

SAFETY DATA SHEET

Tire Pyrolysis Carbon — Recovered Carbon Black (rCB)

Product identifier	Tire Pyrolysis Carbon (Recovered Carbon Black)
SDS number	178/PRC-DNF/SDS/VIII.2026
Version / Revision No.	1.2
Date of issue	18 August 2026
Date of revision	6 October 2026
Supersedes	Version 1.1 dated 18 September 2026

SECTION 1 — IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product name	Tire Pyrolysis Carbon
Synonyms	Recovered Carbon Black (rCB); Pyrolytic Carbon Black (pCB); Tire-Derived Carbon Char
Trade name / grade	PYROCARBON PC-380
CAS No. (main component)	1333-86-4 (carbon black)
Substance identity	UVCB substance recovered from the pyrolysis of end-of-life tyres: amorphous carbon with an inorganic (ash) fraction and residual hydrocarbons. Not identical to virgin furnace carbon black. The CAS number above identifies the carbon component; see Sections 3 and 15.
Chemical family	Inorganic carbon / elemental carbon
Molecular formula	C (amorphous carbon with residual inorganic and hydrocarbon content)

Relevant identified uses

Filler and reinforcing agent for rubber compounding (tire, industrial rubber goods, conveyor belts, rubber mats); pigment and filler for plastics, coatings and inks.

Uses advised against

Not for food, pharmaceutical, cosmetic or feed applications. Not to be used as fuel.

Company identification

Role	Details
Exporter / Supplier	PT. Drei Naftali Enkelkinder The Manhattan Square Mid Tower Lantai 12 unit C-F Jl. TB Simatupang Kav 15, Pasar Minggu, Jakarta 12520 Email: petrus.dwi@dnafcreative.id NIB: 8120019142174 NPWP: 452810963017000
Emergency telephone	+62 811-161-0070

SECTION 2 — HAZARDS IDENTIFICATION

2.1 GHS classification of the substance

Hazard class	Category	Code
Carcinogenicity	Category 2	H351
Specific target organ toxicity — repeated exposure (inhalation, lungs)	Category 2	H373

2.2 GHS label elements

Pictogram	GHS08 (health hazard)
Signal word	WARNING

Hazard statements

- H351 — Suspected of causing cancer (inhalation).
- H373 — May cause damage to lungs through prolonged or repeated exposure (inhalation).

Precautionary statements

- P201 — Obtain special instructions before use.
- P260 — Do not breathe dust.
- P264 — Wash hands and exposed skin thoroughly after handling.
- P280 — Wear protective gloves, protective clothing and eye protection.
- P284 — Wear respiratory protection where dust control is inadequate.
- P308+P313 — IF exposed or concerned: Get medical advice/attention.
- P314 — Get medical advice/attention if you feel unwell.
- P403+P233 — Store in a well-ventilated place. Keep the container tightly closed.
- P501 — Dispose of contents and container in accordance with local, regional and national regulations.

2.3 Other hazards

- **Dust explosion hazard.** Fine dust dispersed in air at sufficient concentration in the presence of an ignition source constitutes a potential dust explosion hazard. Minimum Ignition Energy has not been determined for this product (test method ASTM E2019). Ground and bond all transfer equipment.
- **Mechanical irritation.** Dust may cause mechanical irritation of eyes and skin, and skin drying and soiling. Not a chemical irritant.
- **Confined space hazard.** Products may absorb oxygen from enclosed atmospheres. Test atmosphere and ventilate before entering silos, containers or holds.
- Not assessed as PBT or vPvB for this product; carbon black does not meet the PBT/vPvB criteria (read-across).

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

Substance (UVCB — substance of Unknown or Variable composition, Complex reaction product or Biological material).

Component	CAS No.	EC No.	Concentration (% w/w)
Carbon (fixed carbon; carbon black component)	1333-86-4	215-609-9 *	79.45 %
Ash (inorganic residue: SiO ₂ , ZnO, CaO, metal oxides)	Mixture	—	14.89 %
Residual hydrocarbons (as volatile matter)	Mixture	—	3.95 %
Moisture	7732-18-5	231-791-2	0.98 %

Proximate composition per Sucofindo (ID Survey) Report of Analysis No. E39567/CNBPAT dated 2 September 2026, method SNI 06-3730-1995. Total sulfur 1.34 % (XRF) is bound within the fractions above. Values are typical for the lot analysed; batch certificates of analysis are supplied with each

shipment.

* CAS and EC numbers identify the carbon black component only. With an ash content of about 15 %, the product as a whole is not the same substance as virgin carbon black (EC 215-609-9).

