according to the Globally Harmonized System



# **Cobalt Oxide Solid Formulation**

Versi 2.0	ion	Revision Date: 28.09.2024		S Number: )93975-00005	Date of last issue: 22.11.2023 Date of first issue: 23.11.2022				
1. PF	1. PRODUCT AND COMPANY IDENTIFICATION								
	Produc	t name	:	Cobalt Oxide So	lid Formulation				
Other means of identification		:	Coopers Permatrace 3 Year Cobalt Pellets for Sheep (47611) Coopers Permatrace Cobalt Pellets for Cattle (47638)						
	Manuf	acturer or supplier's c	deta	ils					
	Company		:	MSD					
Address		:	Briahnager - Off Pune Nagar Road Wagholi - Pune - India 412 207						
	Telephone		:	+1-908-740-4000					
	Emerg	ency telephone number	r:	+1-908-423-6000	0				
	E-mail	address	:	EHSDATASTEW	/ARD@msd.com				
	Recon	nmended use of the cl	hem	ical and restriction	ons on use				
		mended use tions on use	:	Veterinary produ Not applicable	ct				

### 2. HAZARDS IDENTIFICATION

#### Manufacture, Storage and Import of Hazardous Chemicals Rules 1989

#### Classification

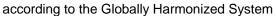
Not classified as hazardous according to criteria laid down in Part I of Schedule-1.

## **GHS Classification**

Respiratory sensitisation	:	Category 1
Short-term (acute) aquatic hazard	:	Category 2
Long-term (chronic) aquatic hazard	:	Category 2
GHS label elements Hazard pictograms	:	
Signal word	:	Danger

Hazard statements

: H334 May cause allergy or asthma symptoms or breathing





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		difficulties if inh H411 Toxic to a	aled. iquatic life with long lasting effects.
Preca	autionary statements	P260 Do not br P271 Use only P273 Avoid rele P280 Wear pro	tainer tightly closed. eathe dust. outdoors or with adequate ventilation. ease to the environment. tective gloves/ protective clothing. piratory protection.
		keep comfortab P342 + P316 If	FINHALED: Remove person to fresh air and le for breathing. experiencing respiratory symptoms: Get emer- nelp immediately. village.
		<b>Storage:</b> P403 Store in a	well-ventilated place.
		<b>Disposal:</b> P501 Dispose o disposal plant.	of contents/ container to an approved waste

#### Other hazards which do not result in classification

Dust contact with the eyes can lead to mechanical irritation. Contact with dust can cause mechanical irritation or drying of the skin. May form explosive dust-air mixture during processing, handling or other means.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixtur	е
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## Components

Chemical name	CAS-No.	Concentration (% w/w)
Tricobalt tetraoxide	1308-06-1	>= 30 - < 50

#### 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical ad- vice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
In case of skin contact	:	Wash with water and soap. Get medical attention if symptoms occur.
In case of eye contact	:	If in eyes, rinse well with water. Get medical attention if irritation develops and persists.
If swallowed	:	If swallowed, DO NOT induce vomiting.



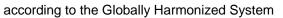
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Most important symptoms and effects, both acute and delayed		:	Get medical attention if symptoms occur. Rinse mouth thoroughly with water. May cause allergy or asthma symptoms or breathing difficu- ties if inhaled. Excessive exposure may aggravate preexisting asthma an other respiratory disorders (e.g. emphysema, bronchitis, re- tive airways dysfunction syndrome). Contact with dust can cause mechanical irritation or drying the skin.						
Protection of first-aiders Notes to physician			:	Dust contact with the eyes can lead to mechanical irritation. First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8). Treat symptomatically and supportively.					
5. F	IREFIGI	HTING MEASURES							
Suitable extinguishing media		:	Water spray Alcohol-resistant t Carbon dioxide (C Dry chemical						
	Unsuita media	able extinguishing	:	None known.					
	Specific hazards during fire- fighting		:	Exposure to combustion products may be a hazard to he					
	Hazardous combustion prod- ucts		:	Metal oxides					
	Specific ods	c extinguishing meth-	:	cumstances and t Use water spray t	measures that are appropriate to local cir- he surrounding environment. o cool unopened containers. ged containers from fire area if it is safe to do				
	Special for firef	l protective equipment ighters	:	In the event of fire Use personal prot	e, wear self-contained breathing apparatus. ective equipment.				

