



Safety Data Sheet

Trade Name: **KRAKEN™ Carbon Black (KCB)**

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER'S NAME

Reclaim, Inc.

**For Chemical Emergency
Spill, Leak, Fire, Exposure or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: 1-703-527-3887 (collect calls accepted)**

EMERGENCY telephone number, Reclaim Plant
TECHNICAL telephone

541-481-2730 (8am – 4pm, PST)
541-481-2730 (8am – 4pm, PST)

Contact person

Plant Manager

MANUFACTURER'S ADDRESS

P.O. Box 729, Boardman, OR 97818

General Product Description

Carbon black in a pelletized form used
in rubber manufacturing, pigments and
as an activated adsorbent

SECTION 2: HAZARDS IDENTIFICATION

Kraken™ carbon black (KCB) is listed as an OSHA Air Contaminant (29CFR1910.1000) and has a permissible exposure limit assigned to it. However, it does not meet the definition of hazardous as found in the Global Harmonized System (GHS) which was established to “to identify intrinsic hazards found in substances and mixtures and to convey hazards information about these hazards.” As such, no Signal Word, Hazard Statements, Precautionary Statements or pictograms apply. See Section 3, Exposure Controls/Personal Protection; Section 11, Toxicological Information; and Section 12, Ecological Information.

In 1995 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,” IARC’s overall evaluation was that “Carbon black is possibly carcinogenic to humans (Group 2B).” This conclusion was based on IARC’s guidelines, which require such a classification if one animal species exhibits carcinogenicity in two or more studies. Lung tumors in rats are the result of exposure under “lung overload” conditions. The development of lung tumors in rats is specific to this species. Mouse and hamster showed no carcinogenicity in similar studies.

In 2006 IARC re-affirmed its 1995 classification of carbon black as, Group 2B (possibly carcinogenic to humans).

Overall, as a result of the detailed epidemiological investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated. This view is consistent with the IARC evaluation in 2006. Furthermore, several epidemiological and clinical studies of workers in the carbon black production industries show no evidence of clinically significant adverse health effects due to occupational exposure to carbon black. No dose response relationship was observed in workers exposed to carbon black.

Applying the rules of the Globally Harmonized System of Classification and Labelling, Rev. 5, 2013, the results of



repeated dose toxicity and carcinogenicity studies in animals do not lead to classification of Carbon Black for Specific Target Organ Toxicity or as a Carcinogen. The GHS states “Substances and mixtures which have induced benign and malignant tumours in well performed experimental studies on animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumour formation is not relevant to humans.” [emphasis added]. The European CLP Regulation also mentions, that no classification is indicated if the mechanism is not relevant to humans. Furthermore, the CLP guidance on classification and labelling states, that “lung overload” in animals is listed under mechanism not relevant to humans.

Emergency Overview

A black, insoluble, powder or pellets that can burn or smolder at temperatures greater than 572°F (>300°C). Some grades of carbon black are sufficiently electrically non-conductive to allow a build-up of static charge during handling. Take measures to prevent the build-up of electrostatic charge.

Potential Health Effects Overview

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

Skin Contact: May cause mechanical irritation, soiling, and skin drying. No cases of sensitization in humans have been reported.

Inhalation: Dust may be irritating to respiratory tract above Occupational Exposure Levels. See Section 8, Exposure Controls and Personal Protection .

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

Carcinogenic and Target Organ Effects: See Section 11, Toxicity Information
Medical conditions aggravated by overexposure: Asthma, Respiratory disorders

Ecological Information Overview

No significant environmental hazards are associated with carbon black release to the environment. Carbon black is not soluble in water. See Section 12, Ecological Information.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

KCB is a stable, odorless, black powder processed into a pelletized form. Product consists predominantly of carbon black and may contain inorganic oxides of silicon, aluminum, titanium, iron, calcium, magnesium and zinc. This product may contain < 1.0% of solvent extractable polycyclic aromatic hydrocarbons (PAHs).

