



SAFETY DATA SHEET

US OSHA Hazard Communication Standard (29 CFR 1910.1200) and Canada WHMIS 2015 which includes the amended Hazardous Products Act (HPA) and the Hazardous Products Regulation (HPR)

Issuing Date 10-Nov-2023

Revision Date 10-Nov-2023

Revision Number 1

1. Identification

Product identifier

Product Name Carbon Black (Oxidized)

Other means of identification

Synonyms BARONX Specialty Products

Recommended use of the chemical and restrictions on use

Recommended use Additive for plastic and rubber; Pigment for coatings, paints and lacquers; Special applications such as semi conductive compounds, UV filters, additive for batteries, refractories, etc.

Restrictions on use Not recommended for use as a human tattoo pigment
For professional use only

Details of the supplier of the safety data sheet

Supplier Address

Himadri Speciality Chemical Ltd.
321 Billerica Road, Suite 100
Chelmsford, MA 01824
+1 (978) 729-9771

E-mail carbonblack@himadri.com

Emergency telephone number

Emergency telephone CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

2. Hazard(s) identification

Classification

Combustible dust	Yes
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Label elements

Warning

Hazard statements

May form combustible dust concentrations in air.

Other information

Contact with dust can cause mechanical irritation or drying of the skin. Dust contact with the eyes can lead to mechanical irritation. Inhalation of dust in high concentration may cause irritation of respiratory system. Do not expose to temperatures above 400 °C.

3. Composition/information on ingredients**Substance**

Synonyms BARONX Specialty Products

Chemical name	CAS No.	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Carbon black	1333-86-4	100	-	-

4. First-aid measures**Description of first aid measures**

Inhalation	Remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if symptoms occur.
Skin contact	Wash skin with soap and water. If symptoms persist, call a physician.
Ingestion	Do NOT induce vomiting. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms	Irritating to the eyes and respiratory tract if exposed above the occupational exposure limits. See Section 11 for additional Toxicological Information.
Effects of Exposure	See Section 11 for additional Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	Foam, Dry chemical, Carbon dioxide (CO ₂), Fog. A fog spray is recommended if water is used.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.
Specific hazards arising from the chemical	Avoid generation of dust. It may not be obvious that carbon black is burning unless the material is stirred and sparks are apparent. Carbon black that has been on fire should be closely observed for at least 48 hours to ensure no smoldering material is present. Burning produces irritant fumes. Product is insoluble and floats on water. If possible, try to contain floating material. Dusts or fumes may form explosive mixtures in air. Dust deposits should not be allowed to accumulate on surfaces, as these may form an

explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. Take precautionary measures against static discharge.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes. Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Special protective equipment and precautions for fire-fighters

Material becomes extremely slippery when wet. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures**Personal precautions, protective equipment and emergency procedures****Personal precautions**

Material becomes extremely slippery when wet. Avoid generation of dust. All equipment used when handling the product must be grounded. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Use personal protective equipment as required. See section 8 for more information.

Other information

Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up**Methods for containment**

Prevent further leakage or spillage if safe to do so. The product is insoluble and floats on water. Any product that reaches water should be contained.

Methods for cleaning up

Avoid sweeping spilled dry material. If possible, vacuum using an explosion-proof vacuum and/or cleaning system suitable for combustible dusts. Cleaning system/vacuum equipped with high efficiency particulate air (HEPA) filtration is recommended. Transfer to properly labelled containers. See Section 13 for additional waste treatment information.

7. Handling and storage**Precautions for safe handling****Advice on safe handling**

Avoid contact with skin and eyes. Avoid generation of dust. Do not breathe dust. Do not use compressed air. Take precautionary measures against static discharges. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts. Safe work practices include the elimination of potential ignition sources in proximity to carbon black dust; good housekeeping to avoid accumulations of dust on all surfaces; appropriate exhaust ventilation design and maintenance to control airborne dust levels to below the applicable occupational exposure limit. If hot work is required, the immediate work area must be cleared of carbon black dust.

Conditions for safe storage, including any incompatibilities**Storage Conditions**

Keep in a dry, cool and well-ventilated place. Store away from heat, ignition sources, volatile chemicals and strong oxidizers. Do not store together with volatile chemicals as they may be adsorbed onto the product.

