SAFETY DATA SHEETS according to (EC) 1907/2006 and (EU) 830/2015

Potassium cyanide

Date of issue: Revision date: Replaces issue of: Page:

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1.1	Product identifier						
	Name:	Potassium Cyanide					
	Identification number:	Index number 006-007-00-5 CAS number: 151-50-8					
	Registration number:	01-2119486407-29-0002					
1.2	Relevant identified uses of the sul	bstance or mixture and uses advised against					
	Intended use:	Synthesis of Chemical and Pharmaceutical Intermediates					
		Formulation of Chemical Products					
		Recycling of Precious Metals					
		Electroplating					
		Metal Hardening					
	Not recommended use:	Production of weapons and narcotics Fertilizers					
		Fishing Germicide					
		Pest control Consumer use					
1.3	This list is only informative and therefore not exhaustive. Details of the supplier of the safety data sheet						
1.5	Manufacturer:	Lučební závody Draslovka a.s. Kolín					
	Registered office:	Havlíčkova 605, 280 02 Kolín, Česká republika					
	Company ID:	46 35 73 51					
	Telephone:	+420 321 335 265, +420 321 335 249					
	•						
	Competent person responsible:	monika.stankova@draslovka.cz					
1.4	Emergency telephone number						
	National Poison Information Service						
	National Poison information Service						
	+44-8454647						
	A TOTOTOTO						
	Toxikologické informační středisko, Na Bojišti 1, Praha						
	(continuously) +420-224919293						
	+420-224915402						
	Information for Health Risks - acute	e poisoning people and animals					
	The toxicological center is different according to the country of use.						

SEC	TION 2: Hazards identification					
	Classification of the substance:	The substance is classified as dangerous according to Regulation EC No 1272/2008.				
	Dangerous health effects:		skin or if inhaled. Causes damage to onged or repeated exposure; oral, dermal,			
	Dangerous environmental effects:	Very toxic to aquatic life with long	lasting effects			
2.1	Classification of the substance or mixture					
	Classification according to (EC) 1272/2008:	Codes for hazard classes and categories Hazard statement Codes	Met. Corr. 1, H290 Acute Tox. 1, H300 + H310 + H330 STOT RE 1, H372 Aquatic Chronic 1, H400 Aquatic Acute 1, H410			
	Specific concentration limits (SCL) and M-factor	SCL: not stated	M-factor: 10			
2.2	Label elements					
	Name: Potassium cyanide	CAS number: 151-50-8				

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Hazard pictogram(s):					
Signal word:	DANGER	-			
Hazard statement(s):	H290 H300 + H310 + H330 H372	May be corrosive to metals. Fatal if swallowed, in contact with skin or if inhaled. Causes damage to organs (thyroid gland) through prolonged			
	H410	or repeated exposure; oral, dermal, inhalation. Very toxic to aquatic life with long lasting effects.			
Precautionary statement(s):	P273 P280	Avoid release to the environment. Wear protective nitrile gloves, protective clothing and eye protection.			
	P301 + P310 P303 + P361 + P353	IF SWALLOWED: Immediately call a doctor. IF ON SKIN (or hair): Take off immediately all			
	P304 + P340	contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing.			
	P403 + P233	Store in a well-ventilated place. Keep container tightly closed.			
Additional labelling information:	EUH 032	Contact with acids liberates very toxic gas (hydrogen cyanide)			
Other hazards					
Substance is not classified as PBT of SVHC.	r vPvB; on the da	te of SDS creation the substance is not on the Candidate list o			

3.1	Substances								
	The major component identifier:	Name.	Potassium Cyanide	Content:	min 99 % wg				
		Identification number:	Index number	CAS number	C&L inventory number				
			006-007-00-5	151-50-8	not yet				
	The chemical identity of impurities conducive to at classification	Name	Potassium Carbonate	Content:	max 0.9 % wg				
		Identification number	Index number	CAS number	C&L inventory number				
			N/A	584-08-7	not yet				
		Name	Potassium Hydroxide	Content:	max <u>0.4</u> % wg				
		Identification number	Index number	CAS number	C&L inventory number				
			019-002-00-8	1310-58-3	not yet				

4.1	Description of first aid measures			
	Inhalation:	Remove exposed person to fresh air. If not breathing ensure airway is clear and commence cardiopulmonary resuscitation (CPR). Avoid mouth to mouth contact and use eg. mouth to mask ventilation with one way valve, sacs for artificial lung ventilation, etc. to exhaust victim's exhaled air away from rescuer. Commence administration of oxygen as soon as possible. Administration of oxygen should be maintained until transfer to the care of a paramedic or doctor. Obtain medical help immediately!		
	Skin contact:	Immediately remove contaminated clothing. Wash contaminated skin with large quantities of (preferably lukewarm) water. If poisoning symptoms appear, follow the above instructions for inhalation exposure. Obtain medical help immediately!		
	Eye contact:	Immediately flush eyes with large quantities of water for 10-15 minutes. While flushing, keep eyelids open even by using force. Obtain medical help immediately!		

