)*** *Substance is listed.*
· ***Prop 65 - Chemicals known to cause cancer*** *Substance is not listed.*

· ***Directive 2012/18/EU***
· ***Named dangerous substances - ANNEX I*** *Substance is not listed.*
· ***REGULATION (EU) 2019/1021 on persistent organic pollutants (POP)*** *Substance is not listed.*
· ***LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)*** *Substance is not listed.*
· ***REGULATION (EC) No 1907/2006 ANNEX XVII*** *Conditions of restriction: 75*
· ***DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II***
Substance is not listed.
· ***REGULATION (EU) 2024/590 on substances that deplete the ozone layer*** *Substance is not listed.*
· ***National regulations:***
· ***Waterhazard class:*** *Water hazard class 1 (Assessment by list): slightly hazardous for water.*

· ***Other regulations, limitations and prohibitive regulations***
· ***Substances of very high concern (SVHC) according to REACH, Article 57*** *Substance is not listed.*
· ***15.2 Chemical safety assessment:*** *A Chemical Safety Assessment has not been carried out.*

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· ***Department issuing SDS:*** *Q.A./Normative*
· ***Date of previous version:*** *19.03.2021*
· ***Version number of previous version:*** *30*
· ***Abbreviations and acronyms:***
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
DNEL
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
ATE: Acute toxicity estimate values
Acute Tox. 3: Acute toxicity – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

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· ***Sources***

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006, REACH, in the latest valid version.
Regulation (EC) N° 1272/2008 of the European Parliament and of the Council of 16 December 2008, CLP, in the latest valid version.
Globally Harmonized System, GHS
ADR/RID, IMDG, IATA
PubChem : an open chemistry database at the National Institutes of Health (NIH)
ECHA : European CHemicals Agency
GESTIS : Information system on hazardous substances of the German Social Accident Insurance

· **** Data compared to the previous version altered.*** .