



Version 2.0

Safety Data Sheet

SECTION 1: IDENTIFICATION

- 1.1 Product Identifier
Commercial Product Name: Recovered Carbon Black (rCB) with different grade names: rC64 and rC74

Synonyms: Recovered Carbon Filler

REACH Registration Number: This material does not require registration according to regulation (EC) 1207/2006 (REACH)
- 1.2 Relevant Identified Uses of the Material:
Recovered Carbon Black (rCB) for industrial plastic and rubber use
- 1.3 Supplier Information:
Pyrolyx USA Indiana
4150 E. Steelton Ave.
Terre Haute, IN. 47805
1-812-462-1703
- 1.4 For Chemical Emergency:
Spill, Leak, Fire, Exposure, or accident:
Call CHEMTREC day or night
Within the USA and Canada: 1-800-424-9300
Outside of the USA or Canada: 1-703-527-3887 (Collect calls are accepted)

SECTION 2: HAZARDS IDENTIFICATION

- 2.2 Classification of the Material: This material is considered hazardous due to being a combustible dust by the United States 2012 OSHA Hazard Communication Standard (29 CFR 1910-1200).
Signal Word: WARNING
Pictogram: NONE
Hazard Statements: May form dust concentrations that are combustible.
Precautionary Statements: Prevent dust accumulation. Keep this material away from ignition sources.
- 2.3 Hazards Not Otherwise Classified:
rCB should not be exposed to temperatures above 300 degrees Celsius. Hazardous products such as Carbon Dioxide, Carbon Monoxide, and Sulfur Oxides may be released.



- 2.4 Emergency Overview: rCB is a black, insoluble, powder or pellet that can burn or smolder at temperatures greater than 572 degrees F (>300 degrees C)
Some grades of carbon black are sufficiently electrically non-conductive to allow a buildup of static charge during handling. Take measures to prevent buildup of electrostatic charge.
- 2.6 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 human sensitization have been reported.
Inhalation: Dust may be irritating to the respiratory tract above occupational exposure levels. Provide local exhaust ventilation if levels exceed occupational exposure limits. See also Section 8.
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: Toxicological Information
Medical Conditions Aggravated by Overexposure: Asthma, respiratory disorders.
Ecological Information Overview: No significant environmental hazards are associated with carbon black release into the environment. Carbon Black is not soluble in water. See section 12: Ecological Information.
- 2.7 Other Hazards: The product has no other known specific hazards for human or environment.
The product does not meet the criteria for PBT or vPvB substances.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

- 3.1 Substance: Chemical Characterization: Carbon Black, Zinc Sulfide, Silicon Dioxide SiO₂.
rCB is a stable, odorless black powder processed into pelletized form.

Description	CAS Number	Conc. (%)	Classification: 1272/2008/EC (CLP)		
			Hazard pict.	Hazard cat.	H phrase
Carbon Black	1333-86-4	76-87	-	Not Classified	-
Zinc Sulfide	1314-98-3	4.0 – 10.0	-	Not Classified	-
Silicon Dioxide	7631-86-9	2.0 – 13.0	-	Not Classified	-



SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures:

General Advice: In case of accident or when feeling unwell, immediately seek medical advice (If possible, show medical personnel Safety Data Sheet (SDS))

EYE CONTACT: High concentrations may cause reversible mechanical irritation to the eyes. Gently flush eyes, holding them open, with an eye wash station until all foreign matter is completely removed. Seek medical attention if irritation develops or persists.

SKIN CONTACT: 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: If conscious, give several glasses of water. Do Not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention if a large amount has been ingested or if gastrointestinal symptoms appear.

NOTE TO PHYSICIANS: Treat symptomatically

Note: Eye wash and hand wash stations should be located near break areas, rCB process lines, and areas in which accidental exposures are more likely to occur. First aid kits should be visible, located and used in a clean area.

4.2 Most Important Symptoms and effects, Both Acute and Delayed:

Frequent or prolonged skin contact may cause skin irritation.
Contact with eyes can cause irritation.
Inhalation may cause allergy, asthma symptoms or breathing difficulties.

4.3 Indication of any immediate medical attention and special treatment needed:

First aid, decontamination, and symptomatic treatment.



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SECTION 5: FIREFIGHTING MEASURES

5.1. 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.

5.2. 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.

5.3. Advice for Firefighters:

Wear full protective chemical resistant gear and self-contained breathing Apparatus (SCBA).

The extinguishing media should not be allowed into drains, soils, or watercourses.

Remove product from danger area.

Cool closed containers affected by the fire with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions:

Wear appropriate personal protective equipment during cleanup, including disposable or washable coveralls, gloves, and filtering facepieces or respirators. See section 8: exposure controls, personal protection.

6.2. Methods for Clean 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-up 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.



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6.3 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 access to storm water drains, surface water or soil.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling:

Use engineering controls to minimize airborne carbon black exposure to less than the OSHA (or relevant state plan) occupational exposure limit.

Avoid exposure to skin and eyes.

If exposed, and before eating and 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 measures to prevent such build-up, such as ensuring all equipment is electrically grounded/earthed.

7.2 Conditions for Safe Storage:

Keep containers tightly closed in a cool, well ventilated area.

Protect from moisture.

Keep away from food, beverages, and animal feed.

Incompatible materials: Acids, bases, and oxidizing agents.