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protec- :	Use personal protective equipment.
tive equipment and emer-	Follow safe handling advice (see section 7) and personal pro-
gency procedures	tective equipment recommendations (see section 8).
Environmental precautions :	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.





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	ods and materials for inment and cleaning up	C / S S / N I E E E E E E E E E E E E E E E E E E E	over the area to m Add excess liquid Soak up with inert Avoid dispersal of with compressed a Dust deposits sho es, as these may f eased into the atr Clean up remainin bent. Local or national r bosal of this mate employed in the cl mine which regula Sections 13 and 1	a absorbents and place a damp covering inimise entry of the material into the air. to allow the material to enter into solution. absorbent material. dust in the air (i.e., clearing dust surfaces air). uld not be allowed to accumulate on surfac- form an explosive mixture if they are re- nosphere in sufficient concentration. In g materials from spill with suitable absor- egulations may apply to releases and dis- rial, as well as those materials and items eanup of releases. You will need to deter- tions are applicable. 5 of this SDS provide information regarding tional requirements.
7. HANDL	ING AND STORAGE			
Local	nical measures	E L L L L L L L L L L L L L L L L L L L	causing an explos Provide adequate and bonding, or in Jse only with ade Avoid breathing du Do not breathe du Do not breathe du Do not swallow. Avoid contact with Avoid prolonged of Handle in accorda bractice, based or sessment Keep container tig Already sensitised to asthma, allergie should consult the ory irritants or ser Minimize dust gen Keep container clo Keep away from h	precautions, such as electrical grounding ert atmospheres. quate ventilation. ust, fume, gas, mist, vapours or spray. st. eyes. r repeated contact with skin. nce with good industrial hygiene and safety the results of the workplace exposure as- htly closed. I individuals, and those susceptible es, chronic or recurrent respiratory disease, ir physician regarding working with respira-
	litions for safe storage	:     	Keep in properly la Keep tightly close Store in accordance	ce with the particular national regulations.
Mater	rials to avoid		Do not store with t Strong oxidizing a	he following product types: gents



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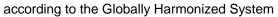
### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
Tricobalt tetraoxide	1308-06-1	TWA (Inhal- able particu- late matter)	0.02 mg/m3 (Cobalt)	ACGIH

### Biological occupational exposure limits

Biological occupational	-			-	_	-
Components	CAS-No.	Control parameters	Biological specimen	Sam- pling time	Permissible concentra- tion	Basis
Tricobalt tetraoxide	1308-06-1	Cobalt (Cobalt)	Urine	End of shift at end of work- week	15 μg/l	ACGIH BEI
Engineering measures	are the fro sta All de pro Es	ntainment tech required to co compound to m a closed sys tionary contair engineering co sign and opera tect products, sentially no op e closed proce	ontrol at sour uncontrolled stem, packou her, ventilated ontrols should ted in accord workers, and en handling	ce and to p areas (e.g t head with d enclosure d be impler dance with d the enviro permitted.	orevent migrati ., vacuum con i inflatable sea e, etc.). nented by faci GMP principle onment.	on of veying I from lity s to
Personal protective equ	ipment					
Respiratory protection Filter type Hand protection	sui orr	dequate local e assessment mended guide rticulates type	demonstrate	es exposure	es outside the	
Material	: Ch	emical-resistar	nt gloves			
Remarks Eye protection Skin and body protection	: We lf ti mis We po ae : Wo Ad be	nsider double ear safety glass ne work enviro sts or aerosols ear a faceshield ential for direc rosols. ork uniform or l ditional body g ng performed	ses with side nment or act , wear the ap d or other full t contact to t aboratory co arments sho (e.g., sleevel	ivity involve propriate g l face prote he face wit at. uld be used ets, apron,	es dusty condi joggles. ction if there is h dusts, mists, d based upon	s a or the task
	Us	ts) to avoid exp e appropriate o ntaminated clo	degowning te		o remove pote	entially





