ICoNiChem Widnes Ltd
Moss Bank Road
Widnes, Cheshire
WA8 0RU, UK

Cobalt Dinitrate Solution

SAFETY DATA SHEET

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name	Cobalt Dinitrate.
Chemical Name	Cobalt Dinitrate Solution
Chemical Formula	$Co(NO_3)_2$
Trade name	Grades TG4 sol, TG5 sol, TG6 sol, TG8 sol, TG9 sol GTL sol, GTL1 sol, CTG1 sol
CAS No.	10141-05-6 (Anhydrous)
UFI	J1S1-M082-A004-UXGP
REACH Registration No.	01-2119542530-49-0005 Registered as anhydrous form CAS No. 10141-05-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified use(s)	See Section: 7.3
Uses advised against	None known.

1.3 Details of the supplier of the safety data sheet

Company Identification	ICoNiChem Widnes Ltd Moss Bank Road Widnes, Cheshire WA8 0RU United Kingdom.
Telephone	+44 (0) 151 424 9156
Fax	+44 (0) 151 495 1446
E-Mail (competent person)	reach@iconichem.com.

1.4 Emergency telephone number

Emergency Phone No.	+44 (0) 151 424 9156 112 (European general emergency number in the UK will connect to 999)

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

As per profile 1 proposed by CoRC

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Acute Tox. 4 H302: Harmful if swallowed.
Eye Dam. 1 H318: Causes serious eye damage.
Resp. Sens. 1B H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens. 1A H317: May cause an allergic skin reaction.
Repr. 1B H360Fd: May damage fertility. Suspected of causing damage to the unborn child.
Muta. 2 H341: Suspected of causing genetic defects.
Carc. 1B H350i: May cause cancer by inhalation.
Aquatic Acute 1 H400: Very toxic to aquatic life.
Aquatic Chronic 1 H410: Very toxic to aquatic life with long lasting effects.
M-factor = 10

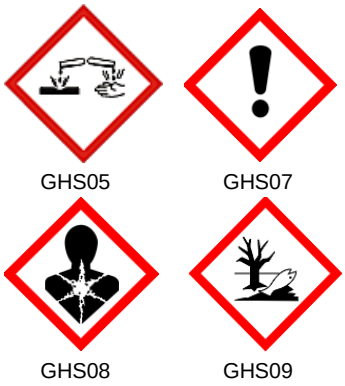
2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product Name: Cobalt Dinitrate.

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Hazard pictogram(s)	 GHS05 GHS07 GHS08 GHS09
Signal word(s)	Danger.
Hazard statement(s)	H302: Harmful if swallowed. H318: Causes serious eye damage. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H317: May cause an allergic skin reaction. H360Fd: May damage fertility. Suspected of causing damage to the unborn child. H341: Suspected of causing genetic defects. H350i: May cause cancer by inhalation. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection. P308 + P313: If exposed or concerned: Get medical advice/attention.

2.3 Other hazards

The PBT and vPvB criteria of Annex XIII of the REACH regulation does not apply to inorganic substances.

Endocrine disrupting properties: EU regulations (EU) 2017/2100 & (EU) 2018/605 - Not identified

2.4 Additional Information

None.

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3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Hazard Classifications noted are those of the anhydrous form of Cobalt Dinitrate

EC Classification No. 1272/2008

Hazardous ingredient(s)	%W/W	CAS No.	REACH Registration No.	Hazard classification
Cobalt Dinitrate	40.1-45	10141-05-6	01-2119542530-49-0005	Ox. Sol. 2 H272.Acute Tox. 4; H302, H332: Eye Dam. 1A H318: , Resp. Sens. 1B H334 Skin Sens. 1A H317, Repr. 1B H360Fd, Muta. 2 H341.Carc. 1B H350i, Aquatic Acute 1; H400, Aquatic Chronic 1; H410
Ammonium Nitrate	0-4.7	6484-52-2	None assigned	Ox. Sol. 3; H272, Eye Irrit. 2; H319

Specific Concentration Limit: Carc. 1B; H350i: C ≥ 0.01%

For more information on M-factors and Acute Toxicity estimates, please refer to sections 11 and 12

4. SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Inhalation — IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

Skin Contact — IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.

Eye Contact — 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.

Ingestion — IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed — Inhalation: Sore throat, Cough, Causes shortness of breath. Skin/Eye Contact: Redness, Pain. Ingestion: Abdominal pain, Nausea, Vomiting.

