COBALT CARBONATE
Safety Data Sheet- MSDS

Update version -IV-

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
COBALT(II) CARBONATE BASIC

OTHER NAMES

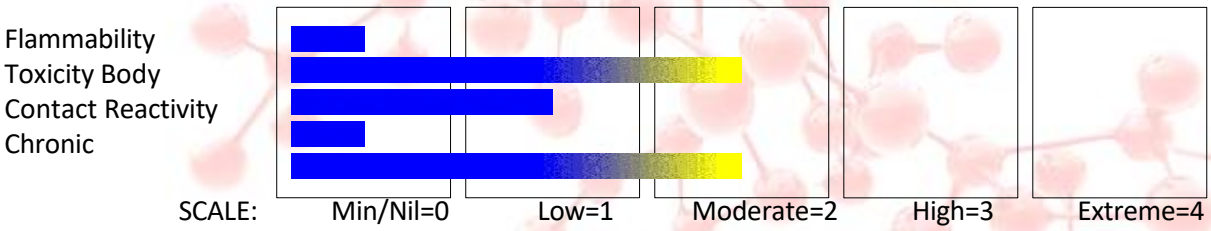
Co5(CO3)2(OH)6, C2-Co2-O6. Co3-H6-O6, "cobalt carbonate, "cobaltous carbonate basic", "cobalt carbonate hydroxide"

PRODUCT USE

The product of commerce. Used in the manufacture of cobaltous oxide, cobalt pigments, cobalt salts.

SUPPLIER
DRON Industries, Corporate Office – E -506 Siddhraz Z Square Plus Off Landmark Kundasan-382421 Gandhinagar - Gujarat -India Plant – 72, Kamala Amrut Industrial Estate Off Torrent Pharma Indrad-382715-Ta- Kadi Dis-Gujarat Indiawww.dronindustries.in , E-mail- contact @dronindustries.in

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification
Acute Toxicity (Inhalation) Category 4
Skin Sensitizer Category 1

EMERGENCY OVERVIEW HAZARD WARNING Determined by using GHS criteria: H332 H317 Harmful if inhaled May cause allergic skin reaction PRECAUTIONARY STATEMENTS Prevention Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated clothing should not be allowed out of the workplace.

Response
If skin irritation or rash occurs, seek medical advice/attention. Wash contaminated clothing before reuse. Call a POISON CENTER or doctor/physician if you feel unwell. Specific treatment: refer to Label or MSDS. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. IF ON SKIN: Gently wash with plenty of soap and water.

Disposal
Dispose of contents and container in accordance with relevant legislation

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
Cobalt (II) carbonate basic	12602-23-2	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor. If swallowed do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

EYE

If this product comes in contact with the eyes: Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. If pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.

INHALED

If dust is inhaled, remove from contaminated area. Encourage patient to blow nose to ensure clear passage of breathing. If irritation or discomfort persists seek medical attention. If fumes or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.

NOTES TO PHYSICIAN

Chronic exposures to cobalt and its compounds result in the so-called "hard metal pneumoconiosis" amongst industrial workers. The lesions consist of nodular conglomerate shadows in the lungs, together with peribranchial infiltration. The disease may be reversible. The acute form of the disease resembles a hypersensitivity reaction with malaise, cough and wheezing; the chronic form progresses to circumoral. Chronic therapeutic administration may cause goiter and reduced thyroid activity. An allergic dermatitis, usually confined to elbow flexures, the ankles and sides of the neck, has been described. Cobalt cardiomyopathy may be diagnosed early by changes in the final part of the ventricular ECG (repolarization). In the presence of such disturbances, the changes in carbohydrate metabolism (revealed by the glucose test) are of important diagnostic value. Treatment generally consists of a combination of Retabolil (1 injection per week over 4 weeks) and beta-blockers (average dose 60-80 mg Obsidian/24 hr). Potassium salts and diuretics have also proved useful. BIOLOGICAL EXPOSURE INDEX (BEI)

Determinant	Sampling time	Index	Comments
Cobalt in urine	End of shift at end of	15 ug/L	B
Cobalt in blood	End of shift at end of workweek	1 ug/L	B, SQ

B: Background levels occur in specimens collected from subjects NOT exposed SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves for fire only. Prevent, by any means available, spillage from entering drains or water courses. Use firefighting procedures suitable for surrounding area.DO NOT approach containers suspected to be hot. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

Noncombustible.

Not considered a significant fire risk, however containers may burn.