Carbon black is not classifiable as a Division 4.2 self-heating substance under the UN test criteria. However, UN criteria for determining if a substance is self-heating is volume dependent (i.e., the auto-ignition temperature decreases with increasing volume). This classification may not be appropriate for large volume storage container.

Before entering vessels and confined spaces containing carbon black, test for adequate

oxygen, flammable gases and potential toxic air contaminants. Do not allow dust to accumulate on surfaces.

8. Exposure controls/personal protection

Control parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	
Carbon black 1333-86-4	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³ (vacated) TWA: 3.5 mg/m ³	TWA: 3.5 mg/m ³	
Chemical name	Alberta	British Columbia	Ontario	Quebec
Carbon black 1333-86-4	TWA: 3.5 mg/m ³	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Carbon black	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3 mg/m ³ inhalable particulate matter

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Carbon black	TWA: 3.5 mg/m ³ STEL: 7 mg/m ³	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³ STEL: 7 mg/m ³	TWA: 3.5 mg/m ³ STEL: 7 mg/m ³

Other information

NOTE: Unless otherwise indicated as "respirable" or "inhalable", the exposure limit represents a "total" value. The inhalable exposure limit has been demonstrated to be more restrictive than the total exposure limit, by a factor of approximately 3.

Appropriate engineering controls

Engineering controls

Use process enclosures and/or exhaust ventilation to keep airborne dust concentrations below the occupational exposure limit. Ensure that eyewash stations and safety showers are close to the workstation location.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Hand protection

Protective gloves. Barrier creams may help to protect the exposed areas of skin.

Skin and body protection

Wear suitable protective clothing.

Respiratory protection

Approved air purifying respirator (APR) for particulates may be used where airborne dust concentrations are expected to exceed occupational exposure limits. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or in circumstances where APRs may not provide adequate protection. When respiratory protection is required to minimize exposures to carbon black, programs should follow the requirements of the appropriate governing body for the country, province or state. Selected references to respiratory protection standards are provided below:

EU: CR 529 Guidelines for Selection and Use of Respiratory Protective Devices (CEN).

Germany: DIN/EN 143 Respiratory Protective Devices for Dusty Materials.

UK: BS 4275 Recommendations for the Selection, Use and Maintenance of Respiratory

Protective Equipment. HSE Guidance Note HS (G)53 Respiratory Protective Equipment.

Environmental exposure controls See Section 12 for additional Ecological Information.

General hygiene considerations Contaminated work clothing should not be allowed out of the workplace. Take off contaminated clothing and wash it before reuse. Wash hands and face before breaks and immediately after handling the product. Do not breathe dust.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Black powder or pellet
Physical state	Solid
Color	Black
Odor	Odorless
Odor threshold	Not applicable

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	> 2 - 4	50 g/L Water, 20°C/68°F (ASTM 1512)
pH (as aqueous solution)		Not applicable
Melting point / freezing point		Not applicable
Initial boiling point and boiling range		Not applicable
Flash point		Not applicable
Evaporation rate		Not applicable
Flammability	> 45 sec	Not flammable
Flammability Limit in Air		
Upper flammability or explosive limits		Not applicable
Lower flammability or explosive limits	50 g/m ³	dust
Vapor pressure		Not applicable
Relative vapor density		Not applicable
Relative density	1.7 - 1.9 g/cm ³	@20°C
Water solubility	Insoluble	
Solubility(ies)		None known
Partition coefficient		Not applicable
Autoignition temperature	> 140 °C / > 284.0 °F	Transport - IMDG Code
Decomposition temperature		Not applicable
Kinematic viscosity		Not applicable
Dynamic viscosity		Not applicable

Other information

Explosive properties	Dust explosive, Dust explosion category: ST 1.
Oxidizing properties	No information available.
Softening point	No information available
Specific surface area	18 - 310 m ² /g BET
Molecular weight	12
VOC content	2 - 14 % w/w @ 950 °C
Liquid Density	Not applicable
Bulk density	1.25 - 40 lb/ft ³ , 20 - 640 kg/m ³ Pellets: 200 - 680 kg/m ³ ; Powder: 20 - 380 kg/m ³

10. Stability and reactivity

Reactivity	May react exothermically upon contact with strong oxidizers.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	None under normal processing.

Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Temperatures above > 400 °C / > 752 °F. Eliminate sources of ignition. Incompatible materials. Avoid accumulation of airborne dusts.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon monoxide, Carbon dioxide (CO ₂), Sulfur oxides, Organic products of combustion.

11. Toxicological information

Information on likely routes of exposure

Product Information

Inhalation	Inhalation of dust in high concentration may cause irritation of respiratory system.
Eye contact	Dust contact with the eyes can lead to mechanical irritation.
Skin contact	Contact with dust can cause mechanical irritation or drying of the skin.
Ingestion	No known hazard by swallowing.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms None known.

Acute toxicity

Numerical measures of toxicity

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Carbon black	> 8000 mg/kg (Rat) Equivalent to OECD TG 401	> 2000 mg/kg (Rat)	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Component Information	
Carbon black (1333-86-4)	
Method	Equivalent to OECD TG 404
Species	Rabbit
Results	non-irritant; Product score: erythema: 0, edema: 0

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Component Information	
Carbon black (1333-86-4)	
Method	OECD TG 405
Species	Rabbit
Results	non-irritant; Product score: Iris: 0, Chemosis: 0, Cornea: 0, Conjunctivae: 0

Respiratory or skin sensitization Based on available data, the classification criteria are not met.

Component Information	
Carbon black (1333-86-4)	
Method	OECD TG 406
Species	Guinea pig
Results	Not a skin sensitizer

Germ cell mutagenicity

In vitro: Carbon black is not suitable to be tested directly in bacterial (Ames test) and other in vitro systems because of its insolubility. However, when organic solvent extracts of carbon black have been tested, results showed no mutagenic effects. Organic solvent extracts of carbon black can contain traces of polycyclic aromatic hydrocarbons (PAHs). A study to examine the bioavailability of these PAHs showed that they are very tightly bound to carbon black and are not bioavailable (Borm, 2005).

In vivo: In an experimental investigation, mutational changes in the hprt gene were reported in alveolar epithelial cells in the rat following inhalation exposure to carbon black (Driscoll, 1997). This observation is considered to be rat-specific and a consequence of "lung overload," which leads to chronic inflammation and release of reactive oxygen species. This is considered to be a secondary genotoxic effect and, thus, carbon black itself would not be considered to be mutagenic.

Assessment: In vivo mutagenicity in rats occurs by mechanisms secondary to a threshold effect and is a consequence of "lung overload," which leads to chronic inflammation and the release of genotoxic oxygen species. This mechanism is considered to be a secondary genotoxic effect and, thus, carbon black itself would not be considered to be mutagenic.

Carcinogenicity

Animal toxicity:

Rat, oral, duration 2 years.

Effect: no tumors.

Mouse, oral, duration 2 years.

Effect: no tumors.

Mouse, dermal, duration 18 months.

Effect: no skin tumors.

Rat, inhalation, duration 2 years.

Target organ: lungs.

Effect: inflammation, fibrosis, tumors.

Note: Tumors in the rat lung are considered to be related to "lung overload" rather than to a specific chemical effect of carbon black itself in the lung. These effects in rats have been reported in many studies on other poorly soluble inorganic particles and appear to be rat specific (ILSI, 2000). Tumors have not been observed in other species (i.e., mouse and hamster) for carbon black or other poorly soluble particles under similar circumstances and study conditions.

Mortality studies (human data):

A study on carbon black production workers in the UK (Sorahan, 2001) found an increased risk of lung cancer in two of the five plants studied; however, the increase was not related to the dose of carbon black. Thus, the authors did not consider the increased risk in lung cancer to be due to carbon black exposure. A German study of carbon black workers at one plant (Morfeld, 2006; Buechte, 2006) found a similar increase in lung cancer risk but, like the Sorahan, 2001 (UK study), found no association with carbon black exposure. A large US study of 18 plants showed a reduction in lung cancer risk in carbon black production workers (Dell, 2006). Based upon these studies, the February 2006 Working Group at the International Agency for Research on Cancer (IARC) concluded that the human evidence for carcinogenicity was inadequate (IARC, 2010).