Chemical formula: C

Ingredients

Carbon Black (CAS No. 1333-86-4) > 88%

SECTION 4: FIRST AID MEASURES

Eyes	High concentrations may cause reversible mechanical irritation to the eyes. Gently flush eyes, holding them open, with water until all foreign matter is completely removed. Seek medical attention if irritation develops or persists.
Skin	May cause mechanical irritation and soiling. Wash material from skin with mild soap and water. Seek medical attention if irritation develops or persists.
Inhalation	Remove to fresh air. Seek medical attention if breathing is difficult or if irritation of the respiratory tract is experienced.
Ingestion	Rinse mouth with water and spit out. If conscious, give several glasses of water. Do not induce



vomiting. Seek medical attention if a large amount has been ingested or if gastrointestinal symptoms appear.

Note to physicians Treat symptomatically.

Eye wash and hand wash stations should be located near break areas, KCB process lines, and areas in which accidental exposures are most likely to occur. First Aid kits should be visible, located and used in a clean area.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media

Use foam, dry chemical, CO₂, or water fog or spray. A fog spray is recommended if water is used. DO NOT USE HIGH PRESSURE WATER STREAM as this may spread burning powder, which will float on water.

Special Exposure 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. Wet carbon black can produce slippery surfaces. Products of combustion include Carbon monoxide (CO), carbon dioxide (CO₂) and oxides of sulfur.

Firefighter Protection

Full fire-fighting turnout gear, including self-contained breathing apparatus (SCBA) should be worn.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear appropriate personal protective equipment during spill cleanup, including disposable or launderable coveralls, gloves, and filtering facepieces or respirators. See Section 8, Exposure Controls, Personal Protection.

Methods for Cleaning Up

Clean up bulk material with a poly shovel, scoop or broom directly into containers in a manner that will minimize dust generation. Dust minimization may include a light water spray. For smaller spills and final clean of larger spills, a high-efficiency particulate air (HEPA) filtered vacuum is recommended, especially for powder forms of carbon black. NOTE: Wet carbon black produces very slippery walking surfaces.

Environmental Precautions

Carbon black is not known to result in significant environmental damage. As a matter of good practice, prevent release of material to soil, groundwater, surface water, drainage systems, etc. Block accesses to stormwater drains, surface water or soil.

SECTION 7: HANDLING AND STORAGE

Handling

Use engineering controls to minimize airborne carbon black exposures to less than the OSHA (or relevant state plan) occupational exposure limit. Avoid exposure to skin and eyes. If exposed, and before eating or drinking and prior to leaving the site, wash exposed skin with soap and water to avoid mechanical irritation and soiling. Keep any cuts or skin abrasions clean and well-protected.

Adequate local exhaust ventilation in the workplace and optimal process design are highly recommended. Minimize accumulations of fugitive carbon black dust through maintenance of facilities.

Fine dust may cause electrical shorts and is capable of penetrating electrical equipment unless tightly sealed. If hot work (welding, cutting, etc.) is required, the immediate work area must be cleared of carbon black product and dust. Some grades of carbon black are sufficiently electrically non-conductive and may allow a build-up of static charge during handling. Take measure to prevent such build up, such as ensuring all equipment is electrically grounded/earthed.



Practice good housekeeping.

Storage

Store material in well-sealed containers in a dry area away from ignition sources and strong oxidizers. Carbon black is not classified as a Division 4.2 self-heating material under the UN test criteria. However, these criteria are volume dependent, i.e., the auto-ignition temperature decreases with increasing volume. This classification may not be appropriate for very large volume storage containers.

If confined spaces must be entered for maintenance or storage purposes, compliant confined space entry programs must be followed.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls are preferred to keep airborne exposures well below the following Occupational Exposure Levels. These controls include general and local exhaust ventilation, enclosed and sealed process design, automation of activities, etc. These controls will also minimize skin exposure. Manufacturers and purchasers of carbon black should select personal protective equipment using a hazard assessment in accordance with the OSHA PPE Standard (29CFR 1910.132). The information in this section is offered as a guide.

Occupational Exposure Levels (OEL)	OSHA PEL	ACGIH TLV	NIOSH REL
Carbon black, total dust (8 hr/ TWA)	3.5 mg/m ³	3.5 mg/m ³	3.5 mg/m ³ (10 hr. TWA)
No Respirable or Short Term Exposure Limits or "skin" designations have been set by any US agency.			

