

# SAFETY DATA SHEET

Version: 1.0 Date: 2 September 2022

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878



## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

<b>1.1 Product identifier</b>	
Product name	Perpetual Carbon / Biochar 28-30MJ/kg
Product code	PCR700T, PCR720T, PCR777T, PCR800P, PCR830P, PCR900T, PCR940T, PCC700T, PCC720T, PCC777T, PCC800P, PCC830P, PCC900T, PCC940T, PCS777T, PCS800P, PCS830P, PCS900T, PCA940T, PCA777T, PCA800P, PCS830P, PCS900P, PCS940P
Unique Formula Identifier (UFI)	None assigned.
<b>1.2 Relevant identified uses of the substance or mixture and uses advised against</b>	
Identified Use(s)	Perpetual Carbon is a renewable carbon-based product which can be used for carbon sequestration, carbon filtration, additive for the cement industry and additive for the steel industry or as a reduction or coking coal replacement. It is made from forestry and agricultural residues which are thermally treated in an oxygen deficient environment.
Uses advised against	Not for human or animal consumption.
<b>1.3 Details of the supplier of the safety data sheet</b>	
Company Identification	Perpetual Next 1033 SE Amsterdam The Netherlands
Telephone	+31 20 308 5910 (Netherlands)
E-mail (competent person)	<a href="mailto:v.kolelas@perpetualnext.com">v.kolelas@perpetualnext.com</a> (UK Derby site) <a href="mailto:a.tonuri@perpetualnext.com">a.tonuri@perpetualnext.com</a> (Estonia, Baltania site) <a href="mailto:h.schimmel@perpetualnext.com">h.schimmel@perpetualnext.com</a> (Netherlands, Perpetual Next)
<b>1.4 Emergency telephone number</b>	
Emergency Phone No.	+44 1332 767340 (Derby site) Office hours: 7am - 4pm +372 508 0144 (Estonia, Baltania site) Office hours: 8am - 5pm
Languages spoken	English (UK Derby site) English and Estonian (Estonia, Baltania site) Dutch and English (Amsterdam site)



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## SECTION 2: HAZARDS IDENTIFICATION

<b>2.1</b>	<b>Classification of the substance or mixture</b>	
<b>2.1.1</b>	<b>Regulation (EC) No. 1272/2008 (CLP)</b>	Eye Irrit. 2; H319 STOT SE 3; H335 Self-heat. 1; H251
<b>2.2</b>	<b>Label elements</b>	According to Regulation (EC) No. 1272/2008 (CLP)
	Product name	Perpetual Carbon / Biochar
	Contains:	Carbon
	Hazard Pictogram(s)	 
	Signal Word(s)	DANGER (H251) WARNING (H319, H335)
	Hazard Statement(s)	H251: Self Heating; May catch Fire H319: Causes serious eye irritation. H335: May cause respiratory irritation.
	Precautionary Statement(s)	P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P261: Avoid breathing dust. P280: Wear protective gloves/protective clothing/eye protection/face protection. P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312: Call a POISON CENTRE/doctor if you feel unwell. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313: If eye irritation persists: Get medical advice/attention.
	Supplemental information	Not applicable.
<b>2.3</b>	<b>Other hazards</b>	Product is classified as Self Heating . Flames and smoke may not always be generated as a sign of combustion. May form combustible or explosive dust concentrations in air. Handling of this material may generate a dust which can cause mechanical irritation of the eyes, skin nose and throat. Self-heating may occur during transport and storage if the product is stored in non-airtight packaging. Do not expose to airflow.

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## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substances** Not applicable.

**3.2 Mixtures**

EC Classification Regulation (EC) No. 1272/2008 (CLP)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard classification
Carbon	> 65	7440-44-0	231-153-3	Not yet assigned in the supply chain	Eye Irrit. 2; H319 STOT SE 3; H335

For full text of H phrases see section 16.

## SECTION 4: FIRST AID MEASURES



### 4.1 Description of first aid measures

Self-protection of the first aider No action should be taken involving personal risk. Wear appropriate personal protective equipment. Ensure adequate ventilation. Avoid breathing dust. Avoid contact with skin and eyes.

Inhalation IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately.

Skin contact IF ON SKIN: Gently wash with plenty of soap and water. If skin irritation or rash occurs, remove contaminated clothing / PPE. If irritation develops and persists, seek medical attention.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, seek medical attention.