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

Keep away from heat, as well as potential ignition sources. Keep strong oxidizing agents away.



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rCB is not classifiable as a Division 4.2 self-heating substance under the UN test criteria. This classification may not be relevant to for large volumes.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Engineering Controls:

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 recovered carbon black should select personal protective equipment using a hazard assessment in accordance with the OSHA PPE Standard (29CFR 1910.132). The information listed in this section is a guide.

8.2 Occupational Exposure Levels (OEL)

OSHA Permissible Exposure Limit (PEL)

- Carbon Black, total dust (8 hour/TWA): 3.5 mg/m³

ACGIH Threshold Limit Value (TLV)

- Carbon Black, total dust (8 hour/TWA): 3.0 mg/m³

NIOSH Recommended Exposure Limit (REL)

- Carbon Black, total dust (10 hour/TWA): 3.5 mg/m³

Note: No respirable or short-term exposure limits or “skin” designations have been set by any US agency.

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

8.3 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.



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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 (APR's) 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 APR's may not provide adequate protection.

APR's 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, smoking, prior to leaving the site, and whenever accumulations on skin produce unexpected symptoms.

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 the breakrooms 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 PROPERTIES

APPEARANCE:	DRY, BLACK POWDER OR PELLETS
UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS:	NO DATA AVAILABLE
ODOR:	BARELY PERCEPTABLE
VAPOR PRESSURE:	N/A



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ODOR THREASHOLD:	N/A
VAPOR DENSITY:	NO DATA AVAILABLE
PH: ASTM 1512	2-11
RELATIVE DENSITY: (WATER= 1@20°C)	1.7-2.2 g/cm ³
MELTING POINT/FREEZING POINT:	N/A
SOLUBILITY:	NOT SOLUABLE IN WATER
INITIAL BOILING POINT AND BOILING RANGE:	N/A
FLASH POINT:	N/A
EVAPORATION RATE:	N/A
FLAMMABILITY (SOLID/GAS):	Not Flammable
EXPLOSIVE PROPERTIES:	DUST MAY FORM EXPLOSIVE MIXTURE IN AIR
PARTITION COEFFICIENT: N-OCTANOL/WATER:	N/A (PRODUCT IS INORGANIC)
AUTO-IGNITION TEMPERATURE:	>140 DEGREES C
DECOMPOSITION TEMPERATURE:	NO DATA AVAILABLE
VISCOSITY:	N/A

SECTION 10: STABILITY AND REACTIVITY

10.1	<u>Reactivity:</u>	Exothermic reaction may occur if in contact with a strong oxidizer.
10.2	<u>Chemical Stability:</u>	This product is stable under normal storage conditions and within normal facility temperatures and pressures.
10.3	<u>Possibility of Hazardous Reactions:</u>	Contact with acids liberates toxic gases.
10.4	<u>Conditions to Avoid:</u>	Avoid temperatures above 300 degrees C. Avoid ignition sources. Avoid formation of dust.
10.5.	<u>Incompatible Materials:</u>	Strong acids and bases, and oxidizers such as chlorates, bromates, and nitrates
10.6	<u>Hazardous Decomposition Products:</u>	Carbon monoxide, carbon dioxide, and Hydrogen Sulfide.



10.7. Hazardous Polymerization: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity:

Oral LD50 results of >8000 mg/kg. (Equivalent to OECD TG 401).

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

Acute inhalation toxicity: No Data

Skin Irritation: Rabbit: non-irritative

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 month 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 as 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 carcinogenetic to humans (Group 2B)". This conclusion was based on IARC's guidelines, which require such 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



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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 contaminate levels >0.1% requires the measurement of PAH's in air. As some PAH's 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 PAH's showed that PAH's 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 the "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, it 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 has 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

12.1 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 (EC₅₀) is ≥ 800 mg/l, which does not indicate a hazard to sewer plant bacteria. If released in very large volumes to aquatic environment, however, this product can be harmful to terrestrial plant and animal life.

12.2 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, which 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.

12.3 Bioaccumulation:

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

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Minimization:

Recover or recycle spilled materials or unused product if possible.

13.2 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.

13.3 Disposal:

Dispose of according to local regulations.

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

- 14.1 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.

DOT

UN/ID no:	Not Regulated
Proper Shipping Name:	Not Regulated
Hazard Class:	Not Regulated
Packing Group:	Not Regulated

SECTION 15: REGULATORY INFORMATION

- 15.1 OSHA has set Permissible Exposure Limits (PEL's) 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 (PAC's) is 100 pounds/year (cumulative total of 21 specific PAC's) manufactured, processed or otherwise used. Carbon black may contain certain of these PAC's 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 on the Canadian Ingredient Disclosure list. It is not listed on the National Pollutant Release Inventory (NPRI).



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SECTION 16: OTHER INFORMATION

16.1 National Fire Protection Association (NFPA) Rating:

Health: 0
Flammability: 1
Reactivity: 0

16.2 Hazardous Materials Identification System (HMIS) Rating:

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

Creation Date: 2-1-19

Revision Date: 2-13-19

This SDS was created by combining the SDS from CCT Pyrolyx dated 10-25-2017 and the SDS from Reclaim dated 9-25-14

The information used in this SDS represents information Pyrolyx USA Indiana believes to be correct. No warranty, expressed or implied is intended. The user of this product has the 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. Pyrolyx USA Indiana is not liable for any damage resulting from handling or from contact with this product.

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