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Hygie	ne measures	flushing systems place. When using do r Wash contamina The effective op engineering con appropriate dego	nemical is likely during typical use, provide eye is and safety showers close to the working not eat, drink or smoke. ated clothing before re-use. eration of a facility should include review of trols, proper personal protective equipment, owning and decontamination procedures, ie monitoring, medical surveillance and the ative controls.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	pellets
Colour	:	black
Odour	:	No data available
Odour Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	May form explosive dust-air mixture during processing, han- dling or other means.
Flammability (liquids)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	Not applicable
Relative vapour density	:	Not applicable
Relative density	:	No data available
Density	:	No data available
Solubility(ies) Water solubility	:	No data available
Partition coefficient: n-	:	Not applicable

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	tanol/water ito-ignition temperature	:	No data available	9	
De	composition temperature	:	No data available	9	
Vis	scosity Viscosity, kinematic	:	Not applicable		
Ex	plosive properties	:	Not explosive		
O	dizing properties	:	The substance o	r mixture is not classified as oxidizing.	
Мо	blecular weight	:	No data available	9	
	rticle characteristics rticle size	:	No data available		
10. ST/	ABILITY AND REACTIVITY	,			
Ch	eactivity nemical stability ossibility of hazardous reac- ns	:	Stable under nor May form explos dling or other me	ive dust-air mixture during processing, han-	
lno Ha	Conditions to avoid Incompatible materials Hazardous decomposition products		<ul> <li>Heat, flames and sparks. Avoid dust formation.</li> <li>Oxidizing agents</li> <li>No hazardous decomposition products are known.</li> </ul>		
11. TO	XICOLOGICAL INFORMAT		l		
	Information on likely routes of exposure		Inhalation Skin contact Ingestion Eye contact		
	<b>sute toxicity</b> ot classified based on availa	blei	information.		
<u>Cc</u>	omponents:				
	icobalt tetraoxide: ute oral toxicity	:	LD50 (Rat): > 5,0	00 mg/kg	
Ac	ute inhalation toxicity	:	LC50 (Rat): > 5.0 Exposure time: 4 Test atmosphere: Method: OECD T	h dust/mist	
Ac	ute dermal toxicity	:	LD50 (Rat): > 2,0 Method: OECD T		

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		F	Remarks: Based	on data from similar materials
Not cl	corrosion/irritation lassified based on ava conents:	ilable in	formation.	
	balt tetraoxide:			
Speci Metho			econstructed hu DECD Test Guid	man epidermis (RhE) eline 431
Speci Metho	es od		econstructed hu ECD Test Guid	man epidermis (RhE) eline 439
Resul	lt	: N	lo skin irritation	

#### Serious eye damage/eye irritation

Not classified based on available information.

#### **Components:**

#### Tricobalt tetraoxide:

Species Method Result	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	No eye irritation

#### Respiratory or skin sensitisation

#### Skin sensitisation

Not classified based on available information.

## Respiratory sensitisation

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

### Components:

## Tricobalt tetraoxide:

Test Type Exposure routes Species Method Result	:	Local lymph node assay (LLNA) Skin contact Mouse OECD Test Guideline 429 negative
Assessment Remarks		Probability or evidence of low to moderate respiratory sensiti- sation rate in humans Based on data from similar materials

#### Germ cell mutagenicity

Not classified based on available information.