4.3 Indication of any immediate medical attention and special treatment needed — If exposed or concerned: Get medical advice/attention.

5. SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media — As appropriate for surrounding fire. Foam, water spray or fog.

Unsuitable Extinguishing Media — None known.

5.2 Special hazards arising from the substance or mixture — May decompose in a fire, giving off toxic and irritant vapours. Oxides of nitrogen

5.3 Advice for fire-fighters — Fire fighters should wear complete protective clothing

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including self-contained breathing apparatus. Chemical protection suit. Water spray should be used to cool containers. Dike fire control water for later disposal. Do not allow to enter drains, sewers or watercourses.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Ensure adequate ventilation. Do not breathe vapour. Avoid contact with skin and eyes. Ensure full personal protection (including respiratory protection) during removal of spillages.
6.2	**Environmental precautions**	Avoid release to the environment. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.
6.3	**Methods and material for containment and cleaning up**	Absorb spillages onto sand, earth or any suitable absorbent material. Collect spillage. Transfer to a lidded container for disposal or recovery. Do NOT absorb in saw-dust or other combustible absorbents.
6.4	**Reference to other sections**	See Also Section 7, 8.

7. SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide sufficient ventilation. Avoid all contact. Wear protective gloves/protective clothing/eye protection/face protection. See Section: 8. Contaminated work clothing should not be allowed out of the workplace. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.
7.2	**Conditions for safe storage, including any incompatibilities**	Store locked up.
	Storage Temperature	Ambient.
	Storage Life	Stable under normal conditions.
	Incompatible materials	Reducing agent,
7.3	**Specific end use(s)**	• F-1: Formulation of metal surface treatment pre-formulations • F-2: Formulation for water treatment chemicals, oxygen scavengers, corrosion inhibitors • F-3: Formulation of mixtures for use in biogas production • IW-1: Manufacture of cobalt carboxylates and resinates (intermediate use) • IW-2: Manufacture of chemicals and other wet chemical processes as intermediate • IW-3: Industrial use of RM as intermediate for the production of another substance in catalyst or catalyst precursor manufacture • IW-4: Passivation processes in surface treatment • IW-5: Passivation processes in surface treatment at large industrial sites with continuous processes • IW-6: Plating processes in surface treatment • IW-7: Use of water treatment chemicals, oxygen scavengers, corrosion inhibitors • IW-8: Battery production (intermediate use)

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- IW-9: Use in biogas production
- IW-10: Use in fermentation processes, in biotech and scientific research and standard analysis
- For PW and SL users see extended scenario section.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following information refers to pure: Cobalt Dinitrate (anhydrous)

8.1 Control parameters

8.1.1 Occupational exposure limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Cobalt and Cobalt compounds (as Co)		-	0.1	-	-	Carc, Sen (UK EH40)

8.1.2 Biological limit value Not established.

8.1.3 PNECs and DNELs

DNEL	Oral	Inhalation	Dermal
Industry - Long Term – Local effects	-	124.2 µg/m³	-
Industry - Long Term - Systemic effects	-	-	-
Consumer - Long Term - Local effects	-	19.6 µg/m³	-
Consumer - Long Term - Systemic effects	93 µg/kg bw/day	-	-

	PNEC
Aquatic Compartment - Fresh water	1.06 µg Co/L
Marine Compartment	2.36 µg Co/L
Aquatic Compartment – sediment, Fresh water	53.8 mg Co/kg sediment dry wt
Marine Compartment - sediment	69.8 mg Co/kg sediment dry wt
Terrestrial Compartment	10.9 mg Co/kg Soil dry wt
Sewage Treatment Plant - microorganisms	0.37 mg Co/L
Atmospheric Compartment	-

8.2 Exposure controls

8.2.1 Appropriate engineering controls Provide adequate ventilation, including appropriate local extraction. A washing facility/water for eye and skin cleaning purposes should be present.

8.2.2 Personal protection equipment

Eye/face protection: Wear protective eyewear (goggles, face shield, or safety glasses).

Skin protection (Hand protection/Other): Wear protective gloves. Contaminated work clothing should not be allowed out of the workplace.

Respiratory protection: Wear respiratory protection. A suitable dust mask or dust respirator with filter type P may be appropriate.

Thermal hazards: Not applicable.

