

Prepared in accordance with the United States Hazard Communication Standard: 29 CFR 1910.1200 (2012)

RIF: J-00050787-2

Revision Date: April 2022

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

Product Name:	CARBON BLACK
Synonyms:	Furnace Black
CAS Number:	1333-86-4
REACH Registration Number:	01-2119384822-32-0056
This SDS is valid for the following grades:	N220, N234, N326, N330, N339, N375, N347, N550, N550T, N550 ORO, N660, N772
Recommended Use	Additive/Filler for plastic and rubber, Pigment, Chemical reagent, Batteries, Refractories, Various.
Restrictions on use:	Negroven, S.A. does not endorse the use of its products in any direct application or applications that will be in contact with food, cosmetics or medicines. Not recommended as a human tattoo pigment.
Supplier:	Negroven, S.A. Ave. Domingo Olavarría. Zona Industrial Municipal Sur Valencia, Venezuela Tel.: +58241 5133500 / 3510 Fax: +582415133446
E-Mail Address:	negroven@negroven.com
Emergency Telephone Number:	See Section 16

2. HAZARDS IDENTIFICATION

Classification:

Classification of the substance or mixture: Not a hazardous substance according to Regulation (EC) 1272/2008 (CLP), its various amendments and adaptations and Directive 67/548/EEC.
Non-hazardous substance or mixture according to the Globally Harmonized System (GHS).
ONU Method for Self-Heating Solids: "It is not a liable to spontaneous combustion substance of Division 4.2"
ONU Method for Easily Combustible Solids: "It is not a flammable Solid of Division 4.1"

Other Information:

Dust may irritate the respiratory tract and eyes, in case it coming into contact with the mucosa.

Do not expose to temperatures above 400°C.

According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) 2012, Carbon Black is not classified for any toxicological or ecotoxicological endpoints. As a combustible dust, OSHA considers it a hazardous substance. Canada's Hazardous Products Regulation (HPR) 2015 classifies this substance as a Combustible Dust.

Note: The signal word, hazard statement, and precautionary statements for the United States and Canada are: WARNING, may form dust concentrations in air, which, depending on conditions, could cause combustion. Keep away from sources of ignition including heat, sparks and flames. Prevent atmospheres with accumulations of dust, to minimize explosion hazard.

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As a combustible dust, it is considered a hazardous substance by OSHA and the 2015 Hazardous Products Regulation (HPR) of Canada, this substance is classified as a Combustible Dust.

GHS Label Elements

Pictogram:	None
Signal Word:	Warning
Hazard statements:	May form combustible dust concentrations in air.
Precautionary Statements - Prevention	<ul style="list-style-type: none"> • Keep away from all ignition sources including heat, sparks and flame • Prevent dust accumulations to minimize explosion hazard
Hazards not otherwise classified (HNOC)	Do not expose to temperatures above 300°C. Hazardous products of combustion can include carbon monoxide, carbon dioxide, oxides of sulfur, and organic products.
Precautionary advice:	<ul style="list-style-type: none"> • Wear suitable respiratory protector when the dust level exceeds the permissible environmental concentration (CAP) = 3.5 mg / m³ • Wear safety glasses, gloves, respiratory protection and suitable clothing.

Poetential Health Effects

Principle Routes of Exposure:	Inhalation, Eye contact, Skin contact
Eye Contyact:	May cause mechanical irritation. Avoid contact with eyes.
Skin Contact:	May cause mechanical irritation, soiling, and skin drying. Avoid contact with skin. No cases of sensitization in humans have been reported.
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:	Adverse health effects are not expected. See Section 11.
Carcinogenicity:	Carbon Black is listed as an IARC (International Agency for Research on Cancer) Group 2B substance (possibly carcinogenic to humans). See also Section 11.
Target Organ Effects:	Lungs, See Section 11
Medical Copnditions Aggravated by Exposure:	Asthma, Respiratory disorder
Potential Environmental Effects:	None known. See Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Carbon Black, Furnace Black.

Chemical Name	CAS Number	Weight %	Trade secret
Carbon Black	1333-86-4	99	

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4. FIRST AID MEASURES**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.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in Section 2 and/or in Section 11.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

5. FIRE AND IGNITION INFORMATION

Suitable Extinguishing Media:	Use foam, carbon dioxide (CO ₂), dry chemical or water spray. A fog is recommended if water is used.
Unsuitable Extinguishing Media:	DO NOT USE a solid water stream as it may scatter and spread fire. DO NOT USE high pressure media which could cause formation of a potentially explosible dust-air mixture.
Specific hazards arising from the chemical:	It may not be obvious that carbon black is burning unless the material is stirred and embers and/or 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.
Hazardous Combustion Products:	Carbon monoxide, Carbon dioxide, Sulphur oxides.