Ingestion IF SWALLOWED: Rinse mouth. Give plenty of water to drink. Do NOT induce vomiting. Seek medical treatment.

**4.2 Most important symptoms and effects, both acute and delayed** Causes serious eye irritation. May cause respiratory irritation.

**4.3 Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

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## SECTION 5: FIREFIGHTING MEASURES

<b>5.1 Extinguishing media</b>	
Suitable extinguishing media	As appropriate for surrounding fire. Use water, CO2, dry chemical, or foam.
Unsuitable extinguishing media	None Known
<b>5.2 Special hazards arising from the substance or mixture</b>	<p>Self-heating; May catch fire. Spontaneous ignition when dry and exposed to airflow. Combustion of this product is unlikely to produce a flame, the product will smoulder and combust at high temperature in certain circumstances without visible smoke or flames. Product may re-ignite after fire is extinguished.</p> <p>Explosion: May form combustible or explosive dust concentrations in air. Avoid dust generation. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Combustion products: Carbon monoxide, Carbon dioxide.</p>
<b>5.3 Advice for firefighters</b>	Beware of flameless combustion, beware of carbon monoxide. Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers. Use of water to prevent generation of dust clouds.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

<b>6.1 Personal precautions, protective equipment and emergency procedures</b>	Caution - spillages may be slippery. Ensure operatives are trained to minimise exposures. No action should be taken involving personal risk. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing dust. Ensure adequate ventilation. Remove contaminated clothing and wash all affected areas with plenty of water. Avoid dust generation. Maintain air gap between stacks or pallets. Dust deposits should not be allowed to accumulate on surfaces, as these may form a flammable or explosive mixture if they are released into the atmosphere in sufficient concentration.
<b>6.2 Environmental precautions</b>	Avoid release to the environment. Do not allow to enter drains, sewers or water courses.
<b>6.3 Methods and material for containment and cleaning up</b>	Provided it is safe to do so, isolate the source of the leak. Sweep spilled substances into containers if appropriate moisten first to prevent dusting. Use non-sparking equipment when picking up flammable spill. Collect mechanically and dispose of according to Section 13. Use non-sparking tools. Ventilate the area and wash spill site after material pick-up is complete.
<b>6.4 Reference to other sections</b>	See Section: 8,13.

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## SECTION 7: HANDLING AND STORAGE

<b>7.1</b>	<b>Precautions for safe handling</b>	Flammable product. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposures. Do not eat, drink or smoke when using this product. Remove contaminated clothing and wash clothing before reuse. Maintain air gap between stacks or pallets when applicable.
<b>7.2</b>	<b>Conditions for safe storage, including any incompatibilities</b>	Keep only in original packaging. Self-heating may occur if product is stored in non-airtight packaging. Do not expose product to air flow. Ensure adequate ventilation in storage room. Keep storage container closed at all times. Oxygen depletion and carbon monoxide emission can occur when material is stored in a confined space. Ensure oxygen and carbon monoxide monitors are worn and activated when entering storage room. Access routes for fire-fighting must be free.
	Storage temperature	Store in a cool/low-temperature, dry place away from heat and ignition sources.
	Incompatible materials	Keep away from: oils, acids and strong oxidising agents.
<b>7.3</b>	<b>Specific end use(s)</b>	See Section: 1.2.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>8.1</b>	<b>Control parameters</b>	
<b>8.1.1</b>	<b>Occupational exposure limits</b>	The UK HSE (EH40) recommends the following limits for dusts: 10 mg/m <sup>3</sup> (8hr TWA) total inhalable dust; 4 mg/m <sup>3</sup> (8hr TWA) total respirable dust.
		Source: WEL: Workplace Exposure Limit (UK HSE EH40), OELV: Health and Safety Authority, Code of Practice, 2020 (Ireland), IOELV: Indicative Occupational Exposure Limit Value (EU)
<b>8.1.2</b>	<b>Biological limit value</b>	Not established.
<b>8.1.3</b>	<b>PNECs and DNELs</b>	Not established.
<b>8.2</b>	<b>Exposure controls</b>	
<b>8.2.1</b>	<b>Appropriate engineering controls</b>	Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Avoid breathing dust. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Maintain air gap between stacks or pallets. Keep cool.