8.2.3 Environmental Exposure Controls Avoid release to the environment.

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9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

The information in this section refers to cobalt Dinitrate (anhydrous) unless otherwise stated

Appearance	Liquid (solution.)
Colour	Red. (solution.)
Odour	Odourless.
Odour Threshold	Not established
pH	2 – 5 pH (solution.)
Melting Point/Freezing Point	0 – 6 °C (solution.)
Initial boiling point and boiling range	115 – 120 °C (solution.)
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Non-flammable.
Vapour pressure	Not applicable.
Vapour density	Not applicable.
Relative density	1.40 – 1.50 (solution.)
Solubility(ies)	Soluble in water.(solution.)
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition Temperature	Not applicable.
Viscosity	Not applicable.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising (solution)

10. SECTION 10: STABILITY AND REACTIVITY

10.1	**Reactivity**	Stable under normal conditions.
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	Stable under normal conditions.
10.4	**Conditions to avoid**	None
10.5	**Incompatible materials**	Reducing agent.
10.6	**Hazardous Decomposition Product(s)**	May decompose in a fire, giving off toxic and irritant vapours. Oxides of nitrogen

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on the hazard classes defined in Regulation (EC) No 1272/2008

11.1.1 Substances

Acute toxicity

Ingestion	Harmful if swallowed. LD50(rat) = 691 mg/kg Main Symptoms: Abdominal pain, Nausea, Vomiting.
Inhalation	Low acute toxicity. Main Symptoms: Cough, Nausea, Increased difficulty in breathing.
Skin Contact	Low acute toxicity. LD50(Dermal) >2000mg/kg Main Symptoms: Redness, Pain.
Eye Contact	Low acute toxicity. Main Symptoms: Redness, Pain.
Skin corrosion/irritation	Not classified. OECD 404; GLP (Non-irritant)
Serious eye damage/irritation	Eye Dam. 1; H318: Causes serious eye damage.
Respiratory or skin sensitization	Resp. Sens. 1B; May cause allergy or asthma symptoms or breathing difficulties if inhaled. Skin Sens. 1; May cause an allergic skin reaction.

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	Germ cell mutagenicity	Muta. 2; Suspected of causing genetic defects.
	Carcinogenicity	Carc. 1B; May cause cancer by inhalation.
	Reproductive toxicity	Repr. 1B; May damage fertility. Suspected of damaging the unborn child.
	STOT - single exposure	Conclusive but not sufficient for classification.
	STOT - repeated exposure	Conclusive but not sufficient for classification.
	Aspiration hazard	Conclusive but not sufficient for classification.
11.2	**Other information**	None.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1	**Toxicity**	Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects. By analogy with similar materials: Cobalt Dichloride. Fish: LC50 = 0.8 mg Co/L (Fresh water) Aquatic invertebrates: LC50 = 0.61 mg Co/L (Fresh water); 2.32 mg Co/L (Sea water) Algae: EC50 = 310.4 µg Co/L (Fresh water); 24.1 µg Co/L (Sea water) Aquatic macrophyte: EC50 = 52.0 µg Co/L EC10 Fish = 350 µg Co/L (Fresh water) EC10 Aquatic invertebrates: = 7.55 µg Co/L (Fresh water); 206 µg Co/L (Sea water) EC10 Algae = 76.4 µg Co/L (Fresh water); 1.23 µg Co/L (Sea water) Self classification: Aquatic Acute 1: H400 Very toxic to aquatic life. M-factor (Acute): 1 Aquatic Chronic 2: H411: Toxic to aquatic life with long lasting effects.
12.2	**Persistence and degradability**	The methods for determining the biological degradability are not applicable to inorganic substances.
12.3	**Bioaccumulative potential**	The substance has no potential for bioaccumulation. Cobalt: Aquatic plants: BCF >100 – 5000 Aquatic invertebrates: BCF <515 Fresh water, Fish: BCF/ BAF <10 Marine fish: BCF/ BAF <10
12.4	**Mobility in soil**	The substance is soluble in water. The substance is predicted to have high mobility in soil.
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Endocrine disrupting properties**	Not applicable
12.7	**Other adverse effects**	None anticipated.

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

13.1.1	**Type**	**Hydro-metallurgical sludge and iron filter cakes.**
	Waste code	01 03 07*, 11 02 07*
	Method	• Internal or external landfilling. • Recycling in process.