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Protective equipment and precautions for firefighters:

Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus. Wet carbon black produces very slippery walking surfaces.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions:

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

Environmental Precautions:

Environmental Precautions:

Contain spilled product on land, if possible. The product is insoluble and floats on water. Any product that reaches water should be contained. Local authorities should be advised if spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for containment:

Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up:

If the spilled material contains dust or has the potential to create dust, use explosion-proof vacuums and/or cleaning systems suitable for combustible dusts. 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. Dry sweeping is not recommended. Water spray will produce very slippery walking surfaces and will not result in satisfactory removal of carbon black contamination. Pick up and transfer to properly labelled containers. See Section 13.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling:

Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Provide appropriate local 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. Dust may form explosible mixture in air.

Take precautionary measures against static discharges. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts. If hot work (welding, torch cutting, etc.) is required the immediate work area must be cleared of carbon black product and dust.

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Conditions for safe storage, including any incompatibilities

Storage Conditions:

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. Carbon black is not classifiable as a Division 4.2 self-heating substance under the UN test criteria. However, the 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 containers. Before entering vessels and confined spaces containing carbon black, test for adequate oxygen, flammable gases and potential toxic air contaminants. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosible mixture if they are released in the atmosphere in sufficient concentrations.

Incompatible materials:

Strong oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

The table below is a summary. Please see the specific legislation for complete information.

EXPOSURE LIMITS

The table below is a summary. Please see the specific legislation for complete information.

Carbon Black, CAS RN 1333-86-4:

Argentina: 3.5 mg/m³, TWA
Australia: 3.0 mg/m³, TWA inhalable
Belgium: 3.6 mg/m³, TWA
Brazil: 3.5 mg/m³, TWA
Canada (Ontario): 3.0 mg/m³, TWA inhalable
China: 4.0 mg/m³, TWA; 8.0 mg/m³, STEL
Colombia: 3.0 mg/m³, TWA inhalable
Czech Republic: 2.0 mg/m³, TWA
Finland: 3.5 mg/m³, TWA; 7.0 mg/m³, STEL
France - INRS: 3.5 mg/m³, TWA/VME inhalable
Germany - TRGS 900: 3.0 mg/m³, TWA respirable; 10.0 mg/m³, TWA inhalable
Germany - AGW: 1.5 mg/m³, TWA respirable; 4.0 mg/m³, TWA inhalable
Hong Kong: 3.5 mg/m³, TWA
Indonesia: 3.5 mg/m³, TWA/NABs
Ireland: 3.5 mg/m³, TWA; 7.0 mg/m³, STEL
Italy: 3.0 mg/m³, TWA inhalable

Japan MHLW: 3.0 mg/m³
Japan SOH: 4.0 mg/m³, TWA; 1.0 mg/m³, TWA respirable
Korea: 3.5 mg/m³, TWA
Malaysia: 3.5 mg/m³, TWA
Netherlands - MAC: 3.5 mg/m³, TWA inhalable
Mexico: 3.5 mg/m³, TWA
Norway: 3.5 mg/m³, TWA
Spain: 3.5 mg/m³, TWA (VLA-ED)
Sweden: 3.0 mg/m³, TWA
United Kingdom - WEL: 3.5 mg/m³, TWA inhalable; 7.0 mg/m³, STEL inhalable
US ACGIH - TLV: 3.0 mg/m³, TWA inhalable
US OSHA - PEL: 3.5 mg/m³, TWA
Venezuela - COVENIN: 3.5 mg/m³, TWA

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NOTE:

(1) 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.

(2) Negroven, S.A. manages to the US ACGIH TLV of 3.0 mg/m³ TWA inhalable.

AGW: Arbeitsplatzgrenzwert

INRS: Institut National de Recherche et de Securite (National Institute of Research and Security)

MAC: Maximaal Aanvaarde Concentraties (Maximum allowed concentration)

MHLW: Ministry of Health, Labor and Welfare

NABS: Nilai Ambang Batas (threshold limit value)

OEL: Occupational Exposure Limit

PEL: Permissible Exposure Limit

SOH: Society of Occupational Health

STEL: Short Term Exposure Limit

TLV: Threshold Limit Value

TRGS: Technische Regeln für Gefahrstoffe (Technical Rule for Hazardous Materials)

TWA: Time Weighted Average

US ACGIH: United States American Conference of Governmental Industrial Hygienists

US OSHA: United States Occupational Safety and Health Administration

VME: Valeur Moyenne d'Exposition (Average Level of Exposure)

WEL: Workplace Exposure Limit

VLA-ED: Valor límite ambiental de exposición diaria (environmental value of daily exposure limit)

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 [PPE]

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.