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	Ingestion:	Obtain medical help immediately! Ingestion of even small amounts is likely to be fatal			
		unless treated rapidly.			
4.2	Most important symptoms and effects, both acute and delayed				
	Inhalation:	Weakness, difficult breathing, headache, dizziness, cherry-red skin; during prolonged inhalation for 30 minutes nausea, vomiting, palpitations			
	Skin contact:	Nausea, anxiety, vomiting, cherry-red skin			
	Eye contact:	Redness and burning eyes, nausea, anxiety, vomiting, cherry-red skin			
	Ingestion:	Weakness, difficult breathing, headache, dizziness, cherry-red skin			
4.3	Indication of any immediate medical attention and special treatment needed				
	Speed is essential! Obtain medical help immediately!				
	Protect yourself and any casualty from further exposure during providing first aid (can be affected also the protective clothing). Wear specified PPE until test confirms no further risk from exposure.				
	- Antidote (Not all antiguidance.) Administrat				
	- Resuscitator (bag var -Oxygen	- Resuscitator (bag valve mask) -Oxygen			

5.1	Extinguishing media				
	Suitable extinguishing	Non-combustible substance, fire- fighting measures are necessary to adapt according to			
	media	conditions around. Powder, dry extinguishing agent, minimum water content.			
	Unsuitable extinguishing Direct water stream, foam, carbon dioxide because of the possibility of toxic hydrogen				
	media:	cyanide release.			
5.2	Special hazards arising from the substance or mixture				
	During heating or in the case of fire there is possibility of toxic gases formation, mainly hydrogen cyanide (HCN).				
	During contact with water leads to the release of hydrogen cyanide (HCN).				
5.3	Advice for firefighters				
	Protective chemical wear	Protective chemical wear (EN 340, EN 464, EN 465, EN 466, EN 943) and self-contained breathing apparatus (EN			
	137).				

SEC	TION 6: Accidental release measures
6.1	Personal precautions, protective equipment and emergency procedures In case of accident it is necessary to wear a face mask with a B2 filter to ensure protection against HCN or equivalent (only in case of self-preservation); higher content requires the use of a self-contained breathing apparatus (EN 137) and protective chemical wear (EN 340, EN 464, EN 465, EN 466, EN 943).
6.2	Environmental precautions Do not rinse the spilled product with water. Prevent further leakage. Restrict the area. Prevent penetration of the substance into soil, water, sewerage. In case the substance gets into waterway or reservoir, inform consumers, cease their operation and use of water. Inform the competent local authorities.
6.3	Methods and material for containment and cleaning up Remove the spilt dust (granules, tablets) mechanically with caution; remove it along with the contaminated soil and hand it over to authorized person to dispose.
6.4	Reference to other sections PPE see Section 8

7.1	Precautions for safe handling
	Ensure good exhaustion of the dust. Make sure that the workplace is ventilated and exhausted properly. Open the packaging units carefully and handle them with care.
7.2	Conditions for safe storage, including any incompatibilities
	To be stored separately in original sealed packaging units in dry, cool, locked storerooms. The storage area must be
	free of acids and substances entering in acidic reactions, as they carry the risk of releasing strongly toxic hydrogen cyanide.
7.3	Specific end use(s)
	See Exposure Scenario

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Control parameters *) according to national legislation of target country							
	CAS	Eight hours mg		ort-term mg/m ³	Note		
	151-50-8	*)		*)			
Occupational exposure	limit values acco	ording to Directi	ves 39/200	0/EC and 15/2006	/EC		
	CAS	Eight hours mg		ort-term mg/m ³ STEL	Note		
potassium cyanide	151-50-8						
DNEL 4.03 mg/kg bw/day(acute dermal) 12.5 mg/m³ (acute inhalation) 0.114 mg/kg bw/day(chronic dermal) 0.94 mg/m³ (chronic inhalation)							
PNEC			arine water termittent r (P) liment dw(s ediment dw				
Exposure controls							
Workplace should be equipped with a face mask (EN 136) with type B2 filter or equivalent (e.g. combined filter A2B2E2K2P3) (EN 14 387 + A1).							
Personal protective equipment:							
Respiratory protection:		sk (EN 149 + A					
Eye protection:		r goggles (EN 1					
Hand protection:	Rubber glove		Material	Tir	ne of Penetration		
	(e.g. KCL 732)	0.4 mm	nitrile		> 480 min		
		be training in combination with specific activity training (e.g. procedure and disposal) for tasks where dermal protection is necessary.					
Skin protection: Protective work clothes (EN 13688), protective boots (ISO 20 346).							

