

Sodium cyanide, solution 30%

1. Identification of the substance/preparation and company/undertaking

Product name : Sodium cyanide, solution 30%
Internal code : WW12204

2. Composition/information on ingredients

Substance/preparation : Preparation

Chemical name	CAS no.	%	EC no. *	Classification
Sodium cyanide	143-33-9	29.5 - 30.5	205-599-4	T+; R26/27/28 R32
sodium hydroxide See section 16 for the full text of the R-phrases declared above	1310-73-2	0.4 - 1	215-185-5	N; R50/53 C; R35

* EC no. means EINECS or ELINCS number.

Occupational exposure limits, if available, are listed in section 8.

3. Hazards identification

Human health hazards : Very toxic by inhalation, in contact with skin and if swallowed. Contact with acids liberates very toxic gas. Irritating to eyes and skin.

Environmental hazards : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause adverse effects in the aquatic environment due to changes in pH.

Physical/chemical hazards : Reacts violently with acids.

Remarks : This very toxic gas is hydrogen cyanide (HCN / hydrocyanic acid).

4. First-aid measures

Remarks : Specific first aid and treatment are necessary. The needed resources and their instructions for use must be present. Do not apply mouth-to-mouth resuscitation. Upon exposure always get medical aid as soon as possible. Immediately call for assistance ("buddy"). If the patient is unconscious or has stopped breathing and has no pulse (in all probability cyanide poisoning), then have immediately administered antidote by a trained first aid assistant or physician. Keep the patient under medical observation (for about 24 hours). Also in these later stages, symptoms of CN poisoning may occur. Let the victim rest in half upright position and administer oxygen (preferably 100%).

Effects and symptoms

Inhalation : Inhalation causes headaches, dizziness, drowsiness, nausea and may lead to unconsciousness. Severe over-exposure can result in death.

Ingestion : Exposure can cause nausea, headache and vomiting. Exposure to high levels may cause unconsciousness. Severe over-exposure can result in death. Irritating to mouth, throat and stomach.

Skin contact : Exposure can cause nausea, headache and vomiting. Exposure to high levels may cause unconsciousness. Causes skin irritation. Prolonged or repeated contact with skin or mucous membrane may result in irritation symptoms such as redness, blistering, dermatitis, etc.

Eye contact : Irritating to eyes. (redness and pain).

First-aid measures

General : Get medical attention immediately. Protection of first-aiders: Put on appropriate personal protective equipment (see section 8). Move exposed person to fresh air. Do not apply mouth-to-mouth resuscitation. Remove contaminated clothing and shoes.

Inhalation : If inhaled, remove to fresh air. Prevent cooling of the person. Keep victim at rest in half-upright position. If not breathing, give artificial respiration. Do not apply mouth-to-mouth resuscitation. Get medical attention immediately.

Ingestion : If swallowed, rinse mouth with water (only if the person is conscious). Seek immediate medical attention.

Skin contact : Take off immediately all contaminated clothing. Rinse with plenty of running water. Get medical attention immediately.

Eye contact : Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

First aid facilities : Ensure that eyewash stations and safety showers are close to the workstation location.

5. Fire-fighting measures

Extinguishing media

Small fire

Suitable : Alkaline powder quenching agent.
Not suitable : Carbon dioxide. Foam. Acidic quenching agents.

Large fire

Suitable : Alkaline powder quenching agent.
Not suitable : Carbon dioxide. Foam. Acidic quenching agents.

Unusual fire/explosion hazards	: No specific hazard.
Hazardous thermal decomposition products	: In case of fire, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, nitrogen oxides (NO, NO ₂), ammonia (NH ₃), amines, sodium oxide. In case of fire: Hydrogen cyanide (HCN)
Special fire-fighting procedures	: Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Protection of fire-fighters	: Wear suitable protective clothing. Self-contained breathing apparatus.
Remarks	: Use water spray to keep fire-exposed containers cool.