The following agencies/organizations approve respirators and/or criteria for respirator programs:

US: NIOSH approval under 42 CFR 84 required.

OSHA (29 CFR 1910.134). ANSI Z88.2-1992 (Respiratory Protection).

EU: CR592 Guidelines for the Selection and Use of Respiratory Protection.

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

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Eye/Face Protection:

Wear eye/face protection. Safety glasses with side-shields or Goggles.

Hand Protection:

Wear protective gloves to prevent soiling of hands. Use protective barrier cream before handling the product. Wash hands and other exposed skin with mild soap and water.

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.

Environmental exposure controls:

In accordance with all local legislation and permit requirements.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Appearance:	Black Powder or Pellets
Color:	Black
Odor:	None
Odor Threshold:	Not applicable

<u>Properties:</u>	<u>Values</u>	<u>Remarks / Method</u>
pH:	2 - 11	2 - 4 (oxidized carbon black) and 4 - 11 (non-oxidized carbon black) [50 g/l water, 68°F (20°C)] Method ASTM D1512
Melting Point/Freezing Point:		Not applicable
Boiling Point/Boiling Range:		Not applicable
Evaporation Rate:		Not applicable
Vapor Pressure:		Not applicable
Vapor Density:		Not applicable
Density:	1.7 - 1.9 g/cm ³	@ 20°C
Bulk Density:	200-680 kg/m ³ 20-380 kg/m ³	(Pellets) (Powder)
Specific Gravity at 20°C:	1.7 - 1.9	
Water Solubility:	Insoluble	
Solubilities	Insoluble	
Partition Coefficient (n-octanol/water):		Not applicable
Decomposition Temperature:		Not applicable
Viscosity:		Not applicable
Kinematic viscosity:		Not applicable
Dynamic viscosity:		Not applicable
Oxidizing Properties:		Not applicable

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Softening point:		Not applicable
VOC content (%):		No information available
% Volatile (by Volume):		No information available
% Volatile by Weight	< 2.5% 2 - 8%	(950°C) (non-oxidized carbon black) (oxidized carbon black)
Surface Tension:		No information available
Explosive properties:		Dust may form explosible mixture in air
Flash Point:		Not applicable
Flammability (solid, gas):		No information available
Flammability Limit in Air:		No information available
Explosion Limits in Air - Upper (g/m3):		No information available
Explosion Limits in Air - Lower (g/m3):	50 g/m3	(dust)
Autoignition Temperature:	> 140 °C	(transport) IMDG-Code
Minimum Ignition Temperature:	> 500 °C > 315 °C	(BAM Furnace) VDI 2263 (Godberg-Greenwald Furnace) VDI 2263
Minimum Ignition Energy:	> 10,000 mJ	VDI 2263
Ignition Energy:		No information available
Maximum Absolute Explosion Pressure:	10 bar	VDI 2263 10 bar at an initial starting pressure of 1 bar. Higher starting initial pressures will yield higher explosion pressures
Maximum Rate of Pressure Rise:	30 - 400 bar/sec	VDI 2263 and ASTM E1226-88
Burn Velocity:	> 45 seconds	(not classifiable as "Highly Flammable", or "Easily Ignitable")
Kst Value:	110 bar m/s (Class ST1)	
Dust Explosion Classification:	ST1	

10. STABILITY AND REACTIVITY

Stability:	Stable under recommended handling and storage conditions.
Reactivity:	May react exothermically upon contact with strong oxidizers.
Possibility of hazardous reactions:	None under normal processing.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Incompatible Materials:	Strong oxidizers such as chlorates, bromates, and nitrates.
Conditions to Avoid:	Do not expose to temperatures above 300°C. Keep away from heat and sources of ignition. Avoid dust formation.
Explosion data:	See also Section 9.
Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact.

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Sensitivity to Static Discharge: Dust may form explosible mixture in air. Avoid dust formation. Do not create a dust cloud by using a brush or compressed air. Take precautionary measures against static discharges. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations.

Hazardous Decomposition Products: Carbon monoxide (CO). Carbon dioxide (CO₂). Sulfur oxides. Organic products of combustion.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Oral LD50: LD50/oral/rat = > 8000 mg/kg. (Equivalent to OECD TG 401).

Inhalation LC50: No data available.

Dermal LD50: No data available.

Assessment: Non-toxic after ingestion.

Skin corrosion/irritation: Rabbit: not irritating. (Equivalent to OECD TG 404)
Edema = 0 (max. attainable irritation score: 4)
Erythema = 0 (max. attainable irritation score: 4)

Assessment: Not irritating to skin

Serious eye damage/eye irritation: Rabbit: not irritating. (OECD TG 405). Cornea: 0 (max. attainable irritation score: 4).
Iris: 0
(max. attainable irritation score: 2). Conjunctivae: 0 (max. attainable irritation score: 3).
Chemosis: 0 (max. attainable irritation score: 4).