Information on basic physical and chemical properties					
Appearance		solid			
Odour:		Waiver			
Odour threshold:		Waiver			
pH (at 20°C):		Waiver			
Melting point/freezing point (°C):		634.5			
Initial boiling point and boiling range (°C):		Waiver			
Flash point (°C):		Waiver			
Evaporation rate:		Waiver			
Flammability (solid, gas):		non flammable			
Flammability: or explosive limits	upper (% vol.): lower (% vol.):	non explosive			
Vapour pressure:		Waiver			
Vapour density:		Waiver			
Relative density:		1.56 at 20°C			
Solubility:		400 g/L at 20 °C			
Partition coefficient n-octanol/water:		Log Kow (Pow): -0.25 at 20 °C			
Auto-ignition temperature:		Waiver			
Decomposition temperature:		Waiver			
Viscosity:		Waiver			

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	Explosive properties:	Non explosive
	Oxidising properties:	No
9.2	Other information	P. Committee of the Com
	none	

SEC	TION 10: Stability and reactivity
10.1	Reactivity
	Reaction with acids releases toxic hydrogen cyanide
10.2	Chemical stability
	In a dry clean environment protected from air humidity.
10.3	Possibility of hazardous reactions
	In contact with water and acids releases hydrogen cyanide, which creates explosive mixture with air.
10.4	Conditions to avoid
	Acids. Its reactions with acids produce highly toxic hydrogen cyanide. It is extremely hygroscopic. In contact with
	water, it hydrolyzes to produce hydrogen cyanide.
10.5	Incompatible materials
	Acids and water.
10.6	Hazardous decomposition products
	Hydrogen cyanide – highly toxic gas

Info	information on toxicological effects					
a)	Acute toxicity					
	LD50 (oral, rat): 6.8 mg/kg bw					
	LD50 (dermal, rabbit): 6.6 mg/kg bw (wet skin; for dry skin 130 mg/kg bw)					
	LC50 (inhalation, 4 hrs, estimate for human): 103 mg/m³ air					
b)	Skin corrosion/irritation					
	Due to high acute toxicity tests for skin irritation are not relevant.					
c)	Serious eye damage/irritation					
	Due to high acute toxicity tests for eye irritation are not relevant.					
d)	Respiratory or skin sensitisation					
	Due to high acute toxicity tests for respiratory or skin sensitisation are not relevant.					
e)	Germ cell mutagenicity					
	Based on available data, the classification criteria are not met.					
f)	Carcinogenicity					
	Based on available data, the classification criteria are not met.					
	There is insufficient evidence from chronic and subchronic animal studies, and from genetic testing and					
	human surveys, to support classification of cyanide salts as carcinogens					
g)	Reproductive toxicity					
	Based on available data, the classification criteria are not met.					
	The results of reproductive toxicity studies indicate that cyanide compounds are not teratogens or					
I.	reproductive toxicants					
h)	Specific target organ toxicity (STOT)— single exposure Read or explicitly data the electification criteria are not met.					
*)	Based on available data, the classification criteria are not met.					
i)	Specific target organ toxicity (STOT)— repeated exposure route: oral: NOAEL: 1.02 mg/kg bw/day Target organs: glandular: thyroids					
	route: inhalation: NOAEC: 3.75 mg/m³ Target organs: glandular: thyroids					

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SECTION 12: Ecological information

12.1 Toxicity

Fish

Data from multiple short-term fish toxicity studies were reviewed by ECETOC Task Force, including LC50 values from fifteen freshwater fish species and four marine fish species. A more conservative analysis was provided by a species sensitivity distribution of six freshwater species and one marine species, restricted to short-term studies with flow-through conditions and the lowest LC50 per species. From this SSD, an HC5 of 26 μ g CN⁻/l was determined, which corresponded well with the lowest LC50 of 27 μ g CN⁻/l. The HC5 was assumed to apply to both freshwater and marine species, with respect to evidence that marine species are not more sensitive than freshwater species

Algae

The EC50/LC50 values in freshwater and saltwater algae were reviewed by the ECETOC Task Force. Data from a small range of static studies providing EC50 values from three freshwater algae, one marine alga and one macrophyte was reviewed by the ECETOC Task Force, from studies lasting from 24 h to 32 d in duration. None of the studies were confirmed to have complied with GLP guidelines. The lowest freshwater EC50 was from a 24 h study of a Chlorococcales species (45 μ g CN⁻/l).; the lowest saltwater EC50 was reported from Nitzschia closterium (57 μ g CN⁻/l).