Inorganic oxides of silicon, aluminum, titanium, iron, calcium, magnesium, and are likely to be present in small concentrations. These metals do not have OELs and the total dust permissible exposure limit (PEL) for carbon black is believed to be protective for exposure to airborne dusts.

Personal Protective Equipment

Eye Protection

Safety goggles or glasses are recommended as a sound industrial safety practice.

Skin Protection

Wear general protective clothing to minimize skin contact. Work clothes should not be worn or taken home and should be washed daily. Disposable single use coveralls are appropriate for high-exposure process equipment maintenance and confined space entries.

No special glove composition is required for carbon black, but nitrile or latex is recommended over more porous gloves to protect hands from carbon black soiling. For tasks requiring greater durability, sturdy work gloves can be worn over the thinner protective gloves. Use of a barrier cream may help to prevent skin drying. Wash hands and other exposed skin with mild soap and water.

Foot Protection

Protective footwear is recommended as a sound industrial safety practice. Styles which are easy to clean are recommended.

Respiratory Protection

NIOSH-approved air purifying respirators (APRs) for particles (including filtering facepieces) should be used when airborne carbon black concentrations are expected to exceed the OEL or a lower action level which the user has set. Higher levels of protection should be used if there is an uncontrolled release, exposure levels are not known or in circumstances where APRs may not provide adequate protection.

APRs do not provide oxygen and may not be appropriate for some exposures. Confined space entry procedures should always include atmospheric monitoring. Use of respirators must be accompanied by a complete and compliant respiratory protection program in accordance with federal and/or state regulations and best practices..



General Hygiene Practices

Wash face and hands with soap and water to remove carbon black before eating, drinking or smoking, prior to leaving the site, and whenever accumulations on skin produce unexpected symptoms. Keep any cuts or skin abrasions that workers may have clean and well-protected.

Emergency eyewash stations should be located in the areas in which accidental exposures are most likely to occur as a matter of good practice. Hand/face wash stations should be located near break rooms and indoor contained process lines. A deluge/safety shower should also be located on site. First Aid kits should be visible, located and used in a clean area.

Practice good housekeeping.

SECTION 9: PHYSICAL AND CHEMICAL PROTECTION

APPEARANCE:	dry, black powder or pellets
ODOR:	none
ODOR THRESHOLD:	N/E
MOLECULAR WEIGHT:	12
PHYSICAL STATE:	solid powder or pellets <1mmd
pH:	>6
MELTING POINT:	N/A
FREEZING POINT:	N/A
BOILING POINT:	N/A
FLASH POINT:	N/A
EVAPORATION RATE:	N/A
FLAMMABILITY:	N/A
UEL/LEL:	N/A
VAPOR PRESSURE:	N/A
VAPOR DENSITY:	N/A
SPECIFIC GRAVITY:	N/E
SOLUBILITY IN H ₂ O:	insoluble
PARTITION COEFFICIENT:	N/E
AUTO-IGNITION TEMPERATURE:	>284° F (for transport)
DECOMPOSITION TEMPERATURE:	>572° F
DENSITY (water = 1 @ 20°C):	1.8 – 2.2 g/ml
BULK DENSITY (powder)	20 to 40 lbs/ft ³
BULK DENSITY (pelletized):	20 to 35 lbs/ft ³

SECTION 10: STABILITY AND REACTIVITY

Stability

This product is stable under normal storage conditions and within normal facility temperatures and pressures.

Conditions to avoid

Prevent exposures to very high temperatures and open flames. Decomposition temperature is >572° F.

Materials to avoid

Strong oxidizers such as chlorates, bromates and nitrates.

Hazardous decomposition products

Carbon monoxide, carbon dioxide and oxides of sulfur form if heated above decomposition temperatures.

Hazardous polymerization

Will not occur.

Static discharge effects

Take precautionary measure against static discharge. All metal parts of mixing and processing equipment must be

grounded/earthed.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50 results of >5000 mg/kg are generally considered to be non-toxic.