Since the IARC evaluation of carbon black, Sorahan and Harrington (2007) have re-analyzed the UK study data using an alternative exposure hypothesis and found a positive association with carbon black exposure in two of the five plants. The same

exposure hypothesis was applied by Morfeld and McCunney (2009) to the German cohort; in contrast, they found no association between carbon black exposure and lung cancer risk and, thus, no support for the alternative exposure hypothesis used by Sorahan and Harrington. Overall, as a result of these detailed investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated.

IARC cancer classification:

In 2006 IARC re-affirmed its 1995 finding that there is “inadequate evidence” from human health studies to assess whether carbon black causes cancer in humans. IARC concluded that there is “sufficient evidence” in experimental animal studies for the carcinogenicity of carbon black. IARC’s overall evaluation is that carbon black is “possibly carcinogenic to humans (Group 2B)”. This conclusion was based on IARC’s guidelines, which generally require such a classification if one species exhibits carcinogenicity in two or more animal studies (IARC, 2010).

Solvent extracts of carbon black were used in one study of rats in which skin tumors were found after dermal application and several studies of mice in which sarcomas were found following subcutaneous injection. IARC concluded that there was “sufficient evidence” that carbon black extracts can cause cancer in animals (Group 2B).

ACGIH cancer classification:

Confirmed Animal Carcinogen with Unknown Relevance to Humans (Category A3 Carcinogen).

Assessment:

Applying the guidelines of self-classification under the Globally Harmonized System of Classification and Labelling of Chemicals, carbon black is not classified as a carcinogen. Lung tumors are induced in rats as a result of repeated exposure to inert, poorly soluble particles like carbon black and other poorly soluble particles. Rat tumors are a result of a secondary non-genotoxic mechanism associated with the phenomenon of lung overload. This is a species-specific mechanism that has questionable relevance for classification in humans. In support of this opinion, the CLP Guidance for Specific Target Organ Toxicity – Repeated Exposure (STOT-RE), cites lung overload under mechanisms not relevant to humans. Human health studies show that exposure to carbon black does not increase the risk of carcinogenicity.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Carbon black 1333-86-4	A3	Group 2B	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

Reproductive toxicity

Assessment:

No effects on reproductive organs or fetal development have been reported in long-term repeated dose toxicity studies in animals.

STOT - single exposure

Assessment:

Based on available data, specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.

STOT - repeated exposure

Animal toxicity:

Repeated dose toxicity: Inhalation (rat), 90 days, No Observed Adverse Effect Concentration (NOAEC) = 1.1 mg/m³ (respirable). Target organ/effects at higher doses are lung inflammation, hyperplasia, and fibrosis.

Repeated dose toxicity: oral (mouse), 2 yrs, No Observed Effect Level (NOEL) = 137 mg/kg

(body wt.)

Repeated dose toxicity: oral (rat), 2 yrs, NOEL = 52 mg/kg (body wt.)

Although carbon black produces pulmonary irritation, cellular proliferation, fibrosis, and lung tumors in the rat under conditions of lung overload, there is evidence to demonstrate that this response is principally a species-specific response that is not relevant to humans.

Morbidity studies (human data):

Results of epidemiological studies of carbon black production workers suggest that cumulative exposure to carbon black may result in small, non-clinical decrements in lung function. A U.S. respiratory morbidity study suggested a 27 ml decline in FEV1 from a 1 mg/m³ 8 hour TWA daily (inhalable fraction) exposure over a 40-year period (Harber, 2003). An earlier European investigation suggested that exposure to 1 mg/m³ (inhalable fraction) of carbon black over a 40-year working lifetime would result in a 48 ml decline in FEV1 (Gardiner, 2001). However, the estimates from both studies were only of borderline statistical significance. Normal age-related decline over a similar period of time would be approximately 1200 ml.

In the U.S. study, 9% of the highest non-smokers exposure group (in contrast to 5% of the unexposed group) reported symptoms consistent with chronic bronchitis. In the European study, methodological limitations in the administration of the questionnaire limit the conclusions that can be drawn about reported symptoms. This study, however, indicated a link between carbon black and small opacities on chest films, with negligible effects on lung function.