Daphnia

The lowest reliable LC50 for *Daphnia* was 39.8 µg CN⁻/l. This value was in the range of the 48-hour LC50 value at 20 °C for *Daphnia pulex* reported by Cairns of 110 µg CN⁻/l, and is very close to the acute LC50/EC50 for all aquatic organisms of 50 µg/l derived by ECETOC.

An HC5 for free cyanide of 15 μ g CN⁻/l was derived from an SSD representing 21 freshwater and marine crustacea; the SSD included two LC50/EC50 values of 1 μ g CN⁻/l and 3 μ g CN⁻/l reported in *Daphnia pulex* at a water temperature of 25 °C. The mean LC50 from two short-term studies of the marine crab *Cancer irroratus* was 5 μ g CN⁻/l. The LC50/EC50 value for all other species was above 30 μ g CN⁻/l; the results reported for *Cancer irroratus* do not appear to be indicative of cyanide sensitivity to marine invertebrates in general. Thus, the acute LC50/EC50 for all aquatic organisms is protective of most of the saltwater invertebrate species

Bacteria

The ECETOC Task Force identified a mean EC50 from an international ring test conducted by Strotmann and Pagga from 17 laboratories assaying growth inhibition in activated sludge; the mean EC50 was 4.9 mg CN⁻/l. This value was similar to a 30-minute EC50 reported from an activated sludgee respiration inhibition assay, conducted in accordance with the guideline (proposed ISO growth inhibition assay as described in Annex I to Strotmann and Pagga, 1996), of 2.3 mg CN⁻/l (Strotmann, 1992).

The NOEC was the lowest from range of toxicity tests to bacteria and cyanobacteria, protozoa and fungi as reviewed by the ECETOC Task Force. The lowest NOEC was 0.007 mg CN⁻/l.

- 12.2 Persistence and degradability
 - Hydrolysis half-life: 6.8 d at 30 °C
- 12.3 Bioaccumulative potential

BCF: 3.162

12.4 Mobility in soil

Data not available

12.5 Results of PBT and vPvB assessment

According to CSR substance does not fulfill criteria as PBT nor vPvB.

12.6 Other adverse effects

Data not available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

a) Possible hazards in disposing of the substance and contaminated packaging Disposing of KCN:

Solid residue is handed over to authorised person for thermal liquidation.

Waste catalogue code 060311* - solid salts and solutions containing cyanides

Liquid residue and rinse water alkalized with calcium hydroxide or sodium (potassium) hydroxide to pH 8 to 10 with an admixture of iron sulfate/iron sulfate heptahydrate (ten times the detected content of CN⁻) are transformed to ferrocyanide ([Fe(CN)6]4-) and are filtrated. The pasty mixture is then mixed with coal or another absorbing agent and together with filter material it is handed over to authorised person for professional liquidation

Waste catalogue code 150202* - absorbents contaminated by dangerous substances meant for thermal

Not necessary.

Not transported.

14.7

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liquidation. It is possible to dispose of liquid residue absorbed into soil using solution of potassium permanganate, sodium hypochlorite or hydrogen peroxide or it is handed over to authorized person for professional liquidation.

Waste catalogue code 170505* - dredging spoil containing dangerous substances Disposing of contaminated packaging:

PE bags and plastic package inserts to be handed over to authorised person for thermal liquidation Waste catalogue code 150110 - packaging containing residues of or contaminated by dangerous substances

Metal packaging contaminated by cyanide must be rinsed properly and the water containing cyanide is then reclaimed as described above. Cleaned metal packagings are handed over to an authorised person for

In case of surface or ground water contamination, immediately inform local fire unit and environmental authorities.