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<b>8.2.2 Individual protection measures, such as personal protective equipment</b>	Keep good industrial hygiene. Wear appropriate personal protective equipment, avoid direct contact. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke at the work place. Avoid breathing dust.
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Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/ face protection 	Wear eye protection with side protection (EN166). Eyewash bottles should be available.
Skin protection 	<b>Hand protection:</b> Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Protective index 6, corresponding > 480 minutes of permeation time according to EN 374. Suitable material: Nitrile rubber  <b>Body protection:</b> Wear dust-resistant protective clothing.
Respiratory protection 	Not normally required. Wear suitable respiratory protective equipment if processing involves working in areas where dusts or vapours are likely to be evolved. In case of inadequate ventilation wear respiratory protection.
Thermal hazards	Not applicable.

<b>8.2.3 Environmental exposure controls</b>	Avoid release to the environment.
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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>9.1 Information on basic physical and chemical properties</b>	
Physical state	Chips
Colour	Black
Odour	None / Woody / Smoky
Melting point/freezing point	No data available
Boiling point or initial boiling point and boiling range	No data available
Flammability (solid, gas)	Explosion: Dust from Biochar may form combustible or explosive dust concentrations in air.
Upper/lower flammability or explosive limits	No data available
Flash point	No data available

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Auto-ignition temperature	No data available
Decomposition Temperature	No data available
pH	No data available
Kinematic viscosity	No data available
Solubility	No data available
Partition coefficient: n-octanol/water (log value)	No data available
Vapour pressure	No data available
Density and/or relative density	No data available
Relative vapour density	No data available
Particle characteristics	No data available

## 9.2 Other information

Evaporation rate	No data available
Explosive properties	Dust from Biochar may form combustible or explosive dust concentrations in air.
Oxidising properties	Not oxidising.
Moisture content	~5%
Particle size	Chips – generally less than 25mm in length
Loss on Drying	No data available
Form	Chips to Dust
Colour	Black
Net CV Dry	28 – 30 MJ/kg
Bulk density	Chips 160 – 200 kg/m <sup>3</sup>
Mechanical Durability	Chips – Not Applicable
Minimum Explosive Concentration (MEC)	No Data available

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## SECTION 10: STABILITY AND REACTIVITY

<b>10.1</b>	<b>Reactivity</b>	Stable under normal conditions
<b>10.2</b>	<b>Chemical stability</b>	Stable under normal conditions
<b>10.3</b>	<b>Possibility of hazardous reactions</b>	Self-heating may occur if the product is exposed to airflow. Hazardous polymerisation will not occur. May form combustible or explosive dust concentrations in air. May generate concentrations of Carbon monoxide in bulk
<b>10.4</b>	<b>Conditions to avoid</b>	Keep away from ignition sources, excess airflow, heat and moisture. Avoid dust formation.
<b>10.5</b>	<b>Incompatible materials</b>	Keep away from: oils, acids and strong oxidising agents.
<b>10.6</b>	<b>Hazardous decomposition products</b>	Combustion products: Carbon monoxide, Carbon dioxide.

## SECTION 11: TOXICOLOGICAL INFORMATION

<b>11.1</b>	<b>Information on hazard classes as defined in Regulation (EC) No 1272/2008</b>	
	<b>Acute toxicity - Ingestion</b>	Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
	<b>Acute toxicity - Inhalation</b>	Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) > 5 mg/L (Dust)
	<b>Acute toxicity - Skin contact</b>	Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
	<b>Skin corrosion/irritation</b>	Mixture: Based upon the available data, the classification criteria are not met.
	<b>Serious eye damage/irritation</b>	Mixture: Eye Irrit. 2; H319: Causes serious eye irritation. Carbon Eye Irrit. 2; H319: Causes serious eye irritation. EU classification and labelling inventory
	<b>Respiratory or skin sensitisation</b>	Mixture: Based upon the available data, the classification criteria are not met.
	<b>Germ cell mutagenicity</b>	Mixture: Based upon the available data, the classification criteria are not met.
	<b>Carcinogenicity</b>	Mixture: Based upon the available data, the classification criteria are not met.
	<b>Reproductive toxicity</b>	Mixture: Based upon the available data, the classification criteria are not met.



