SAFETY DATA SHEET

Prepared in accordance with the Thai Classification System and Communication of the Hazards of the Hazardous Substance 2555 BC (2012)

Revision date: 29-Jan-2018

According to the Thai Classification System and Communication of the Hazards of the Hazardous Substance 2555 BC (2012), (SDS) must be provided for hazardous substances or mixtures. This product does not meet the classification criteria of the standard. Therefore such document is outside the scope of the standard and the requirements for content in each section do not apply.

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

Product name:	REGAL® 330 Carbon Black
Product code:	R330
Synonyms:	Carbon Black, Furnace Black
This SDS is valid for the following grades:	Carbon Black grade series: BLACK PEARLS®, ELFTEX®, MOGUL®, MONARCH®, REGAL®, SPHERON®, STERLING®, VULCAN®, CSX™, CRX™, IRX™, FCX™, SHOBLACK™, DL™, PROPEL®, LITX®, and PBX® carbon black. Oxidized grades include: BLACK PEARLS® / MOGUL® L, BLACK PEARLS® / MOGUL® E, MOGUL® H, and REGAL® 400/400R carbon black. *Excludes: BLACK PEARLS® / MONARCH® 1000, 1300, 1400, 1500; BLACK PEARLS® 1300B1; Monarch® 4750; and Black Pearls® 4350/4750 carbon black; and all oil pellet grades..
Recommended use:	Additive/Filler for plastic and rubber, Pigment, Chemical reagent, Batteries, Refractories, Various
Restrictions on use:	Not Applicable.

Supplier:

Cabot China Ltd. 558 Shuangbai Road Shanghai 201108 CHINA Tel: +86 21 5175 8800 Fax: +86 21 6434 5532	Shanghai Cabot Chemical Co. Ltd. 15 Shuangbai Lu Wujing, Shanghai 201108 CHINA Tel: +86 21 6434 7766 Fax: +86 21 6434 0002	Cabot Chemical (Tianjin) Co. Ltd. No.1, Yao Shan Road Han Gu District Tianjin 300000 CHINA Tel: +86 22 5991 1200 Fax: +86 22 6716 0017

Emergency Telephone Number:	CHEMTREC Thailand : 001-800-13-203-9987 International CHEMTREC: +1 703-741-5970 or +1-703-527-3887 US: CHEMTREC: 1-800-424-9300 or 1-703-527-3887

2. HAZARDS IDENTIFICATION

Classification

This substance/mixture is considered not hazardous according to the Thailand Classification System and Communication of the Hazards of the Hazardous Substance 2555 BC (2012).

Label Elements:

Signal Word:
None

Hazard statements:
None

Precautionary statements:
None

Hazards not otherwise classified (HNOC)

This substance is classified as hazardous as a combustible dust by the United States 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Hazardous Products Regulation (HPR) 2015. The signal word, hazard statement and precautionary statements in the United States and Canada are: WARNING May form combustible dust concentrations in air. Keep away from all ignition sources including heat, sparks and flame. Prevent dust accumulations to minimize explosion hazard.

Do not expose to temperatures above 300°C. Hazardous products of combustion can include carbon monoxide, carbon dioxide, oxides of sulfur, and organic products.

Potential health effects

Principle Routes of Exposure:	Inhalation, Eye contact, Skin Contact
Eye Contact:	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 local 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 Conditions 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 No	weight-%	Trade secret
Carbon Black	1333-86-4	100	

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

Note to physicians: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

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 (CO). Carbon dioxide (CO_2). Sulphur oxides.

Protective equipment and: Wear suitable protective equipment. In the event of fire, wear self-contained breathing

precautions for firefighters: 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.

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.