Assessment: Not irritating to the eyes.

Sensitization: Guinea pig skin (Buehler Test): Not sensitizing (OECD TG 406).

Assessment: Not sensitizing in animals. No cases of sensitization in humans have been reported.

Germ Cell Mutagenicity

In Vitro
Carbon black is not suitable to be tested 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 PAHs are very tightly bound to carbon black and 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. This observation is believed to be rat specific and a consequence of "lung overload" (Driscoll, 1997) which led 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.

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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 the "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.

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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 Labeling 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.

Reproductive and Developmental 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.

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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.

INHALATION ASSESSMENT:

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 the "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 ASSESSMENT:

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

DERMAL ASSESSMENT:

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.

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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: The methods for determining biodegradability are not applicable to inorganic substances

Distribution to Environmental Compartments: Insoluble. Expected to remain on soil surface. Expected to float on water.

PBT and vPvB Assessment: This substance does not fulfill the criteria for PBT or vPvB

Other adverse effects: No other data are available

13. DISPOSAL CONSIDERATIONS

Disclaimer: Information in this section pertains to the product as shipped in its intended composition as described in Section 3 of this MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers, liners or rinsate. State/provincial and local regulations may be different from federal regulations.

RCRA: Classification (40 CFR 261): Not a hazardous waste.

Canadian Waste Classification: Canada: Not hazardous waste under provincial regulations.

DISPOSAL CONSIDERATIONS:

Waste should not be released to sewers. Product, as supplied, can be burned in suitable incineration facilities or should be disposed of in accordance with the regulations issued by the appropriate federal, state and local authorities. Same consideration should be given to containers and packaging.

14. TRANSPORT INFORMATION

Seven (7) ASTM reference carbon blacks were tested according to the UN method, Self Heating Solids, and 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". Negroven carbon blacks meets this definition.

DOT

UN/ID no	Not regulated
Proper Shipping Name	Not regulated
Hazard Class	Not regulated
Packing group	Not regulated

IMDG

UN/ID no	Not regulated
Proper Shipping Name	Not regulated
Hazard Class	Not regulated
Packing group	Not regulated



SAFETY DATA SHEET

Prepared in accordance with the United States Hazard Communication Standard: 29 CFR 1910.1200 (2012)

RIF: J-00050787-2

RID

UN/ID no	Not regulated
Proper Shipping Name	Not regulated
Hazard Class	Not regulated
Packing group	Not regulated

ADR

UN/ID no	Not regulated
Proper Shipping Name	Not regulated
Hazard Class	Not regulated
Packing group	Not regulated

ICAO (air)

UN/ID no	Not regulated
Proper Shipping Name	Not regulated
Hazard Class	Not regulated
Packing group	Not regulated

IATA

UN/ID no	Not regulated
Proper Shipping Name	Not regulated
Hazard Class	Not regulated
Packing group	Not regulated

15. REGULATORY INFORMATION

Hazard Classification

United States - OSHA (29 CFR 1910.1200): Hazardous.

Mexico - NOM-018-STPS-2000: Refer to HMIS Rating in Section 16.

Canada - WHMIS Classification (CPR, SOR/88-66): Class D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Chemical Name	WHMIS Ingredient Disclosure List:
Carbon Black 1333-86-4	1%

International Inventories

All components of this product are listed on or exempt from the following inventories:

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



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U.S. Federal Regulations

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

SARA 311/312 Hazard Categories

Acute Health Hazard	NO
Chronic Health Hazard	YES
Fire hazard	YES
Sudden release of pressure hazard	NO
Reactive Hazard	NO

SARA Section 313 (40 CFR 372) Toxics Release Inventory:

Under EPA's Toxics Release Inventory (TRI) program the reporting threshold for 21 Polycyclic Aromatic Compounds (PACs) has been lowered to 100 pounds/year manufactured, processed, or otherwise used. The 100 pounds/year applies to the cumulative total of 21 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

Clean Air Act Amendments of 1990 (CAA, Section 112, 40 CFR 82):

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

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).

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.

Food and Drug Administration (FDA):

Carbon black is permitted for indirect contact with food when used as a filler in rubber articles intended for repeated 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. Negroven 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.

Pharmaceutical use:

Not Permitted.

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U.S. 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	Louisiana:
Carbon Black 1333-86-4	X	X	X	

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.

Food, Cosmetic or Medical Use:

Negroven, S.A. does not endorse the use of its products in any direct application or applications that will be in contact with food, cosmetics or medicines.

References:

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General Information:

The carbon black industry continues to sponsor research designed to identify adverse health effects from long term exposure to carbon black. This MSDS will be updated as new safety and health information may become available.

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