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<b>STOT - single exposure</b>	Mixture: STOT SE 3; H335: May cause respiratory irritation. Carbon STOT SE 3; H335: May cause respiratory irritation. EU classification and labelling inventory
<b>STOT - repeated exposure</b>	Mixture: Based upon the available data, the classification criteria are not met.
<b>Aspiration hazard</b>	Mixture: Based upon the available data, the classification criteria are not met.
<b>11.2 Information on other hazards</b>	
<b>11.2.1 Endocrine disrupting properties</b>	This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.
<b>11.2.2 Other information</b>	None Known

## SECTION 12: ECOLOGICAL INFORMATION

<b>12.1 Toxicity</b>	Mixture: Based upon the available data, the classification criteria are not met. Estimated LC50 (Mixture): >100mg/l
<b>12.2 Persistence and degradability</b>	No data for the mixture as a whole. Carbon No data
<b>12.3 Bioaccumulative potential</b>	No data for the mixture as a whole. Carbon No data
<b>12.4 Mobility in soil</b>	Stability expected, No data for the mixture as a whole. Carbon No data
<b>12.5 Results of PBT and vPvB assessment</b>	None of the substances in this product fulfil the criteria for being regarded as a PBT or vPvB substance.
<b>12.6 Endocrine disrupting properties</b>	This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.
<b>12.7 Other adverse effects</b>	None Known

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## SECTION 13: DISPOSAL CONSIDERATIONS

<b>13.1</b>	<b>Waste treatment methods</b>	While generally a benign and stable material do not allow to enter drains, sewers or watercourses. Disposal should be in accordance with local, state or national legislation.
<b>13.2</b>	<b>Additional information</b>	Avoid release to the environment.

## SECTION 14: TRANSPORT INFORMATION

	<b>ADR/RID</b>	<b>IMDG</b>	<b>IATA/ICAO</b>
<b>14.1</b>	<b>UN number or ID number</b>	UN 1361	UN 1361
<b>14.2</b>	<b>UN proper shipping name</b>	Non activated charcoal	Non activated charcoal
<b>14.3</b>	<b>Transport hazard class(es)</b>	4.2	4.2 Carriage by Road and Sea
<b>14.4</b>	<b>Packing group</b>	Packing Group II	Packing Group II
<b>14.5</b>	<b>Environmental hazards</b>	Not classified	Not classified as a Marine Pollutant.
<b>14.6</b>	<b>Special precautions for user</b>	See Section 2: <b>keep in original packaging</b> In cases where product bags are damaged during transport, the material must be re-packed in airtight packaging with Packing Group II materials.	
<b>14.7</b>	<b>Maritime transport in bulk according to IMO instruments</b>	Not applicable	Not applicable
<b>14.8</b>	<b>Additional information</b>	Packages to be loaded onto closed or sheeted vehicles.	None Known

## SECTION 15: REGULATORY INFORMATION

<b>15.1</b>	<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	
<b>15.1.1</b>	<b>EU regulations</b>	
	Authorisations and/or restrictions on use	Not restricted
<b>15.1.2</b>	<b>National regulations</b>	
	Germany	Water hazard class: nwg (Self classification)
<b>15.2</b>	<b>Chemical Safety Assessment</b>	No data available

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## SECTION 16: OTHER INFORMATION

The following sections have updates indicated by:

### References:

Existing Safety Data Sheet (SDS)

EU classification and labelling inventory for Carbon (CAS No. 7440-44-0)

Test Result: Biochar - Thermal stability testing; Report issue date - 30th March 2022; Report number –

S3016010316R1/2022

IMSBC Code 2018 Edition – Wood torrefied page 386 – 387

REACH SIEF Final Report Phase 1

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	Classification procedure
Self-heat. 1; H251	On basis of test data. (UN Test N.4 of Section 33 of UN Manual of Tests and Criteria)
Eye Irrit. 2; H319	Threshold Calculation
STOT SE 3; H335	Threshold Calculation

### LEGEND

ADR	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	Chemical Abstracts Service
DNEL	Derived No Effect Level
EC	European Community
EN	European Standard
EU	European Union
IATA	International Air Transport Association
ICAO/IATA	ICAO: International Civil Aviation Organization / IATA: International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Lethal concentration 50
LD50	Lethal dose 50
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
TWA	Time Weighted Average
UN	United Nations
vPvB	Very Persistent and very Bioaccumulative
WGK	Wassergefährdungsklasse (Germany) / Water hazard class

### Hazard classification / Classification code:

Self-heat. 1; H251, Category 1

Eye Irrit. 2; Eye Irritation, Category 2

STOT SE 3; Specific target organ toxicity — single exposure, Category 3

### Hazard Statement(s)

H251: Self Heating; May catch Fire

H319: Causes serious eye irritation.

H335: May cause respiratory irritation.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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## Annex to the extended Safety Data Sheet (eSDS)

Exposure Scenarios are not applicable

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