MATERIAL SAFETY DATA SHEET

Iran Carbon Company

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: **CARBON BLACK**

Synonyms: Carbon Black, Furnace Black

Manufacturer/supplier: Iran Carbon Company

No.73,Gandi Ave., Tehran 1517973111, Iran

Phone number: +98 21 88791648,49
Phone number: +98 6112270658

Fax number: +98 21 88774748

Use of substance/preparation:

Used as filler in rubber products, pigment in polymers and printing inks.

2. HAZARDS IDENTIFICATION

Indication of danger: Not a hazardous substance or preparation according to EC-directives 67/548/EEC or 99/45/EC and their various amendments and adaptations.

Principle Routes of Exposure: Inhalation, Eye contact, Skin contact

POTENTIAL HEALTH EFFECTS Eye Contact: May cause mechanical irritation. Irritating, but will not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.

Skin Contact: No adverse effects expected.

Inhalation: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

Ingestion: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

Target Organ Effects: Lungs

Medical Conditions Aggravated by Exposure: Asthma, Respiratory disorder

Potential Environmental Effects: No special environmental precautions required. Not soluble in water. See also Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EINECS/ELINCS Number	Weight %	EU Classification
Carbon Black	1333-86-4	215-609-9	100	None

Strong Acidizers such as chlorates, bromates, and nitrates

4. FIRST AID MEASURES

Skin Contact: Wash thoroughly with soap and water. Seek medical attention if symptoms develop.

Eye Contact: Flush eyes immediately with large amounts of water for 15 minutes. Seek medical attention if symptoms develop.

Inhalation: If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.

Ingestion: Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

Notes to Physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing Media: Use foam, carbon dioxide (CO_2), dry chemical or water spray. A fog is recommended if water is used. DO NOT USE a solid water stream as it may scatter and spread fire.

Special Protective Equipment for Firefighters: Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus.

Specific Hazards: 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 observed closely for at least 48 hours to ensure no smoldering material is present. Burning produces irritant fumes. The product is insoluble and floats on water. If possible, try to contain floating material. This material creates a fire hazard because it floats on water.

Hazardous Decomposition and/or Combustion Products: Carbon monoxide, Carbon dioxide, Oxides of sulphur, Organic products of decomposition.

Risk of Dust Explosion: Do not create a dust cloud by using a brush or compressed air.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: CAUTION: Wet carbon black produces slippery walking surfaces. Avoid dust formation. Ensure adequate ventilation. Use personal protective equipment. See also Section 8.

Methods for Cleaning Up: Clean up promptly by vacuum. Use of a vacuum with high efficiency particulate air (HEPA) filtration is recommended. Do not create a dust cloud by using a brush or compressed air. Pick up and transfer to properly labelled containers. See Section 13.

Environmental Precautions: Do not allow material to contaminate ground water system. The product is insoluble and floats on water. If possible, try to contain floating material. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Do not breathe dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Do not create a dust cloud by using a brush or compressed air. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts. Take precautionary measures against static discharge.

Storage: Keep in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Do not store together with strong oxidizing agents. Do not store together with volatile chemicals as they may be adsorbed onto product. Keep in properly labeled containers.

8. PERSONAL PROTECTION

ENGINEERING CONTROLS Ensure adequate ventilation to maintain exposures below occupational limits. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: An approved air-purifying respirator (APR) for particulates may be permissible where airborne concentrations are expected to exceed occupational exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any circumstances where air-purifying respirators may not provide adequate protection. Use of respirators must include a complete respiratory protection program in accordance with national standards and current best practices.

Hand Protection: Wear protective gloves to prevent soiling of hands.

Eye Protection: Wear eye/face protection. Safety glasses with side-shields. Goggles.

Skin and Body Protection: Wear suitable protective clothing. Wash clothing daily. Work clothing should not be allowed out of the workplace.