Acute oral toxicity: LD50, rat: >8000 to 15,400 mg/kg

Acute inhalation toxicity: No data

Skin irritation: rabbit: non-irritative, index score 0.6/8 (4.0 = severe edema)

Eye irritation: rabbit: non-irritative, Draize score 10-17/110 (100 is maximally irritating)

Chronic toxicity

Inhalation: 2 year inhalation (rat), no tumors

2 year inhalation (mouse), no tumors

Dermal: 18 months dermal (mouse), no skin tumors

Inhalation: 2 year inhalation (rat), inflammation, fibrosis, tumors (see Section 2, Hazards Identification) and the following discussion of this study's results)

Carcinogenicity

Carbon black is not designated a carcinogen by the US NTP or OSHA. The ACGIH has classified carbon black as A4, *Not Classifiable as a Human Carcinogen*. However, the IARC determined in 1996 that "There is *inadequate evidence* in humans for the carcinogenicity of carbon black." Based on the chronic rat toxicity study mentioned above, IARC concluded that there is "*Sufficient evidence* in experimental animals for the carcinogenicity of carbon black." IARC's overall evaluation was that "Carbon black is *possibly carcinogenic* to humans (Group 2B)". This conclusion was based on IARC's guidelines, which require such a classification if one species exhibits carcinogenicity in two or more studies. The State of California added carbon black to the Proposition 65 list of substances "known to cause cancer" based on the IARC's determination.

Recent evidence indicates that the phenomenon of carcinogenicity in the rat lung is species-specific, resulting from persistent overloading of the rat lung with poorly soluble particles <1.0 umd, not a specific chemical property of carbon black. These effects in rats have been reported in many studies on other poorly soluble inorganic particles. Mortality studies of manufacturing workers do not show an association between carbon black exposure and elevated lung cancer rates.

NIOSH recommends that only carbon black with PAH contaminant levels >0.1% requires the measurement of PAHs in air. As some PAHs are possible human carcinogens, NIOSH recommends an exposure limit of 0.1 mg/m³ for PAHs in air for the cyclohexane-extractable fraction.

Specific target organ toxicity (STOT) classification

Because the only inhalation studies showing respiratory system effects are believed to be species specific and the result of lung overload, no STOT classification is made.

Mutagenic effects and germ cell mutagenicity

Studies cannot be done on carbon black in aqueous systems due to its insolubility in water. A study using organic solvent extracts to examine bioavailability of PAHs showed that PAHs are very tightly bound to carbon black and not bioavailable.

One inhalation test using DMSO as a vehicle showed mutational changes in rat alveolar epithelial cells, however, this effect has been attributed to species specificity and to "lung overload" which led to chronic inflammation and release of genotoxic oxygen species. This mechanism is considered to be secondary genotoxic effect and thus, carbon black itself would not be considered to be mutagenic.

Reproductive and teratogenic effects

No reproductive effects have been reported in long-term animal studies, and based on carbon black toxicokinetic data, is not likely to distribute in the body to reach reproductive organs, embryos, and/fetuses in vivo conditions.



Human Epidemiology

Several epidemiological and clinical studies of carbon black production workers show no evidence of clinically significant adverse health effects due to occupational exposure. However, review of historical worker exposure data have demonstrated that exposure over a 40-year period to carbon black dust and other poorly soluble particles may play a role in declining lung capacity as measured by forced expiratory volume in one second (FEV₁). Few other rigorous conclusions have been made in review of historical epidemiological data due to methodological limitations and borderline statistical significance. No dose response relationship was observed in workers exposed to carbon black.

In contrast, a large US study of 18 plants showed a reduction in lung cancer risk in carbon black production workers. Based on these studies, in 2006 the International Agency for Research on Cancer (IARC) concluded that the human evidence for carcinogenicity for *inadequate*. As a result of further detailed investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated.

SECTION 12 ECOLOGICAL INFORMATION

Aquatic toxicity

Aquatic studies have not shown carbon black to be acutely toxic to fish (zebrafish), water fleas, or algae when tested in accordance with OECD guidelines 203, 202, and 201, respectively. The Effective Concentration to 50% of activated sludge bacteria (EC₀) is ≥ 800 mg/l, which does not indicate a hazard to sewer plant bacteria. If released in very large volumes to an aquatic environment, however, this product can be harmful to terrestrial plant and animal life.

Environmental Fate and Persistence

Carbon black is substantially elemental carbon and cannot be further degraded by microorganisms, hydrolysis, light or photodegradation in air or in surface water. It is inert, has negligible vapor pressure, and contains no functional or water-soluble groups.