6. Accidental release measures

Personal precautions	: Avoid contact with eyes, skin and clothing. Self-contained breathing apparatus. Use suitable protective equipment (section 8). Consult expert immediately.
Environmental precautions	: Prevent entry into sewers, basements or confined areas. Dyke if necessary. In case of contamination of aquatic environment, inform local authorities.
Clean-up Methods	
Small spill and leak	: Take up with suitable material. Place in a suitable container. Clean up affected area with a large amount of water. Keep away from incompatible materials and avoid specific conditions (See section 10).
Large spill and leak	: Prevent entry into sewers, basements or confined areas. Dyke if necessary. Neutralize the residue with a suitable diluted agent. Absorb with an inert material and place in an appropriate waste disposal container. Recycle, if possible. Avoid release to the environment. This material and its container must be disposed of as hazardous waste.
Remarks	: Immediately call for assistance ("buddy"). Evacuate surrounding areas. Approach the release from upwind. Neutralize the residue with a suitable diluted agent. = Water

Note: see section 8 for personal protective equipment and section 13 for waste disposal.

7. Handling and storage

Handling	: Use in closed systems. Avoid contact with eyes, skin and clothing. Keep away from acids. Do not allow to enter drains or watercourses.
Storage	: Keep away from incompatibles such as flammable substances, oxidizing substances and corrosive substances. Keep away from incompatibles such as acids. Keep container tightly closed. Handle and open container with care. Use appropriate containment to avoid environmental contamination.
Storage temperature	: Do not store above 40 °C.
Remarks	: Do not work alone when handling cyanides.
Packaging materials	
Suitable	: Stainless steel . Carbon steel : Beware of cyanide stress corrosion cracking.
Not suitable	: Aluminium. Copper, zinc.

Note: See section 10 for stability and reactivity

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Europe	
Sodium cyanide	ACGIH TLV (United States, 1/2006). Skin Notes: 1994-1995 Adoption CEIL: 5 mg/m ³ Form: All forms
sodium hydroxide	ACGIH TLV (United States, 1/2006). CEIL: 2 mg/m ³ Form: All forms
Sweden	
Sodium cyanide	AFS (Sweden, 6/2005). Skin Notes: As CN TGV: 5 mg/m ³ Form: Total Fraction
sodium hydroxide	AFS (Sweden, 6/2005). TGV: 2 mg/m ³ Form: Inhalable fraction NGV: 1 mg/m ³ 8 hour(s). Form: Inhalable fraction
France	
Sodium cyanide	INRS (France, 2/2005). Skin Notes: As CN orientative exposure limits VME: 5 mg/m ³ 8 hour(s). Form: All Forms
sodium hydroxide	INRS (France, 2/2005). Notes: orientative exposure limits VME: 2 mg/m ³ 8 hour(s). Form: All Forms
Netherlands	
Sodium cyanide	Nationale MAC-lijst (Netherlands, 3/2005). Skin Notes: Administrative TGG: 1.8 mg/m ³ 8 hour(s). Form: All forms TGG 15 min: 18 mg/m ³ 15 minute/minutes. Form: All forms
Germany	