#### Components:

#### Tricobalt tetraoxide:

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Geno	otoxicity in vivo	cytogenetic tes Species: Rat Application Ro	) Test Guideline 475
	<b>inogenicity</b> lassified based on ava	ilable information	
	oductive toxicity		
•	lassified based on ava	ilable information.	
Com	ponents:		
Trico	balt tetraoxide:		
Effect	ts on fertility	reproduction/d Species: Rat	nbined repeated dose toxicity study with the evelopmental toxicity screening test
			ute: Ingestion ) Test Guideline 422 /e

## STOT - single exposure

Not classified based on available information.

## STOT - repeated exposure

Not classified based on available information.

## Repeated dose toxicity

### Components:

#### Tricobalt tetraoxide:

: Rat
: 300 mg/kg
: Ingestion
: 90 Days
: OECD Test Guideline 408

### Aspiration toxicity

Not classified based on available information.

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### **12. ECOLOGICAL INFORMATION**

### Ecotoxicity

### Components:

Tricobalt tetraoxide:		
Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l Exposure time: 96 h Remarks: Based on transformation/dissolution testing and data from soluble metal compounds
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Ceriodaphnia dubia (water flea)): > 100 mg/l Exposure time: 48 h Remarks: Based on transformation/dissolution testing and data from soluble metal compounds
Toxicity to algae/aquatic plants	:	EC50 ( Champia parvula (marine algae)): > 1 - 10 mg/l Exposure time: 7 d Remarks: Based on transformation/dissolution testing and data from soluble metal compounds
		EC10 (Champia parvula (marine algae)): > 0.1 - 1 mg/l Exposure time: 7 d Remarks: Based on transformation/dissolution testing and data from soluble metal compounds
Toxicity to fish (Chronic tox- icity)	:	EC10: > 1 mg/l Exposure time: 34 d Species: Pimephales promelas (fathead minnow) Remarks: Based on transformation/dissolution testing and data from soluble metal compounds
Toxicity to daphnia and other aquatic invertebrates (Chron- ic toxicity)	:	EL10: > 0.1 - 1 mg/l Exposure time: 28 d Species: Hyalella azteca (Amphipod) Method: OECD Test Guideline 211 Remarks: Based on transformation/dissolution testing and data from soluble metal compounds

## Persistence and degradability

No data available

## **Bioaccumulative potential**

No data available

## Mobility in soil

No data available

## Other adverse effects

No data available

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#### 13. DISPOSAL CONSIDERATIONS

Waste from residues	:	Do not dispose of waste into sewer.
		Dispose of in accordance with local regulations.
Contaminated packaging	:	Empty containers should be taken to an approved waste han- dling site for recycling or disposal. If not otherwise specified: Dispose of as unused product.

## 14. TRANSPORT INFORMATION

### International Regulations

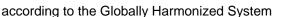
UNRTDG		
UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tricobalt tetraoxide)
Class	:	9
Packing group	:	
Labels	:	9
Environmentally hazardous	:	yes
IATA-DGR		
UN/ID No.	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Tricobalt tetraoxide)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	956
Packing instruction (passen- ger aircraft)	:	956
Environmentally hazardous	:	yes
IMDG-Code		
UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
		(Tricobalt tetraoxide)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

#### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

#### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data





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Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

#### **15. REGULATORY INFORMATION**

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

AICS	:	not determined
DSL	:	not determined
IECSC	:	not determined

#### **16. OTHER INFORMATION**

Revision Date	:	28.09.2024
Further information Sources of key data used to compile the Safety Data Sheet	:	Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen- cy, http://echa.europa.eu/

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format	:	dd.mm.yyyy					
Full text of other abbreviations							
ACGIH ACGIH BEI		USA. ACGIH Threshold Limit Values (TLV) ACGIH - Biological Exposure Indices (BEI)					
ACGIH / TWA	:	8-hour, time-weighted average					

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR -Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration: ICAO - International Civil Aviation Organization: IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New

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Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

IN / EN