Carbon black is not soluble in water, will not leach and tends to settle out in stable water mass. It is not expected to migrate. Carbon black has a very high surface area and a strong adsorptive capacity, which can result in uptake of certain organic materials.

Bioaccumulation

Bioaccumulation is not expected due to physiochemical properties of the substance.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Minimization

Recover or recycle spilled materials or unused product if possible.

Waste Classification

In the US, (non-contaminated) carbon black is not considered a hazardous waste under RCRA (40CFR261). In Canada, this product is not a hazardous waste under provincial regulations.

Disposal

Carbon black can be disposed of in landfills. Disposal must be in accordance with national, provincial, and local regulations that are current at the time of disposal. It is the ultimate responsibility of the purchaser of the material to determine appropriate and compliant disposal practices.

SECTION 14 TRANSPORT INFORMATION

Carbon black is not regulated or considered hazardous for shipment purposes by the US Department of Transportation (49CFR172) and is not classified as a hazardous material by Canadian Transport of Dangerous Goods Regulation.



Carbon black is considered not dangerous according to International Maritime Dangerous Goods Code, International Civil Aviation Authority or under US Rail Regulations.

SECTION 15 REGULATORY INFORMATION

OSHA has set Permissible Exposure Limits for carbon black (29CFR1910.1000, Table Z-1); see Section 8, Exposure Controls/Personal Protection. As such, OSHA considers carbon black to be a hazardous material. Carbon black is not a Hazardous Air Pollutant under Section 112 of the Clean Air Act and does not deplete ozone. It is not listed as a Toxic or Priority Pollutant under Section 307 or included in Section 311 (Oil and Hazardous Substance Liability) of the Clean Water Act.

Carbon black is not listed as an Extremely Hazardous Substance under SARA Sections 301/302, Emergency Planning. Carbon black is not a CERCLA hazardous substance; it is also not subject to SARA Section 304, Emergency Release Notifications. Carbon black is not subject to SARA Section 313, Toxic Chemical Release Inventory Reporting.

SARA Sections 311/312 Community Right to Know (RTK) Reporting Requirements is triggered if a facility exceeds the threshold limit of 10,000 pounds of carbon black on-site for any one day in a calendar year. Such a facility must comply with required RTK reporting. The RTK reporting threshold for 21 polycyclic aromatic compounds (PACs) is 100 pounds/year (cumulative total of 21 specific PACs) manufactured, processed or otherwise used. Carbon black may contain certain of these PACs and the user is advised to evaluate their own reporting responsibilities.

Carbon black (airborne, unbound particles of respirable size) is listed on the State of California Proposition 65 Carcinogen List. Carbon black can be found on the following state RTK lists: Pennsylvania, Minnesota, New Jersey, California, Massachusetts, and Louisiana (above 500 lbs. on site on any one day).

Carbon black is listed on Canadian EPA (CEPA) Domestic Substances List (DSL). It is identified as a class D2A (due to its IARC 2B rating) and D2B (due to its skin/eye irritation potential) by the Workplace Hazardous Material Information System. It is listed on the Canadian Ingredient Disclosure list. It is not listed on the National Pollutant Release Inventory (NPRI).

TSCA Product definition: Contact Reclaim.

SECTION 16 OTHER INFORMATION

National Fire Protection Association (NFPA) rating

Health: 0
Flammability: 1
Reactivity: 0

Hazardous Materials Identification System (HMIS™) rating

Health: 1 (chronic hazard)
Flammability: 1
Physical Hazard: 0

Revision date: 9-25-14 for compliance with GHS
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This SDS was prepared in accordance with OSHA 29CFR1910.1200 and with ANSI Standard Z400.1-2004 by:

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The data and information presented in this document corresponds to the present state of our knowledge and experience and intended to describe the product with respect to possible occupational health and safety concerns.



The user of this product has sole responsibility to determine the suitability of the product for any use and manner of use intended, and for determining the regulations applicable to such use in the relevant jurisdiction. It does not represent any guarantee of the properties of the product. Reklaim and Integral Consulting are not liable for any damage resulting from handling or from contact with this product.