Sodium cyanide	TRGS900 MAK (Germany, 8/2004). Skin Spitzenbegrenzung: 20 mg/m ³ 15 minute/minutes. Form: Inhalable fraction TWA: 5 mg/m ³ 8 hour(s). Form: Inhalable fraction MAK-Werte Liste (Germany, 7/2005). Skin Spitzenbegrenzung: 3.8 mg/m ³ 4 times per shift, 15 minute/minutes. Form: All forms TWA: 3.8 mg/m ³ 8 hour(s). Form: All forms
sodium hydroxide	TRGS900 MAK (Germany, 8/2004). Spitzenbegrenzung: 2 mg/m ³ Form: Inhalable fraction TWA: 2 mg/m ³ 8 hour(s). Form: Inhalable fraction
United Kingdom (UK)	
Sodium cyanide	EH40-WEL (United Kingdom (UK), 1/2005). Skin TWA: 5 mg/m ³ 8 hour(s). Form: All forms
sodium hydroxide	EH40-WEL (United Kingdom (UK), 1/2005). STEL: 2 mg/m ³ 15 minute/minutes. Form: All forms
Austria	
Sodium cyanide	BMW_A_MAK (Austria, 4/2004). Skin Notes: Measured as CN STEL: 20 mg/m ³ 4 times per shift, 15 minute/minutes. Form: Inhalable fraction TWA: 5 mg/m ³ 4 times per shift, 15 minute/minutes. Form: Inhalable fraction
sodium hydroxide	BMW_A_MAK (Austria, 4/2004). Spitzenbegrenzung: 4 mg/m ³ 8 times per shift, 5 minute/minutes. Form: Inhalable fraction TWA: 2 mg/m ³ 8 times per shift, 5 minute/minutes. Form: Inhalable fraction
Switzerland	
Sodium cyanide	SUVA (Switzerland, 2/2005). Skin Notes: not temporary Kurzzeitgrenzwerte: 3.8 mg/m ³ 15 minute/minutes. Form: inhalable dust MAK: 3.8 mg/m ³ 8 hour(s). Form: inhalable dust
sodium hydroxide	SUVA (Switzerland, 2/2005). Notes: not temporary Kurzzeitgrenzwerte: 2 mg/m ³ 15 minute/minutes. Form: inhalable dust MAK: 2 mg/m ³ 8 hour(s). Form: inhalable dust
Belgium	
Sodium cyanide	Lijst Grenswaarden / Valeurs Limites (Belgium, 12/2002). Skin CEIL: 5 mg/m ³ Form: All forms
sodium hydroxide	Lijst Grenswaarden / Valeurs Limites (Belgium, 12/2002). CEIL: 2 mg/m ³ Form: All forms
Spain	
Sodium cyanide	INSHT (Spain, 1/2005). Skin VLA-EC: 5 mg/m ³ 15 minute/minutes. Form: All forms
sodium hydroxide	INSHT (Spain, 1/2005). VLA-EC: 2 mg/m ³ 15 minute/minutes. Form: All forms

Engineering measures : Use only with adequate ventilation.

Hygiene measures : When using do not eat, drink or smoke. Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Personal protective equipment - Production scale

Respiratory system : Self-contained breathing apparatus. (airhood, air fed respirator).

Skin and body : Chemical-resistant protective suit.

Eyes : Full-face mask

Hands : Wear suitable gloves.

Recommended material (s) : 4-8 hours (breakthrough time): butyl rubber - PVC - nitrile rubber - neoprene

Personal protective equipment - Laboratory scale

Respiratory system : Handle the material in a fume hood/cupboard or under local exhaust ventilation.

Skin and body : Lab coat.

Eyes : Safety glasses with side shields.

Hands : Wear suitable gloves.

Recommended material (s) : 4-8 hours (breakthrough time): butyl rubber - PVC - nitrile rubber - neoprene

Advice on personal protection is applicable for high exposure levels. Select proper personal protection based on a risk assessment of the actual exposure situation.

9. Physical and chemical properties

Physical state	: Liquid.
Colour	: Colourless.
Odour	: Almond-like.
pH	: 11.8 to 12.1 (Concentration 30%)
Boiling point	: 112 °C
Melting point	: 0 °C
Flash point	: Not applicable.
Lower explosion limit	: Not applicable.
Upper explosion limit	: Not applicable.

Vapour pressure at 20°C	: 2.3 kPa
Density (g/cm ³)	: 1.16 g/cm ³ (20°C)
Solubility	: Easily soluble in cold water Soluble in methanol
Vapour/gas density	: 0.93 (Air = 1)
Remarks	: Vapours may form explosive mixtures with air.

10. Stability and reactivity

Stability	: Stable under recommended storage and handling conditions (see section 7). In case of incorrect use: Contact with acids liberates very toxic gas. Reactive material.
Conditions to avoid	: No special recommendations.
Materials to avoid	: Reactive with metals and acids. Air . Exothermic reaction with: oxidising agents .
Hazardous decomposition products	: Hydrogen cyanide (HCN)
Remarks	: Depending on temperature and time of storage ammonia (NH ₃) can be released (hydrolysis).

