1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 Product identifier	
Substance name:	Carbon black
Trade name:	Carbon black marks **N-115, N-121, N-220, N-234, N-299,** **N-326, N-330, N-339, N-347, N-375,** **N-539, N-550, N-650, N-660, N-762, N-772, N-774,** **N-990, N-990 UP, N-990R, N-991, N-991 UP**
ES#	215-609-9
IUPAC	Carbon black
CAS#	1333-86-4
Structural formula	Substantially elemental carbon, C
REACH registration No:	01-2119384822-32-XXXX
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Identified uses:	As additive for rubber in manufacture of rubber products. As additive for plastics in manufacture of plastics products, including compounding and conversion As pigment in manufacture of textiles, leather, fur, pulp, paper, fine chemicals, rubber products, other non-metallic mineral products, e.g. plasters, cement. As chemical reagent in manufacture of bulk, large scale chemicals (including petroleum products), fine chemicals, basic metals, fabricated metal products, except machinery and equipment. As refractories in manufacture of large scale chemicals, fine chemicals, basic metals, formulation of preparations and/or re-packaging. As portable energy in manufacture of computer, electronic and optical products, electrical equipment.
Uses advised against:	As pigment in tattoo inks for human.
1.3 Details of the supplier of the safety data sheet	
Manufacturer / Supplier	PentaCarbon GmbH Annabergstrasse 168 45721 Haltern am See GERMANY Tel. +49-2364 8997 970 Fax +49-2364 8997 999 Mail contact@pentacarbon.de
Responsible person	Marko Sonnemann Tel. +49-2364 8997 970 Mail contact@pentacarbon.de
1.4 Emergency telephone number:	
Tel. +49-2364 8997 970 Fax +49 2364 8997 999 (during office hours)	

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance	
Carbon Black is not classified according to the Regulation (EC) No 1272/2008	
Human Health effects	
Inhalation	Mechanical irritation of upper respiratory tract. Short-term effects after exposure of dust of carbon black at high concentrations of dust may cause temporary discomfort in the upper respiratory tract, accompanied by coughing and wheezing.
Eyes	High concentrations of dust may cause mechanical eye irritation.
Skin	Prolonged or repeated contact with product may cause mechanical irritation, dry skin.
Swallowing	No effect
2.2 Label elements:	
No labelling is required according to the Regulation (EC) No 1272/2008	
2.3 Other hazards:	
The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of the Regulation (EC) No. 1907/2006. The substance may form an explosive dust-air mixture when dispersed.	

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances				
Chemical name	**EC #**	**CAS #**	**Concentration, range %, ppm**	**Index#**
Carbon	215-609-9	1333-86-4	96 - 99,5%	not classified

4. FIRST AID MEASURES

4.1 Description of first aid measures	
General information:	**In case of inhalation:** Take affected persons into fresh air. If necessary, restore normal breathing through standard first aid measures. **In case of eye contact:** Rinse eyes thoroughly with large volumes of water keeping eyelid open. If symptoms develop, seek medical attention. **In case of skin contact:** Wash skin with mild soap and water. If symptoms develop, seek medical attention. **In case of ingestion:** Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.
4.2 Most important symptoms and effects, both acute and delayed	
In case of inhalation:	Cough, wheezing and breathlessness

In case of eye contact:	Redness, slight mechanical irritation
In case of skin contact:	Dry skin
In case of ingestion:	No effect
Information to physician:	Treat symptomatically
First aid arsenal:	Universal medical kit with a set of drugs (in consultation with the medical department of the enterprise), moisturizers.
4.3 Indication of any immediate medical attention and special treatment needed	
If exposed there is no need to seek urgent medical attention.	

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media	
Flammable properties	Non-flammable or explosive solid. The formation of explosive dust-air-mixtures is possible. Carbon black that has been on fire should be observed closely for at least 48 hours to ensure no smoldering material is present. For further information, see Section 9.
Suitable extinguishing media	Use foam, carbon dioxide, dry chemical, nitrogen, or water fog. A fog spray is recommended if water is used.
Unsuitable extinguishing media:	High-pressure water stream as this may spread burning powder because burning powder will float and may spread fire.
5.2 Special hazards arising from the substance or mixture	
Hazardous combustion products:	Products of combustion include carbon monoxide, carbon dioxide, and oxides of sulphur.
Special protective equipment for fire-fighters:	Full protective fire fighting gear (Bunker gear) including self-contained breathing apparatus (SCBA).
5.3 Advice for fire fighters	
Product on floor when wetted will become slippery and may present a hazard - wear anti-slip boots. It may not be obvious that carbon black is burning unless the material is stirred and sparks are apparent.	

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures	
6.1.1. For non-emergency personnel	Keep dust levels to a minimum. Keep unprotected persons away. Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8). Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used. Take care of wet product on floor, which presents a slip hazard.