Assessment:

Inhalation: Applying the guidelines of self-classification under GHS, carbon black is not classified under STOT-RE for effects on the lung. Classification is not warranted on the basis of the unique response of rats resulting from "lung overload" following exposure to poorly soluble particles such as carbon black. The pattern of pulmonary effects in the rat, such as inflammation and fibrotic responses, are not observed in other rodent species, non-human primates, or humans under similar exposure conditions. Lung overload does not appear to be relevant for human health. Overall, the epidemiological evidence from well-conducted investigations has shown no causative link between carbon black exposure and the risk of non-malignant respiratory disease in humans. A STOT-RE classification for carbon black after repeated inhalation exposure is not warranted.

Oral: Based on available data, specific target organ toxicity is not expected after repeated oral exposure.

Dermal: Based on available data and the chemical-physical properties (insolubility, low absorption potential), specific target organ toxicity is not expected after repeated dermal exposure.

Aspiration hazard

Assessment:

Based on industrial experience and the available data, no aspiration hazard is expected.

Other information

This product does not contain any known or suspected endocrine disruptors.

12. Ecological information

Ecotoxicity

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Carbon black 1333-86-4	EC50: >10,000 mg/L (72h, Scenedesmus subspicatus) NOEC: ≥10,000 mg/L (Scenedesmus)	LC50: >1000mg/L (96h, Brachydanio rerio (zebrafish)) Method: OECD Guideline 203	EC0: 800 mg/L (3h, Activated sludge) Method: DEV L3 (TTC test)	EC50: > 5600 mg/l (24h, Daphnia magna (waterflea)) Method: OECD Guideline 202

	subspicatus) Method: OECD Guideline 201			
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Persistence and degradability Insoluble in water. The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulation Not expected because of the physicochemical properties of the substance.

Other adverse effects This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

13. Disposal considerations

Disposal methods

Waste from residues/unused products Dispose of in accordance with local regulations, Dispose of waste in accordance with environmental legislation.

Contaminated packaging Dispose of contents/containers in accordance with local regulations.

14. Transport information

Note: The International Carbon Black Association organized the testing of seven ASTM reference carbon blacks according to the UN method, Self-Heating Solids. All seven reference carbon blacks were found to be "Not a self-heating substance of Division 4.2." The same carbon blacks were tested according to the UN method, Readily Combustible Solids and found to be "Not a readily combustible solid of Division 4.1;" under current UN Recommendations on the Transport of Dangerous Goods.

The following organizations do not classify carbon black as a "hazardous cargo" if it is "carbon, non-activated, mineral origin." Himadri Speciality Chemical Ltd's carbon black products meet this definition.

DOT Not regulated

TDG Not regulated

IATA Not regulated

IMDG Not regulated

15. Regulatory information

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

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

TSCA Active.
This product does not contain any components that are subject to TSCA 12(b) Export

Notification.

DSL/NDSL	Listed on DSL.
EINECS/ELINCS	Listed. RN: 215-609-9.
ENCS	Listed.
IECSC	Listed.
KECL	Listed.
PICCS	Listed.
AICS	Listed.
NZIoC	Listed.
TCSI	Listed.

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Industrial Chemicals
NZIoC - New Zealand Inventory of Chemicals
TCSI - Taiwan Chemical Substance Inventory

US Federal Regulations

SARA 313

Under EPA's Toxics Release Inventory (TRI) program, the reporting threshold for the polycyclic aromatic compounds (PAC) category is 100 pounds/year manufactured, processed, or otherwise used. The 100 pounds/year reporting threshold applies to the cumulative total of 25 specific PACs. In addition, the TRI reporting threshold for benzo(g,h,i)perylene is 10 pounds/year manufactured, processed, or otherwise used. Carbon black may contain certain PACs and/or benzo(g,h,i)perylene. The user is advised to evaluate their own TRI reporting responsibilities.

SARA 311/312 Hazard Categories

Sections 311/312 apply if Carbon Black is present at any one time in amounts equal to or greater than 10,000 pounds. Under Section 311/312

– SDS requirements, carbon black is determined to be hazardous according to the following EPA hazard categories:
 Combustible Dust.