Other: Handle in accordance with good industrial hygiene and safety practice. Emergency eyewash and safety shower should be located nearby.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black Powder or Pellets **Odor:** None **pH:** 4 - 11 [50 g/l water, 68°F (20°C)] (non-oxidized carbon

black) 2 - 4 (oxidized carbon black)

Density: 1.7 - 1.9 g/cm³ @ 20°C **Bulk Density:** 20 - 550 kg/m^3 **Specific Gravity:** Not determined **Boiling**

Point/Range: Not applicable **Melting Point/Range:** Not applicable **Vapor Pressure:** Not determined

Water Solubility: Insoluble **% Volatile (by Weight):** < 2.5% @ 950°C (non-oxidized carbon black)

2 - 11% (oxidized carbon black)

Evaporation Rate: Not applicable **Viscosity:** Not determined **Partition Coefficient**

(n-octanol/water): Not determined **Flash Point:** Not applicable

Method: Not applicable

Explosion Limits in Air - Upper (%): Not determined **Explosion Limits in Air -**

Lower (%): 50 g/m^3 (dust) **Autoignition Temperature:** > 140°C (transport)

Method: IMDG-Code **Minimum Ignition Temperature:** > 500°C (BAM Furnace) VDI 2263 > 315°C (Godberg-Greenwald Furnace) VDI 2263

Burn Velocity: > 45 seconds (not classifiable as "Highly Flammable", or "Easily Ignitable")

Flammability Classification: Not applicable

Dust Explosion Classification: ST 1 (VDI 2263)

Maximum Absolute Explosion Pressure: 10 bar at an initial starting pressure of 1 bar. Higher starting initial pressures will yield higher explosion pressures. **Method:** VDI 2263

Maximum Rate of Pressure Rise: 30 - 400 bar/sec **Method:** VDI 2263 and ASTM E1226-88

Ignition Energy: > 1 kJ **Method:** VDI 2263

Minimum Ignition Energy: > 10,000 mJ **Method:** VDI 2263

10. STABILITY AND REACTIVITY

Stability: Stable. **Reactivity:** May react exothermically upon contact with strong oxidizers.

Chemical Name	CAS Number	EINECS/ELINCS Number	Weight %	EU Classification
Carbon Black	1333-86-4	215-609-9	100	None

Strong oxidizers such as chlorates, bromates, and nitrates.

Incompatible Materials:

order to avoid exothermic reactions.

Hazardous Polymerization: Hazardous polymerization does not occur.

Hazardous Decomposition and/or Combustion Products: Carbon monoxide, Carbon dioxide, Oxides of sulphur, Organic products of decomposition.

Static Discharge Effects: Take precautionary measures against static discharges. Avoid dust formation. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Oral LD50: LD50/oral/rat = > 8000 mg/kg.

Eye Irritation: Rabbit. Draize score 10-17/110 @ 24 hr. Non-irritating.

Skin Irritation: Rabbit. 0.6/8. Slight irritation.

SUBCHRONIC TOXICITY

Rat, inhalation, duration 90 days NOAEL = 1.0 mg/m^3 Target organ: lungs Effect: inflammation, hyperplasia, fibrosis.

CHRONIC 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 related to the fine particle overload phenomenon rather than to a specific chemical effect of the dust particles in the lung. These effects in rats have been reported in studies on other inorganic insoluble particles and appear to be species specific. Tumors have not been observed in other species (i.e., mouse and hamster) for other insoluble particles under similar circumstances and study conditions.

Carbon Black IARC Statement: In 1995 International Agency for Research on Cancer (IARC) concluded, "There is inadequate evidence in humans for the carcinogenicity of carbon black." Based on rat inhalation studies, IARC concluded that there is "sufficient evidence in experimental animals for the carcinogenicity of carbon black", resulting in their classifying carbon black as "possibly carcinogenic to humans (Group 2B)".

Epidemiology: Results of epidemiological studies of carbon black production workers suggest that cumulative exposure to carbon black may result in small decrements in lung function, as measured by FEV1. In addition to normal age related decline in the FEV1 of approximately 1200 ml over 40 years, according to a European investigation, exposure to 1 mg/m^3 (inhalable fraction) of carbon black over a 40-year lifetime will result in an additional 48 milliliter (ml) decline in FEV1. A similar morbidity study in the United States suggested a 27 ml decline in FEV1 from a 1mg/m^3 exposure over a 40-year period.