	Clean up contaminated area.
6.1.2. For emergency responders	Wear personal protection equipment as required depending on the nature of accidental release.
6.2 Environmental precautions	
Carbon black poses no significant environmental hazards. As a matter of good practice, minimize contamination of sewage water, soil, groundwater, drainage systems, or bodies of water. Product is not considered a hazardous substance according to: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 40 CFR 302, USA), Federal Water Pollution Control Act, (40 CFR 116, USA). It is also not a hazardous air pollutant according to Amendments to the Federal Water Pollution Control Act of 1990 (SAAA-90, 40 CFR 63).	
6.3 Methods and material for containment and cleaning up	
Small spills should be vacuumed when possible. A vacuum equipped with HEPA (high efficiency particulate air) filtration is recommended. Dry sweeping is not recommended. If necessary, light water spray will reduce dust for dry sweeping, but over-wetting may produce very slippery walking surfaces. Large spills may be shovelled into containers.	
6.4 Reference to other section	
Information about personal precautions (see section 8). Information about waste disposal (see section 13).	

7. HANDLING AND STORAGE

7.1 Precautions for safe handling	
Precautions for safe handling	Avoid dust generation. Avoid dust exposures above the occupational exposure limit. Avoid contact with skin and eyes. If exposed, wash to avoid mechanical irritation and soiling.
Fire preventions	If hot work (welding, torch cutting, etc.) is required the immediate work area must be cleared of carbon black product and dust.
Aerosol and dust generation preventions	Use local exhaust ventilation or other appropriate engineering controls to maintain exposures below occupational exposure limit.
Electrostatics prevention	Dust may cause electrical shorts if capable of penetrating electrical equipment. 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 the build-up of electrostatic charge, such as ensuring all equipment is electrically grounded.
Safe transporting	Carbon black is not restricted for transport by the United Nations Recommendations on the Transport of Dangerous Goods.

	Adhere to the rules on the transport of goods, which operate for the appropriate type of transport. Do not violate the integrity of container. During loading works, execute instructions and rules for the appropriate works (see section 14).
Advice on general occupational hygiene	Do not eat drink and smoke in work areas, wash hands after use, remove contaminated clothing and protective equipment before entering eating areas.
7.2 Conditions for safe storage, including any incompatibilities	
Technical measures and storage conditions	Store in a dry place away from ignition sources and strong oxidizers.
Packaging materials	Bulk in hopper cars, Polypropylene containers (big bag), Polyethylene bags, paper bags. Package should exclude moisture penetration and guarantee the safety of the product during transportation and storage.
Requirements for storage rooms and vessels	Unpacked carbon black should be stored in special bunker depots. Special requirements for storage structures are not established. The product is to be stored at room temperature and normal humidity environment. Before entering closed vessels and confined spaces containing carbon black test for adequate oxygen, flammable gases and potential toxic air contaminants (e.g., CO). Follow standard safe practices when entering confined spaces.
7.3 Specific end use(s)	
none	

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

OEL values

Limit value type (country of origin)	Sub-stance name	EC-No.	CAS-No.	Monitoring procedures	Occupational exposure limit value		Regulatory Reference
					Long term (8 hours) mg/m^3	Short term mg/m^3	
Belgium (VLEP)	Carbon black	215-609-9	1333-86-4	Gravi-metric method	3.5	-	Royal Decree of March 11, 2002 on the safety and protection of the health of workers from the risks of chemicals exposure in the workplace.
Denmark (OEL)					3.5	7	Order on limit values for substances and materials, BEK No. 670 dated May 31, 2018

Finland (OEL)					3.5	7	Limit concentrations in the air of the working zone HTP-arvot 2016. Decree of the Ministry of Social Policy and Health on December 23, 2016
France (VLE)					3.5	-	National Research and Safety Institute (INRS) Limits of occupational chemicals exposure in France, technical checklist. ED 984.
Ireland (OEL)					3.5	7	Code of Rules of 2007 on Safety, Health and Welfare on Production (Chemical Agents) 2001 (S.I. No. 619 dated 2001)
Spain (VLA)					3.5	-	Royal Decree 374/2001 on the transposition of Directive 98/24/EC. 72/5000 Occupational exposure limits for chemicals in Spain. 2018, M-187-2018
Sweden (OEL)					3	-	The limits of exposure in the workplace. Provisions and general recommendations of the Swedish Environment Management Office on hygienic limit values AFS 2018: 1
UK (WEL)					3.5	7	EH40/2005 Workplace exposure limits
USA-OSHA (PEL)					3.5	-	California Department of Occupational Safety and Health (Cal/OSHA) Permissible exposure limits (PELs). California Division of Occupational Safety and Health Administration (Cal/OSHA) Permissible Exposure Limits (PELs) National Institute for Occupational Safety and Health (NIOSH) Recommended exposure limits (RELs).
Argentina (TLV)					3.5	-	Decree 351/79 of the President of Argentina on the application of Law No. 19.587 and the cancellation of the schedule approved by Decree No. 4 160/73 Law No. 19,587 and Executive Order No. 351/79 establish general health and safety requirements.
Brazil (OEL)					3.5	-	Decree of the Ministry of Labor No. 3214 of June 08, 1978. Standard NR N-15
Venezuela (OEL)					3.5	-	Organic Law on Social Security System No. 37600 of December 30, 2002. ACGIH
South Korea (OEL)					3.5	-	Executive Regulations of the Ministry of Employment and Labor for the Occupational Safety and Health Act
Republic of China					4	-	Standard GBZ 2.1-2007 - Occupational Exposure Limits for Hazardous Agents