- Physical/chemical properties that may affect waste treatment See above
- Avoiding waste disposal through sewerage Avoid release of contaminated water to sewerage

	d) Special precautions for any recommended waste treatment								
	See above								
SEC	ΓΙΟΝ 14: Transport	information							
14.1									
	1680								
14.2	4.2 UN proper shipping name								
	ADR POTASSIUM CYANIDE, SOLID								
	RID	POTASSIUM CYANIDE							
	IMDG:	POTASSIUM CYANIDE, SOLID							
	ICAO/IATA:								
14.3	Transport hazard class(s)								
	ADR	RID	IMDG:	ICAO/IATA:					
	6.1	6.1	6.1	6.1					
	Classification								
	ADR	RID							
	T5	T5							
14.4	Packing group								
	ADR	RID	IMDG:	ICAO/IATA:					
	I	I	I	I					
	Hazard Identification	n No. (Kemler)							
	ADR	1101 (12011101)							
	66								
	Labels								
	ADR	RID	IMDG:	ICAO/IATA:					
	(a)			8					
		1							
	Note								
	ADR	RID	IMDG:	ICAO/IATA:					
			EmS: F-A, S-A	PAO: 666 CAO: 673					
14.5	Environmental hazar	rds							
	ADR, RID, ICAO / IATA: Yes, substance hazardous to environment IMDG Code: Yes, marine pollutant								
14.6	Special precautions for user								
	NT.4								

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

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SECTION 15: Regulatory information

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

Regulation EC 1907/2006 (REACH) as amended

Regulation EC 1272/2008 (CLP) as amended

Directive 2008/98 / EC on waste, as amended

and valid national legislation

15.2 Chemical safety assessment

CSR

SECTION 16: Other information

a) The changes in case of a revised safety data sheet

Changes are marked by underlining and highliting.

Changes in the MSDS are made to release fourth amendment to the Regulation of the European Parliament and Council Regulation (EC) no. 1272 / 2008- Regulation no. 830/2015, which amends and clarifies the criteria for classification and labelling.

Classification according to 67/548 / EEC was removed.

PNEC values have been changed according to CSR.

b) A key or legend to abbreviations and acronyms

Met.Corr. 1 Corrosive to metals
Acute Tox. 1 Acute toxicity

STOT RE 1 Specific target organ toxicity – repeated exposure

Aquatic Acute 1 Toxic to aquatic life

Aquatic Chronic 1 Toxic to aquatic life, with long-lasting effects

DNEL Derived no effect level

PNEC Predicted no effect concentration

EN European norm

ISO International Organization for Standardization

CAS Chemical Abstract Service

REACH European Community Regulation on chemicals and their safe use (EC 1907/2006)

STP Wastewater treatment plant

LD50 Lethal dose killing 50 % of tested population

LC50 Lethal concentration killing 50 % of tested population EC50 Effective concentration for 50 % of tested population HC5 Dangerous concentration for 5% of tested population

NOAEL No observable adverse effect level

NOAEC No observable adverse effect concentration

LOEL Lowest observed effect level

NOEC Non-observed measured concentration
PBT Persistent bioaccumulative toxic chemical

vPvB Very persistent and very bioaccumulative chemical

BCF Bioconcentration factor
GLP Good laboratory practice

ADR European agreement concerning the international carriage of dangerous goods by road

RID International rule for transport of dangerous goods by railway IMDG International rule for transport of dangerous goods by sea

ICAO/IATA Rules for transport by air

c) Key literature references and sources for data

	See Section 15.1					
d)	List of relevant	statements and/or precautionary statements				
	H290	May be corrosive to metals				
	H300 + H310 + H330	Fatal if swallowed, in contact with skin or if inhaled.				
	H372	Causes damage to organs (thyroid gland) through prolonged or repeated exposure; oral, dermal, inhalation.				
	H400	Very toxic to aquatic life				
	H410	Very toxic to aquatic life with long lasting effects				
	EUH 032	Contact with acids liberates very toxic gas (hydrogen cyanide).				

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P273	Avoid release to the environment.			
P280	Wear protective nitrile gloves, protective clothing and eye protection.			
P301+P310	IF SWALLOWED: Immediately call a doctor.			
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.			
P303+P361+	IF ON CVIN (on heir). Take officered in the little of the			
P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.			
P403+P233	Store in a well-ventilated place. Keep container tightly closed			

e) Training appropriate for workers

SDS and training for manipulation with dangerous and flammable substances.

f) More information

The substance is a subject of harmonised classification according to Annex VI Regulation 1272/2008/ES.

Disclaimer

The information stated in this SDS is given in good faith and considered correct but it is not presented as completely exhaustive and can be used as a lead only. Information in this document is based on the contemporary state of our knowledge and concern the product with regard to relevant safety regulations. It does not represent a guarantee of the product qualities. Lučební závody Draslovka a.s. Kolín does not bear responsibility for any damage resulting from handling or coming into contact with the above mentioned product.