The relationship between symptoms and exposure to carbon black is less clear. In the U.S. study, 9% of the highest 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 drawing of definitive conclusions about symptoms. This study, however, indicated a link between carbon black and small opacities on the chest films, with negligible effects on lung function.

A study of carbon black workers in the UK showed an elevated incidence of lung cancer but it was not considered to be related to carbon black exposure. A study of workers at a large German carbon black manufacturing facility found increased lung cancer mortality among German carbon black workers, but found no apparent dose-response relationship between lung cancer mortality and several indicators of occupational exposure, including years of employment and carbon black exposure. The study concluded that the high lung cancer mortality could not be fully explained by selection, smoking, or other occupational risk factors, but the results also provided little evidence for an effect from carbon black exposure. A recent mortality study of US carbon black workers found no association between employment in carbon black production and lung cancer or any other type of cancer.

Mutagenic Effects: A dimethylsulfoxide (DMSO) suspension of carbon black produced negative results in an Ames test. Organic solvent extracts of carbon black, however, can contain traces of polycylic aromatic hydrocarbons (PAH), which may affect the results in different in-vitro test systems. 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. This observation is believed to be rat specific and a consequence of "lung overload" (see Chronic Toxicity above).

Reproductive Toxicity: Did not show effects in animal experiments.

Sensitizing Effects: Contains no known sensitizers.

Synergistic Materials: None reasonably foreseeable.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity: Fish (Brachydanio rerio): LC50 (96hr) > 1,000 mg/L. (Method: OECD 203). Daphnia magna: EC50 (24hr) > 5,600 mg/L. (Method: OECD 202). Algae (Scenedesmus subspicatus): EC50 (72hr) > 10,000 mg/L. Algae (Scenedesmus subspicatus): NOEC >= 10,000 mg/L. Activated sludge: EC0 (3hr) >= 800 mg/L. (Method: DEV L3 TTC test).

ENVIRONMENTAL FATE

Mobility: Not expected to migrate. Insoluble.

Bioaccumulation: Not expected due to physicochemical properties of the substance. **Persistence /**

Degradability: Not expected to degrade. **Distribution to Environmental** Insoluble. Expected to

remain on soil surface.
Compartments:

13. DISPOSAL CONSIDERATIONS

Product, as supplied, should be disposed of in accordance with the regulations issued by the appropriate local authorities.

14. TRANSPORT INFORMATION

carbon black is not classified as a "hazardous cargo" if it is "carbon, non-activated, mineral origin".

UN Number: None

UN Proper Shipping Name: Not classified

UN Shipping Class: Not classified

UN Packing Group: Not classified

International Transportation "Carbon black, non-activated, mineral origin".
Identification: Not dangerous according to IMDG-Code. Not dangerous according to ICAO-TI.

US Rail Regulations: Not classified

15. REGULATORY INFORMATION

Indication of danger:
Not a hazardous substance or preparation according to EC-directives 67/548/EEC or 99/45/EC and their various amendments and adaptations.

US Food Contact Information

Carbon black is permitted for indirect contact with food and drugs when used as a filler in rubber articles intended for repeat use under 21 CFR (Code of Federal Regulations) 177.2600. LIMITATIONS:

Total carbon black (channel process and furnace process) in the rubber may not exceed 50% by weight of the rubber products. Cabot carbon blacks are furnace process blacks.

Furnace process black content may not exceed 10% by weight of rubber product intended for use in contact with milk or edible oils.

16. OTHER INFORMATION

Carbon Black Extracts:

Manufactured carbon blacks generally contain less than 0.1% of solvent extractable polycyclic aromatic hydrocarbons (PAH). Solvent extractable PAH content depends on numerous factors including, but not limited to, the manufacturing process, desired product specifications, and the analytical procedure used to measure and identify solvent extractable materials. Questions concerning PAH content of carbon black and analytical procedures should be addressed to your carbon black supplier.