Impurities: Polycyclic Aromatic Hydrocarbons (PAH) may be present as residual surface-adsorbed impurities. PAH content has not been measured on this product.

SECTION 4 — FIRST AID MEASURES

Route	Measure
Eyes	Rinse with clean water for at least 15 minutes, keeping eyelids open. Carbon black is not a chemical eye irritant; treat symptomatically for mechanical irritation. If symptoms persist, seek medical attention.
Inhalation	Move the person to fresh air and restore normal breathing as conditions permit. Short-term exposure to concentrations well above the occupational exposure limit may produce temporary discomfort of the upper respiratory tract, with coughing and wheezing. Removal from exposure is normally sufficient for symptoms to subside without lasting effects. If breathing is difficult, give oxygen. Seek medical attention if symptoms persist.
Skin	Remove contaminated clothing, taking precautions to avoid making dust airborne. Wash skin with mild soap and water. Get medical attention if symptoms occur. Launder contaminated clothing before reuse; do not take work clothing home.
Ingestion	No adverse effects expected. Do not induce vomiting. Rinse mouth with water. If a large quantity has been swallowed or the person feels unwell, seek medical attention.

Most important symptoms and effects: Mechanical irritation of eyes and upper respiratory tract; skin drying and soiling. No cases of human sensitization reported.

Note to physician: Treat symptomatically. No specific antidote.

SECTION 5 — FIRE-FIGHTING MEASURES

Suitable extinguishing media	Water fog or spray (preferred), foam, carbon dioxide (CO ₂), dry chemical, nitrogen (N ₂), sand.
Unsuitable extinguishing media	Do not use a direct high-pressure water jet — it disperses dust and may create an explosive dust cloud.
Specific hazards	Combustible solid. May smoulder internally for extended periods without visible flame; a fire may appear extinguished while combustion continues within the bulk. Fine airborne dust in sufficient concentration with an ignition source is a dust explosion hazard. Products may absorb oxygen from enclosed spaces.
Hazardous combustion products	Carbon monoxide (CO), carbon dioxide (CO ₂), oxides of sulphur (SO _x), oxides of nitrogen (NO _x), and organic decomposition products.
Protective actions for fire-fighters	Wear full protective firefighting gear including self-contained breathing apparatus (SCBA). After extinguishing, break open and spread the bulk material to verify no internal smouldering remains. Monitor the site for re-ignition for at least 48 hours.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions	Wear personal protective equipment per Section 8. Avoid dust generation. Eliminate all ignition sources. Ensure adequate ventilation.
Environmental precautions	Prevent entry into drains, sewers and watercourses.

Containment and clean-up	Use vacuum equipment fitted with a HEPA filter, or lightly wet the material with water to suppress dust before sweeping. Do not use dry sweeping or compressed air. Scoop into a labelled container for recovery or disposal. Wash the residual film from the surface with water and detergent.
Reference	See Sections 8 and 13.

SECTION 7 — HANDLING AND STORAGE

Precautions for safe handling	Minimize dust generation and accumulation on surfaces. Keep airborne dust below the occupational exposure limit (Section 8). Ground and bond containers and transfer equipment to prevent electrostatic discharge. Keep away from open flames, hot surfaces and other ignition sources. Do not smoke. Avoid contact with strong acids and oxidizing agents. Wash hands thoroughly after handling.
Conditions for safe storage	Store in tightly sealed containers at ambient temperature in a dry, well-ventilated area away from heat, ignition sources and incompatible materials. Do not store near strong oxidizers. Keep away from combustible materials. Monitor bulk storage temperature — internal heating may indicate the onset of self-heating.
Incompatible materials	Strong oxidizing agents (chlorates, bromates, nitrates, perchlorates), strong acids.
Packaging	Supplied in the following standard packaging: • 25 kg woven polypropylene (PP) bag with inner polyethylene (PE) liner • 500 kg flexible intermediate bulk container (FIBC / jumbo bag) with inner PE liner • 1,200 kg flexible intermediate bulk container (FIBC / jumbo bag) with inner PE liner Keep all packaging tightly closed. Store on pallets, clear of the floor and protected from moisture. Do not stack beyond the limit marked on the container. Handle FIBCs by the designated lifting loops only.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Occupational exposure limits — Carbon Black (CAS 1333-86-4)

Jurisdiction	Limit	Value
Indonesia (Permenaker 5/2018)	NAB (TWA)	3.5 mg/m ³
ACGIH	TLV-TWA	3 mg/m ³ (inhalable fraction)
US OSHA	PEL-TWA	3.5 mg/m ³

Biological limit values: None established.

