

CERAMIC COLOR & CHEMICAL MFG. CO.

412-846-4000

BLACK COBALT OXIDE 7:

**TYPICAL COMPOSITION %**

November 7, 1985

Co  
72.0

**HAZARDOUS INGREDIENTS**

Hazardous Ingredients	Calculated Composition %	C.A.S. No.	PEL <sup>1</sup> -mg/m <sup>3</sup>	TLV <sup>2</sup> -mg/m <sup>3</sup>
Cobalto-Cobaltic oxide (Co <sub>3</sub> O <sub>4</sub> )	> 95	1308-06-1	0.1 as Co	0.1 as Co <sup>1</sup>
Cobaltous oxide (CoO)	< 5	1307-96-1	0.1 as Co	0.1 as Co <sup>1</sup>
Nickel oxide (NiO)	0.9	1313-99-1	1 as Ni	1 as Ni

**PHYSICAL and CHEMICAL DATA**

Black, odorless powder of which 98% passes through a 350 mesh sieve.

Ingredient	Mol. wt.	Density g/cm <sup>3</sup>	m.p. °C	b.p. °C	Sol. in H <sub>2</sub> O g/100 ml	Magnetic properties
Co <sub>3</sub> O <sub>4</sub>	240.80	6.07	—	—	0	paramagnetic
CoO	74.93	6.45	1935	—	0	paramagnetic
NiO	74.71	6.67	1990	—	0	paramagnetic

**PHYSICAL HAZARDS**

None

**HEALTH HAZARDS<sup>1</sup>**

**Inhalation:** Some workers engaged long-term in the production of cobalt oxides showed symptoms of chronic bronchitis.

Inhalation experiments show that cobalto-cobaltic oxide accumulated in the lymph nodes of dogs suggesting it is tissue insoluble.

Excessive concentrations of airborne cobaltous oxide resulted in the development of emphysema and pneumoconiosis in hamsters.

The inhalation of cobaltous oxide and of nickel oxide, even at high concentrations, has not resulted in an increased incidence of malignant tumors in rodents.

The National Toxicology Program has listed nickel oxide as a possible cancer hazard. The International Agency for Research on Cancer concluded there was sufficient evidence that nickel refining was carcinogenic to humans and limited evidence that nickel and certain nickel compounds were carcinogenic to humans. IARC could not state with certainty which forms of nickel are human carcinogens but said "... metallic nickel seems less likely to be so than nickel subsulphide or nickel oxides."

The inhalation of nickel oxide impaired long-term lung clearance in rats and high concentrations produced pneumoconiosis in hamsters.

**Wounds:** Cobaltous oxide and nickel oxide have caused tumors at the site of injection in rats.

**Ingestion:** The oral toxicity of cobalto-cobaltic oxide and of cobaltous oxide are low. Their oral rat LD<sub>50</sub>s are Co<sub>3</sub>O<sub>4</sub> > 5000 mg/kg and CoO = 1700 mg Co/kg. Nickel oxide also has a low oral toxicity (oral rat LD<sub>50</sub> > 5000 mg/kg).

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## **PRECAUTIONS FOR SAFE STORAGE, HANDLING AND USE**

Do not inhale powder. Keep container closed when not in use. Ventilation is normally required when handling or using this product to keep exposure to airborne cobalto-cobaltic oxide below the PEL. If ventilation alone cannot so control exposure, use NIOSH-approved respirators selected according to OSHA 29 CFR 1910.134. Maintain airborne cobalto-cobaltic oxide levels as low as possible.

## **SPILL, LEAK AND DISPOSAL PROCEDURE**

Collect spills by wet sweeping or by vacuuming with the vacuum exhaust passing through a high efficiency particulate arresting (HEPA) filter if the exhaust is discharged into the workplace.

Wear appropriate NIOSH-approved respirators if collection and disposal of spills is likely to cause the concentration of airborne cobalto-cobaltic oxide to exceed the PEL.

Cobalt-containing waste is normally collected to recover cobalt values. Should waste disposal be deemed necessary follow EPA and local regulations.

## **EMERGENCY AND FIRST AID PROCEDURES**

Cleanse wounds thoroughly to remove any oxide particles.

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<sup>1</sup> OSHA Permissible Exposure Limit.

<sup>2</sup> Threshold Limit Value of the American Conference of Governmental Industrial Hygienists.

the ACGIH has been considering since 1976 whether to reduce the TLV for cobalt metal, dust and fume to 0.05 mg Co/m<sup>3</sup>.

<sup>4</sup> Describes possible health hazards of the oxide product supplied. If user operations change it to other chemical forms, whether as end products, intermediates or fugitive emissions, the possible health hazards of such forms must be determined by the user.