

Substance Safety Summary

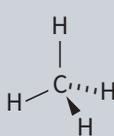
SUBSTANCE: Carbon Black

GENERAL STATEMENT

Carbon black (subtypes are acetylene black, channel black, furnace black, lamp black and thermal black) is a material produced by the incomplete combustion of heavy petroleum products such as FCC tar, coal tar, ethylene cracking tar, and a small amount from vegetable oil.

Carbon black is a form of paracrystalline carbon that has a high surface-area-to-volume ratio. It is dissimilar to soot in its much higher surface-area-to-volume ratio and significantly lower (negligible and non-bioavailable) PAH (polycyclic aromatic hydrocarbon) content. However, carbon black is widely used as a model compound for diesel soot for diesel oxidation experiments. Carbon black is mainly used as a reinforcing filler in tires and other rubber products. In plastics, paints, and inks carbon black is used as a color pigment.

CHEMICAL IDENTITY

CATEGORY	DETAIL
EC Number	215-609-9
CAS Number	1333-86-4
Name Subclass 1	Carbon Black
Structural Formula	

USES AND APPLICATIONS

Colored printing inks, non-impact printing, coatings, paints and lacquers, plastics, spinning fibers, specials applications; pigment, conductivity, reaction media, UV-filters. Carbon Black is by far the most important black pigment, and is the second most used in terms of volume of all pigments employed by the plastic industry, ranking behind only TiO₂.

PHYSICAL/CHEMICAL PROPERTIES

PROPERTY	DETAIL
Physical State	Solid
Form	Powder/ Beads
Color	Black
Odor	Odorless
Melting Point	3550°C
Boiling Point	500–600°C
Partition Coefficient: N-octanol/Water	Not Applicable
Bulk Density	1.7-1.8 g/cm ³ (20°C)
Water Solubility	Insoluble
Self-ignition Temperature	>284°F
Flammability	>45 s
Explosiveness	50 g/m ³

HEALTH EFFECTS

	HUMAN HEALTH SAFETY ASSESSMENT
Consumer	Overall, as a result of the detailed epidemiological investigations, no causative link between Carbon Black exposure and cancer risk in humans has been demonstrated.
Worker	Several epidemiological and clinical studies of workers in the Carbon Black production industries show no evidence of clinically significant adverse health effects due to occupational exposure to Carbon Black.

EFFECT ASSESSMENT	RESULTS
Acute Toxicity Oral Inhalation/Dermal	Acute toxicity is not expected. Dust may be irritating to respiratory track.
Irritant Effect on Skin & Eyes	May cause mechanical irritation as well as soiling, and skin drying.
Sensitization	No cases of sensitization in humans has been reported.
Toxicity after Repeated Exposure	
Genotoxicity/Mutagenicity	Carbon Black is not considered to be mutagenic.
Carcinogenicity	Carbon Black is listed as an IARC Group 2B substance.
Toxicity for Reproduction	

ENVIRONMENTAL EFFECTS

Based on its physical/ chemical properties (insolubility, no vapor pressure), Carbon Black released into the environment will be distributed mainly in soil or sediments. Elemental Carbon is widely distributed in nature and is an essential element in the components of all living organisms. Since Carbon Black is not soluble in water, it is not possible to carry out many standard ecotoxicity tests for this substance. However, tests using Carbon Black suspensions or filtrates indicate that it has low toxicity to aquatic and terrestrial organisms in the environment. Since Carbon Black is an inert solid, it does not have adverse biodegradability and is not bioaccumulative.

EFFECT ASSESSMENT	RESULT
Biodegradation	The methods for determining biodegradability are not applicable to inorganic substances.
Bioaccumulation Potential	Not expected due to physiochemical properties of the substance.
PBT/vPvB Conclusion	This substance does not fulfill the criteria for PBT or vPvB.

EXPOSURE

	HUMAN HEALTH SAFETY ASSESSMENT
Human Health	Carbon Black, when generally used as noted above is bound into a matrix. Thus, it has been concluded by IARC and other organizations that consumer exposures to Carbon Black is negligible.
Environment	In accordance with all local legislation and permit requirements.

RISK MANAGEMENT RECOMMENDATION

Risk is measured as a function of both hazard and exposure. If the hazard and/or exposure are low, the potential for risk is low. IARC's listing of carbon black as a Group 2B carcinogen is based on laboratory rat studies only; studies on carbon black production workers have not shown a link between carbon black exposure and cancer. Studies indicate that carbon black has low hazard for both humans and the environment. Carbon black exposure to workers is controlled through engineering controls and personal protective equipment. Consumer exposure to carbon black is negligible. Therefore, carbon black is considered to pose a low risk to humans and the environment.

SIGNAL WORD

No signal word.

CONCLUSION

The assessment has revealed that the substance is considered to be safe for the above described uses and applications.

COMPANY CONTACT INFORMATION

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