FIRE INCOMPATIBILITY

None known. MINOR SPILLS Clean up all spills immediately. Avoid contact with skin and eyes. Wear impervious gloves and safety glasses. Use dry clean up procedures and avoid generating dust. Sweep up or vacuum up (consider explosion-proof machines designed to be grounded during storage and use). Place spilled material in clean, dry, sealable, labelled container. MAJOR SPILLS Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Control personal contact by using protective equipment and dust respirator. Prevent spillage from entering drains, sewers or water courses. Avoid generating dust. Sweep, shovel up. Recover product wherever possible. Put residues in labelled plastic bags or other containers for disposal. If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment

Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

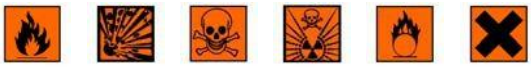
MINOR SPILLS

Clean up all spills immediately. Avoid contact with skin and eyes. Wear impervious gloves and safety glasses.
Use dry clean up procedures and avoid generating dust. Sweep up or vacuum up (consider explosion-proof machines designed to be grounded during storage and use). Place spilled material in clean, dry, sealable, labelled container.

MAJOR SPILLS

Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Control personal contact by using protective equipment and dust respirator. Prevent spillage from entering drains, sewers or water courses. Avoid generating dust. Sweep, shovel up. Recover product wherever possible. Put residues in labelled plastic bags or other containers for disposal. If contamination of drains or waterways occurs, advise emergency services

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



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+: May be stored together
O: May be stored together with specific preventions X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Limit all unnecessary personal contact. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. When handling DO NOT eat, drink or smoke. Always wash hands with soap and water after handling. Avoid physical damage to containers. Use good occupational work practice. Observe manufacturer's storing and handling recommendations.

SUITABLE CONTAINER
Packaging as recommended by manufacturer. Check that containers are clearly labelled. Glass container. Plastic container.

STORAGE INCOMPATIBILITY
Avoid reaction with oxidising agents, bases and strong reducing agents.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

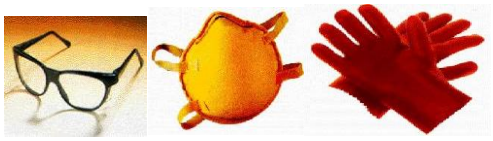
STORAGE REQUIREMENTS
Observe manufacturer's storing and handling recommendations. Store in original containers. Store in a cool, dry place. Store in a well-ventilated area. No smoking, naked lights, heat or ignition sources. Store away from incompatible materials. Store away from foodstuff containers. Keep containers securely sealed. Protect containers against physical damage. Check regularly for spills and leaks

EXPOSURE CONTROLS
The following materials had no OELs on our records
• Cobalt (II) carbonate basic: CAS:12602- 23- 2 CAS:62647- 83- 0 CAS:186361- 92- 2

MATERIAL DATA

Epidemiological studies do not support a link between cobalt and abnormal growths (neoplasms) in humans.
In view of the serious effects seen in experimental animals after a relatively short exposure period at 0.1 mg/m3 the recommended TLV-TWA is thought to reduce the significant risk of material impairment of health posed by respiratory disease and pulmonary sensitization which have been shown to occur at higher levels of exposure. The value does not apply generally to cobalt compounds. A significant increase in the risk of lung cancer was reported among workers involved in cobalt production (with concomitant exposure to nickel and arsenic) and hard-metal workers with documented exposure to cobalt -containing dusts. A significant increase in lung cancer risk was reported among workers involved in cobalt production (with concomitant exposure to nickel and arsenic) and hard-metal workers with documented exposure to cobalt-containing dusts. A significant increase in lung cancer risk has been observed in workers whose exposure began more than 20 years previously. A number of single cases of malignant tumors, mostly sarcomas, have been reported at the site, following implant of cobalt-containing orthopedic implants.

PERSONAL PROTECTION



EYE
Safety glasses. Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET Rubber gloves. PVC gloves. Impervious gloves. Safety footwear. Rubber boots.

OTHER No special equipment needed when handling small quantities. Otherwise: Overalls. Barrier cream. Eyewash unit.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25- 0.5 m/s (50- 100 f/min)
aerosols, fumes from pouring operations, f/min.) intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200
direct spray, spray painting in shallow booths, f/min) drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500
grinding, abrasive blasting, tumbling, high f/min.) speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favorable to currents capture	1: Disturbing room air
2: Contaminants of low toxicity or of nuisance toxicity value only	2: Contaminants of high
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore, the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE Red-violet crystals; do not mix with water (decomposed by hot water). Soluble in dilute acids and ammonia.

PHYSICAL PROPERTIES Solid. Does not mix with water.