11. Toxicological information

Acute toxicity

Ingredient name	Test	Species	Route	Result
Sodium cyanide, solution 30%	LD ₅₀	Rat	Oral	25 mg/kg
	LD ₅₀	Human/30 min	Dermal	10 mg/kg
Sodium cyanide	LD ₅₀	Rat	Oral	4.7 mg/kg
	LD ₅₀	Domestic Animals.	Oral	4 mg/kg
	LD ₅₀	wild bird species	Oral	4 mg/kg
	LD ₅₀	Rabbit	Dermal	300 mg/kg
	LD _{Lo}	woman	Oral	40 mg/kg
	LD _{Lo}	child	Oral	100 mg/kg
sodium hydroxide	LD _{Lo}	Rabbit	Oral	500 mg/kg
	LD _{Lo}	human	Oral	1.57 mg/kg

Irritation : Hazardous in case of skin contact (irritant), of eye contact (irritant).

Chronic toxicity

Mutagenic effects : Non-mutagenic for bacteria and/or yeast. [Sodium hydroxide].

Note: See section 4 for effects and symptoms

12. Ecological information

Ecotoxicity data

Ingredient name	Test	Period	Result
Sodium cyanide, solution 30%	Fish (LC ₅₀)	96 hour(s)	0.1 mg/l
	Daphnia (EC ₅₀)	48 hour(s)	0.1 mg/l
Sodium cyanide	Oncorhynchus mykiss (LC ₅₀)	96 hour(s)	0.0463 mg/l
	Oncorhynchus mykiss (LC ₅₀)	96 hour(s)	0.0521 mg/l
	Oncorhynchus mykiss (LC ₅₀)	96 hour(s)	0.0541 mg/l
	Oncorhynchus mykiss (LC ₅₀)	96 hour(s)	0.0572 mg/l
	Oncorhynchus mykiss (LC ₅₀)	96 hour(s)	0.0621 mg/l
	Oncorhynchus mykiss (LC ₅₀)	96 hour(s)	0.0748 mg/l
sodium hydroxide	Fish (LC ₅₀)	96 hour(s)	33 to 189 mg/l
	Daphnia (EC ₅₀)	48 hour(s)	40 mg/l

Ingredient name	LogP _{ow}	Bio-concentration factor	Bioaccumulative potential
Sodium cyanide, solution 30%	0.6	-	low





Mobility : For data on physical state, solubility and vapour pressure see section 9.

13. Disposal considerations

Methods of disposal (waste of residues; contaminated packaging) : Waste must be disposed of in accordance with national and local environmental regulations.

14. Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
ADR/RID Class	UN3414	SODIUM CYANIDE SOLUTION	6.1	I		Hazard identification number 66 Limited quantity LQ0 CEFIC Tremcard 61GT4-I-Cy
ADNR Class	UN3414	SODIUM CYANIDE SOLUTION	6.1	I		-
IMDG Class	UN3414	SODIUM CYANIDE SOLUTION. Marine pollutant (sodium cyanide)	6.1	I		Emergency schedules (EmS) F-A, S-A Marine pollutant Marine pollutant (P)
IATA Class	UN3414	Sodium cyanide solution	6.1	I		Quantity limitation - Passenger aircraft 1 L Quantity limitation - Cargo aircraft 30 L

PG* : Packing group

15. Regulatory information

EU regulations

Hazard symbol/symbols



Very toxic, Dangerous for the environment.

Risk phrases

: R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed.
 R36/38- Irritating to eyes and skin.
 R32- Contact with acids liberates very toxic gas.
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases

: S7- Keep container tightly closed.
 S27/28- After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.
 S29- Do not empty into drains.
 S37- Wear suitable gloves.
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S60- This material and its container must be disposed of as hazardous waste.
 S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

Contains

: Sodium cyanide 205-599-4

16. Other information

Remarks

: This very toxic gas is hydrogen cyanide (HCN / hydrocyanic acid). Do not work alone when handling cyanides.

Full text of R phrases referred to in sections 2 and 3 - Europe

: R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed.
 R35- Causes severe burns.
 R36/38- Irritating to eyes and skin.
 R32- Contact with acids liberates very toxic gas.
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications referred to in sections 2 and 3 - Europe

: T+ - Very toxic
 C - Corrosive
 Xi - Irritant
 N - Dangerous for the environment.

Internal code

: WW12204

History

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- Training advice** : Handling of this substance or preparation is restricted to skilled personnel only.
- Sources of key data** : Literature data and/or investigation reports are available at the compiler of this safety data sheet.
- Alterations compared to the previous version** : Alterations compared to the previous version are marked with a little (blue) triangle.