8.2 Exposure controls

Engineering controls	Use process enclosures, local exhaust ventilation and/or other engineering controls to keep airborne dust below the applicable occupational exposure limit. Use explosion-proof electrical and ventilation equipment. Provide eyewash stations and safety showers in the work area.
Respiratory protection	Where dust levels may exceed the exposure limit, use a NIOSH/KOSHA-approved particulate respirator (minimum N95 / FFP2; use P100 / FFP3 for higher concentrations).
Hand protection	No special glove composition required. General-duty work gloves are adequate to prevent soiling and skin drying. A barrier cream may help.

Eye protection	Safety glasses with side shields, or goggles where dust levels are high.
Skin and body protection	General protective clothing covering exposed skin. Work clothing should be laundered daily and must not be taken home.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Property	Value
Appearance	Fine black powder
Colour	Black
Odour	Slight rubber-like odour
Odour threshold	Not applicable
pH (aqueous suspension)	Not determined (test method ASTM D1512)
Melting / freezing point	Not applicable (carbon sublimates >3500 °C) †
Boiling point	Not applicable
Flash point	Not applicable (solid)
Evaporation rate	Not applicable
Flammability	Combustible solid; not readily flammable
Explosive limits (dust)	Not determined for this product; carbon black approx. 50 g/m ³ (lower explosive concentration) †
Minimum Ignition Energy (MIE)	Not determined (test method ASTM E2019)
Vapour pressure	Not applicable
Vapour density	Not applicable
Relative density	1.7 – 1.9 g/cm ³ †
Bulk (pour) density	250 – 400 kg/m ³ (indicative, not measured on this lot)
Solubility in water	Insoluble
Partition coefficient (n-octanol/water)	Not applicable
Auto-ignition temperature	Not determined
Self-heating (UN Test N.4)	Not determined
Decomposition temperature	>400 °C †
Viscosity	Not applicable

† Literature value for carbon black (read-across); not measured on this product.

9.2 Proximate analysis and sulfur — accredited laboratory results

Parameter	Unit	Result	Method
Moisture content	%	0.98	SNI 06-3730-1995
Ash content	%	14.89	SNI 06-3730-1995
Volatile matter	%	3.95	SNI 06-3730-1995

Fixed carbon	%	79.45	SNI 06-3730-1995
Total sulfur	%	1.34	XRF

Source: Sucofindo (ID Survey) Report of Analysis No. **E39567/CNBPAT**, dated 2 September 2026, issued by Sub Dept. Oil, Gas & Chemical Laboratory, Cibitung; sample received 20 August 2026, analysed 20 August – 1 September 2026; client PT. Drei Naftali Enkelkinder; sample type Carbon Black Pyrolysis, powder. Results relate to the sample submitted. Certificate reference 38010326001109.

SECTION 10 — STABILITY AND REACTIVITY

Reactivity	Not reactive under normal ambient conditions.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Hazardous polymerization will not occur. Contact with strong oxidizers may cause a violent reaction.
Conditions to avoid	Temperatures above 400 °C; open flames and other ignition sources; dust cloud formation; electrostatic discharge; confined storage without temperature monitoring.
Incompatible materials	Strong oxidizing agents (chlorates, bromates, nitrates, perchlorates); strong acids.
Hazardous decomposition products	On heating above the decomposition temperature — carbon monoxide (CO), carbon dioxide (CO ₂), oxides of sulphur (SO _x), and organic products of decomposition.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute toxicity

Route	Result
Oral	LD ₅₀ (rat) > 8,000 mg/kg
Dermal	LD ₅₀ (rabbit) > 3,000 mg/kg
Inhalation	LC ₅₀ (rat, 4 h) > 4.6 mg/L

All data in this section are read-across from carbon black (CAS 1333-86-4). No toxicological testing has been performed on this product.

Skin corrosion / irritation	Not irritating (mechanical irritation and drying only).
Serious eye damage / irritation	Not a chemical irritant; mechanical irritation only.
Respiratory or skin sensitization	Not a sensitizer. No cases of human sensitization reported.
Germ cell mutagenicity	Not classified. Carbon black is negative in bacterial reverse mutation assays (read-across).
Reproductive toxicity	Not classified. No evidence of reproductive toxicity.
Carcinogenicity	IARC: Group 2B — possibly carcinogenic to humans. NTP: not listed. US OSHA: not regulated as a carcinogen. Chronic inhalation studies in rats produced lung tumours at high exposure concentrations under conditions of lung overload. Epidemiological studies of carbon black production workers have not demonstrated a consistent causal association with cancer in humans. Classified as Carcinogenicity Category 2 (H351) by self-classification.
STOT — single exposure	Not classified.
STOT — repeated exposure	Prolonged or repeated inhalation of dust may cause lung effects (inflammation, fibrosis). Category 2 (H373).