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13.1.2	**Type**	**Sludge from on-site WWTP.**
	Waste code	06 05 02*
	Method	• Internal or external landfilling. • Incineration. • Recycling internally or externally.
13.1.3	**Type**	**Packaging materials.**
	Waste code	15 01 10*
	Method	• Landfilling. • Incineration. • Recycling internally or externally.
13.1.4	**Type**	**Metal dusts and scraps.**
	Waste code	10 08 04, 10 10 11*, 12 01 03, 12 01 04
	Method	• Recycling internally or externally.
13.1.5	**Type**	**Out of specification products: Waste water, Spent catalysts, Solvents, Contaminated materials, Battery casings.**
	Waste code	06 03 13*, 06 03 15*, 06 04 05*, 10 10 03, 10 10 05*, 10 10 07*, 16 06 05, 16 08 02*, 16 08 03
	Method	• Redistillation. • Reuse in process. • Storage. • Landfilling. • Incineration. • Recycling.
13.1.6	**Type**	**Scraps, Cuttings, Dusts, Solvents, Solutions, Sludges, Contaminated materials, Off-specification batches, Spent catalysts.**
	Waste code	02 01 10*, 10 10 10, 12 01 03*, 15 01 04*, 1601 04*, 16 01 06*, 16 01 18*, 16 06 02*, 16 08 02* 16 08 03, 17 04 07*, 17 04 09*, 17 09 04*, 19 10 02*, 19 12 03*
	Method	• To be disposed of as hazardous waste.
13.1.7	**Type**	**Solid municipal waste: Paper/Card-board, Metal, Glass, Plastics, Textile, Organic matter, Other.**
	Waste code	20 01 34, 20 01 40, 20 03 01, 20 03 07
	Method	• Municipal waste landfill. • Municipal waste incineration. • Recycling.
13.2	**Additional Information**	Disposal should be in accordance with local, state or national legislation.

14. SECTION 14: TRANSPORT INFORMATION

14.1 Land transport (ADR/RID)

UN number	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Cobalt Nitrate)
Transport hazard class(es)	9

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	Packing Group	III
	Hazard label(s)	9
	Classification code	M6
	Special Provisions	274 335 375 601
	Hazard Identification Number	90
	ADR Transport Category	3
	Tunnel Restriction Code	none
	Veh. For tank	AT
	Limited and Excepted Quantities	Limited quantity: 5L Excepted quantity: E1
	Packaging	Instructions: P001 IBC03 LP01 R001 Special Provisions: PP1 Mixed provisions: MP19
	UN Portable Tank	Instructions: T4 Special Provisions: TP1 TP29
	ADR Tank	Tank Code: LGBV
	Special Provisions for Carriage	Packaging: V12 Loading: CV13
14.8.1	Hazard label(s) (ADR Number System)	5.1
14.8.2	Marks	EHS/MP
14.8.3	IMDG EMS	F-A, S-Q
14.8.4	ADR Tunnel Restriction Code	(-)

15. SECTION 15: REGULATORY INFORMATION

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

15.1.1 EU regulations

Authorisations and/or restrictions on use	
Candidate List of Substances of Very High Concern for Authorisation	Listed: Cobalt Dinitrate (10141-05-6)
REACH: ANNEX XIV List of substances subject to authorisation	Not listed.
REACH: Annex XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	Listed: Toxicity for reproduction: Category 1B (10141-05-6)
Community Rolling Action Plan (CoRAP)	Not listed.
Regulation (EU) N° 2019/1021 of the European Parliament and of the Council on persistent organic pollutants	Not listed
Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer	Not listed
Regulation (EU) N° 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals	Not listed

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15.1.2	**National regulations**	
	Wassergefährdungsklasse (Germany)	Cobalt Dinitrate: WGK 3 (Highly hazardous to water)
15.2	**Chemical Safety Assessment**	Available

16. SECTION 16: OTHER INFORMATION

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose.
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Extended Safety Data sheet available on request.

Revision

11.4	Section 1	UFI added
11.3	Section 1.1	Addition of TG9 sol Specification
	Section 3	Cobalt Nitrate w/w % corrected
11.2	Section 1.1	Addition of GTL1 sol specification
11.1	Section 1.1	Addition of TG8 sol specification
11	Section 2.3	Endocrine disrupting stated as not identified
	Section 3.1	SCL stated and directing user to section 11 and 12 for further information
	Section 8.1.3	Aquatic compartment PNEC changed
	Section 11	Toxicological information updated
	Section 12	Ecological information updated
	Section 15	EU regulations added