Carbon Black, CAS RN 1333-86-4:

Argentina: 3.5 mg/m^3, TWA
Australia: 3.0 mg/m^3, TWA inhalable
Belgium: 3.6 mg/m^3, TWA
Brasil: 3.5 mg/m^3, TWA
Canada (Ontario): 3.0 mg/m^3, TWA inhalable
China: 4.0 mg/m^3, TWA; 8.0 mg/m^3, STEL
Colombia: 3.0 mg/m^3, TWA inhalable
Czech Republic: 2.0 mg/m^3, TWA
Finland: 3.5 mg/m^3, TWA; 7.0 mg/m^3, STEL
France - INRS: 3.5 mg/m^3, TWA/VME inhalable
Hong Kong: 3.5 mg/m^3, TWA
Indonesia: 3.5 mg/m^3, TWA/NABs
Ireland: 3.5 mg/m^3, TWA; 7.0 mg/m^3, STEL
Italy: 3.0 mg/m^3, TWA inhalable
Japan SOH: 4.0 mg/m^3, TWA; 1.0 mg/m^3, TWA respirable
Korea: 3.5 mg/m^3, TWA
Malaysia: 3.5 mg/m^3, TWA
Netherlands - MAC: 3.5 mg/m^3, TWA inhalable
Mexico: 3.5 mg/m^3, TWA
Norway: 3.5 mg/m^3, TWA
Poland: 4.0 mg/m^3 TWA (NDS) (applies to carbon black containing benzo(a)pyrene <35 mg in 1 kg of carbon black, total inhalable dust)
Sweden: 3.0 mg/m^3, TWA
United Kingdom - WEL: 3.5 mg/m^3, TWA inhalable; 7.0 mg/m^3, STEL inhalable
US ACGIH - TLV: 3.0 mg/m^3, TWA inhalable
US OSHA - PEL: 3.5 mg/m^3, TWA

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) In its facilities globally, Cabot Corporation manages to the US ACGIH TLV of 3.0 mg/m^3 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)
NDS: Najwyzsze dopuszczalne stezenie (8-hour occupational exposure limit)
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 exposicíon diaria (environmental value of daily exposure limit)

Engineering Controls: Ensure adequate ventilation to maintain exposures below occupational limits. Provide appropriate local 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.

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.

Eye/face Protection: Wear eye/face protection. Wear safety glasses with side shields (or 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.

Environmental exposure controls: In accordance with all local legislation and permit requirements.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid	Odor:	None.
Appearance:	Black powder or pellets	Odor threshold:	Not Applicable
Color:	Black		

Property	Values		**Remarks • Method**
pH:	2-11		2-4 (oxidized carbon black) and 4-11 (non-oxidized carbon black), 50 g/l water, 68ºF (20ºC), ASTM 1512
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/cm3		@ 20 °C
Bulk Density:	200-680 kg/m³		(Pellets)
	20-380 kg/m³		(powder)
Specific Gravity at 20°C:	1.7-1.9		
Water solubility:	Insoluble		
Solubility(ies):	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
Softening point:			Not Applicable
VOC content (%):			No information available
% Volatile (by Volume):			No information available
% Volatile (by Weight):	< 2.5%		(950ºC) non-oxidized carbon black
	2 - 8%		(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	(BAM Furnace) VDI 2263 (cloud)
		> 400 °C	VDI 2263 (layer)
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:			No information available
Dust Explosion Classification:		ST1	

10. STABILITY AND REACTIVITY

Reactivity: May react exothermically upon contact with strong oxidizers.

Stability: Stable under recommended handling and storage conditions.

Possibility of hazardous reactions: None under normal processing.

Hazardous polymerization:	Hazardous polymerization does not occur.
Conditions to avoid:	Do not expose to temperatures above 300°C. Keep away from heat and sources of ignition. Avoid dust formation.
Incompatible materials:	Strong oxidizing agents.
Explosion data	See also Section 9.
Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact.
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.

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.

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/m^3 (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/m^3 8 hour TWA daily (inhalable fraction) exposure over a 40-year period (Harber, 2003). An earlier European investigation suggested that exposure to 1 mg/m^3 (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.

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 (Method: OECD 201).
Activated sludge: EC0 (3hr) >= 800 mg/L. (Method: DEV L3 TTC test).

ENVIRONMENTAL FATE

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

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

Mobility: Not expected to migrate. Insoluble.

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 information 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 SDS. 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.

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not regulated

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". Cabot carbon blacks meet this definition.

DOT

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

IMDG

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

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

15. REGULATORY INFORMATION

International 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

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

Cosmetic Use:
Cabot Corporation does not support the use of this product in any cosmetic application.

References:

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ADR: International Carriage of Dangerous Goods by Road
DOT: Department of Transportation
ICAO: International Civil Aviation Organization
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail

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End of Safety Data Sheet