Aspiration hazard	Not classified.
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SECTION 12 — ECOLOGICAL INFORMATION

Ecotoxicity	Insoluble in water and of low bioavailability. No significant adverse effects on aquatic organisms expected.
Persistence and degradability	Not biodegradable. Chemically inert and persistent in the environment.
Bioaccumulative potential	Not expected to bioaccumulate. Log K_{ow} not applicable (insoluble inorganic solid).
Mobility in soil	Immobile. Adsorbs onto soil and sediment.
PBT and vPvB assessment	Not assessed for this product. Carbon black does not meet the PBT/vPvB criteria (read-across).
Other adverse effects	May cause physical fouling and discoloration of surface water and soil. Prevent release to drains and watercourses.

SECTION 13 — DISPOSAL CONSIDERATIONS

Product	Do not release to sewers or watercourses. May be incinerated in a suitably permitted facility, or landfilled, in accordance with national and local regulations. In Indonesia, dispose of in accordance with PP 22/2021 on Environmental Protection and Management.
Contaminated packaging	Empty containers retain product residue. Do not reuse for other purposes. Dispose of or recycle in accordance with the same regulations as the product.

SECTION 14 — TRANSPORT INFORMATION

Mode	Classification
UN number	Not applicable
IMDG (sea)	Not classified as dangerous goods
IATA (air)	Not classified as dangerous goods
ADR / RID (road / rail)	Not classified as dangerous goods
Marine pollutant	No

SECTION 15 — REGULATORY INFORMATION

Republic of Indonesia

- Government Regulation **PP 22/2021** — Environmental Protection and Management.
- Minister of Industry Regulation **No. 23/M-IND/PER/4/2013** — Globally Harmonized System of Classification and Labelling of Chemicals.
- Minister of Manpower Regulation **No. 5/2018** — Occupational Safety and Health in the Working Environment.
- Export classification: **HS 2803.00.41** — “Carbon black, of a kind used for rubber processing”. Export duty: nil.

International

- **IARC Monographs:** carbon black classified in **Group 2B** (possibly carcinogenic to humans).
- **EU:** No harmonised classification under CLP Regulation (EC) 1272/2008 for carbon black. ECHA has accepted a dedicated substance identity for carbon recovered from spent tyres, EC 954-402-4 (“Amorphous carbon and silicon dioxide recovered from processing of spent tyres”). This product is not registered under EU REACH.

- **Republic of Korea:** Registration under the Act on Registration and Evaluation of Chemicals (K-REACH) is the responsibility of the Korean importer.

Chemical safety assessment: Not performed.

SECTION 16 — OTHER INFORMATION

Abbreviations used

Abbreviation	Meaning
ACGIH	American Conference of Governmental Industrial Hygienists
ASTM	American Society for Testing and Materials
CAS	Chemical Abstracts Service
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
IARC	International Agency for Research on Cancer
IMDG	International Maritime Dangerous Goods Code
LD ₅₀ / LC ₅₀	Lethal Dose / Lethal Concentration, 50%
NAB	Nilai Ambang Batas (Indonesian occupational exposure limit)
PAH	Polycyclic Aromatic Hydrocarbons
PBT / vPvB	Persistent, Bioaccumulative and Toxic / very Persistent, very Bioaccumulative
rCB	Recovered Carbon Black
SCBA	Self-Contained Breathing Apparatus
SNI	Standar Nasional Indonesia (Indonesian National Standard)
STOT RE	Specific Target Organ Toxicity — Repeated Exposure
TLV / PEL / TWA	Threshold Limit Value / Permissible Exposure Limit / Time-Weighted Average
UN	United Nations
UVCB	Substance of Unknown or Variable composition, Complex reaction product or Biological material
XRF	X-Ray Fluorescence spectrometry

Disclaimer

The information in this Safety Data Sheet is based on data available to the supplier at the date of issue and is believed to be correct. It is provided in good faith as guidance on the safe handling, use, storage, transport and disposal of the product, and does not constitute a warranty or specification of quality. The product is intended for industrial use only, by trained personnel. Users must satisfy themselves as to the suitability and completeness of this information for their own particular application and are responsible for compliance with all applicable laws and regulations.

— END OF SAFETY DATA SHEET —