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CAA (Clean Air Act)

This product does not contain any components listed as a Hazardous Air Pollutant, Flammable Substance, Toxic Substance, or Class 1 or 2 Ozone Depletor.

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:

•"carbon black (airborne,unbound particles of respirable size)" is a California Proposition 65 listed substance. Please note that all three listing qualifiers [airborne, unbound (not bound within a matrix), and respirable size (10 micrometers or less in diameter)] must be met for this substance to be considered a Proposition 65 substance. Please contact your sales representative for additional information.

•Certain polycyclic aromatic hydrocarbons (PAHs) that may be found adsorbed onto the surface of carbon black are California Proposition 65 listed substances.

•"Carbon-black extracts" is a California Proposition 65 listed substance.

•"Certain metals, including arsenic, cadmium, lead, mercury, or nickel, may be present on and/or in carbon black and are California Proposition 65 listed substances".

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Carbon black 1333-86-4	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA **Health hazards** - **Flammability** - **Instability** - **Special hazards** -
HMIS **Health hazards** - **Flammability** - **Physical hazards** - **Personal protection** -

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	Sk*	Skin designation
+	Sensitizers		

Key literature references and sources for data used to compile the SDS

Borm, P.J.A., Cakmak, G., Jermann, E., Weishaupt C., Kempers, P., van Schooten,FJ., Oberdorster, G., Schins, RP. (2005) Formation of PAH-DNA adducts after in-vivo and vitro exposure of rats and lung cell to different commercial carbon blacks. *Tox.Appl. Pharm.* 1:205(2):157-67.

Buechte, S, Morfeld, P, Wellmann, J, Bolm-Audorff, U, McCunney, R, Piekarski, C. (2006) Lung cancer mortality and carbon black exposure – A nested case-control study at a German carbon black production plant. *J.Occup. Env.Med.* 12: 1242-1252.

Dell, L, Mundt, K, Luipold, R, Nunes, A, Cohen, L, Heidenreich, M, Bachand, A. (2006) A cohort mortality study of employees in the United States carbon black industry. *J.Occup. Env. Med.* 48(12): 1219-1229.

Driscoll KE, Deyo LC, Carter JM, Howard BW, Hassenbein DG and Bertram TA (1997) Effects of particle exposure and particle-elicited inflammatory cells on mutation in rat alveolar epithelial cells. *Carcinogenesis* 18(2) 423-430.

Gardiner K, van Tongeren M, Harrington M. (2001) Respiratory health effects from exposure to carbon black: Results of the phase 2 and 3 cross sectional studies in the European carbon black manufacturing industry. *Occup. Env. Med.* 58: 496-503.

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ILSI Risk Science Institute Workshop: The Relevance of the Rat Lung Response to Particle to Particle Overload for Human Risk Assessment. *Inh. Toxicol.* 12:1-17 (2000).

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Morfeld P and McCunney RJ, (2009). Carbon Black and lung cancer testing a novel exposure metric by multi-model inference. Am. J. Ind. Med. 52: 890-899.

Sorahan T, Hamilton L, van Tongeren M, Gardiner K, Harrington JM (2001). A cohort mortality study of U.K. carbon black workers, 1951-1996. Am. J. Ind. Med. 39(2):158-170.

Sorahan T, Harrington JM (2007) A "Lugged" Analysis of Lung Cancer Risks in UK Carbon Black Production Workers, 1951–2004. Am. J. Ind. Med. 50, 555–564

U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

EPA (Environmental Protection Agency)

Acute Exposure Guideline Level(s) (AEGL(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act

U.S. Environmental Protection Agency High Production Volume Chemicals

Food Research Journal

Hazardous Substance Database

International Uniform Chemical Information Database (IUCLID)

Japan GHS Classification

Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

U.S. National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

Organization for Economic Co-operation and Development Environment, Health, and Safety Publications

Organization for Economic Co-operation and Development High Production Volume Chemicals Program

Organization for Economic Co-operation and Development Screening Information Data Set

World Health Organization

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End of Safety Data Sheet