Molecular Weight: 516.73
Melting Range (°C): Not available
Solubility in water (g/L): Immiscible
pH (1% solution): Not applicable
Volatile Component (%vol): Negligible
applicable Relative Vapor Density (air=1): Not applicable
applicable
Lower Explosive Limit (%): Not applicable
available Autoignition Temp (°C): Not available
available

Boiling Range (°C): Not available
Specific Gravity (water=1): Not available
pH (as supplied): Not applicable
Vapor Pressure (kPa): Negligible
Evaporation Rate: Not
Flash Point (°C): Not

Upper Explosive Limit (%): Not
Decomposition Temp (°C): Not

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials. Product is considered stable.Hazardous polymerisation will not occur

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS ACUTE
HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual. Animal test indicates an increase in red blood cells (polycythaemia) following the absorption of cobalt salts. [ICI] In toxic doses soluble cobalt salts act locally on the gastro-intestinal tract to produce pain and vomiting. Systemic effects in man include a peculiar vasodilation (flushing) of the face and ears, mild hypotension, rash, tinnitus (ringing in the ears) and nerve deafness. [GOSSELIN, SMITH HODGE: Clinical Toxicology of Commercial Products].

EYE

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn). The dust may produce eye discomfort causing transient smarting, blinking.

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

INHALED

The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation, of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Health hazards from welding fume containing cobalt are not well documented but there are well-known dangers associated with the processing of the substance by other techniques. Inhalation of the fume may result in shortness of breath, coughing and pneumonitis. Hypersensitivity, involving lung changes, occurs in a small number of workers exposed to the fume; the symptoms disappear after exposure ends. Obliterative bronchiolitis adenomatosis has been produced in guinea pigs receiving intratracheal injections of 10 mg cobalt dust. Intratracheal administration of 12.5 mg/kg caused lethargy and death in rats in 15 minutes to 6 hours.

CHRONIC HEALTH EFFECTS

There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitization reaction in a significant number of individuals, and/or of producing positive response in experimental animals.

Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts. Occupational asthma attributed to the inhalation of cobalt powder has been confirmed following bronchial challenge tests. Chest tightness and chronic bronchitis have been recorded in hard-metal workers exposed to cobalt. Chronic exposure to cobalt produces polycythaemia (increase in blood hemoglobin), increased production of cells of the bone marrow and thyroid gland, pericardial effusion and damage to the alpha cells of the pancreas. Chronic administration of cobaltous chloride has produced goiter, reduced thyroid activity and lowered synthesis rates and levels of cytochrome P-450, an enzymatic system responsible for chemical detoxification, in the liver. Animals also exhibit an increase in respiration, as well as tremor and convulsion. A toxic nephritis (kidney disease) may also develop. Epidemic cardiomyopathy (heart disease) among heavy beer drinkers in the 1960's in Canada, the USA and Belgium has been attributed to the addition of up to 1.5 ppm of cobalt as a foam restorative and stabilizer. Other factors are probably implicated as therapeutic doses of cobalt, up to 50 mg/day (in the treatment of refractory anemias) do not produce this effect. Inadequate protein or vitamin intake amongst heavy drinkers, or the effects of alcohol in rendering the heart more susceptible to disease may be important. Allergic dermatitis of an erythematous popular type may also occur following occupational exposures and may also have positive skin tests. Cobalt metal dust inhalations by miniature swine resulted in early marked decrease in lung compliance and increases in septal collagen. After a one-week "sensitizing period", followed by a 10-day lapse period, further exposures produced wheezing produced by hypersensitivity reactions. Single and repeated subcutaneous or intramuscular injection of cobalt powder and salts to rats may cause sarcoma at the injection site but evidence for carcinogenicity by any other route of exposure does not exist. A number of single cases of malignant tumors, mostly sarcomas, have been reported at the site of orthopedic implants containing cobalt.

TOXICITY AND IRRITATION

No significant acute toxicological data identified in literature search. Bacterial mutagen.

Section 12 – ECPLOGICAL INFORMATION

No data for Cobalt (II) carbonate basic.

Section 13 - DISPOSAL INFORMATION

Recycle wherever possible or consult manufacturer for recycling options. Consult State Land Waste Management Authority for disposal. Bury residue in an authorized landfill. Recycle containers if possible, or dispose of in an authorized landfill.

Section 14 - TRANSPORT INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

REGULATIONS

No regulations applicable No data available for cobalt (II) carbonate basic as CAS: 12602-23-2, CAS: 62647-83-0, CAS : 186361-92-2

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
Cobalt (II) carbonate basic	12602- 23- 2, 62647 - 83- 0, 186361- 92- 2

Update version -IV-