(OEL)							in the Workplace.
Canada (VEA)					3.5	-	Chemical Hazards Regulation, Alta Reg 393/1988, ACGIH, RRO 1990, reg. 833: Control of biological or chemical agents exposure, S-2.1, d. 13 - Occupational health and safety regulations
Norway (OEL)					3.5	-	Norwegian Labor Inspectorate - Administrative Standards for Pollutants in the Air of the Work Area.
Russian federation (ПДК)					4	-	GN 2.2.5.686-98 Maximum allowable concentrations (MAC) of harmful substances in the air of the working area. Hygienic standards
Japan (OEL)					4	-	Recommendations of Japanese Society for Occupational Health (JSOH)

DNEL/DMEL values:

Substance name	Worker		Consumer	Exposure route	Exposure frequency
	Industry	Professional			
Carbon black	DNEL = 2 mg/m³	-	-	Inhalation	Acute

PNEC values:

Substance name	PNEC	Value	Assessment factor	Remark/ Justifications
Carbon black	aqua (freshwater)	5 mg/L	1000	-
	aqua (marine water)	5 mg/L	1000	-

8.2 Exposure controls

8.2.1. Appropriate engineering controls

Use process enclosures and/or exhaust ventilation to keep airborne dust concentrations below the occupational exposure limit.

8.2.2. Individual protection measures, such as personal protective equipment

Respiratory protection	Approved air purifying respirator (APR) for particulates should be used where airborne dust concentrations are expected to exceed occupational exposure limits. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or in circumstances where APRs may not provide adequate protection.
Eye/face protection	Safety glasses or goggles recommended as a matter of good practice.
Skin protection	Wear general protective clothing to minimize skin contact. Gloves may be used to protect hands from carbon black soiling. Use of a barrier cream may help to prevent skin drying.
General hygiene considerations	Emergency eyewash and safety shower should be in close proximity as a matter of good practice. Wash hands and face thoroughly with mild soap before

	eating and drinking.
8.2.3. Environmental exposure controls	
Measures to prevent exposure	Carbon black poses no significant environmental hazards. As a matter of good practice, minimize contamination of sewage water, soil, groundwater, drainage systems, or bodies of water.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties	
Appearance	Black powder, spherical pellets, solid
Odour	Odourless
Odour threshold	Not applicable
pH	6-11 (water suspension 50g/dm^3)
Melting point/range (°C)	3652-3697 (sublimation)
Initial boiling point/range (°C)	Not applicable
Flash point (°C)	Not applicable
Ignition temperature (°C)	>600
Auto ignition temperature (°C)	>140 Not classifiable as a self-heating substance.
Decomposition temperature (°C)	Not applicable
Evaporation rate	Not applicable
Flammability	Combustible at 600 °C Not classified as flammable solid
Lower-Upper flammability or explosive limits	The formation of explosive dust-air-mixtures is possible. LEL: 50 g/m3 KSt = 110 bar m/s (ST class 1) Maximum explosion pressure: 6.7 bars
Vapour pressure (°C)	Not applicable
Vapour density (g/cm3)	Not applicable
Relative density	1.80 – 1.98
Water solubility (20°C in g/l)	Insoluble
Partition coefficient n-Octanol/Water (log Po/w)	Not applicable
Viscosity	Not applicable
9.2 Other information	
Granulometry	Primary particle size (aggregates) distribution: Individual values depending on the Carbon black grade
Maximum ignition energy	20 kJ
Explosion pressure rise ratio (bar./s)	46

10. STABILITY AND REACTIVITY

10.1 Reactivity	Stable under regular storage and use conditions. Hazardous polymerization will not occur.
10.2 Chemical stability	Stable under normal ambient conditions.
10.3 Possibility of hazardous reactions	Will not occur.
10.4 Conditions to avoid	Prevent exposure to high temperatures and open flames.
10.5 Incompatible materials	Strong oxidizers such as chlorates, bromates and nitrates.
10.6 Hazardous decomposition products	Carbon monoxide, carbon dioxide, oxides or sulphur.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects.

Toxicokinetics, metabolism and distribution

Based on available data, the substance does not meet the classification criteria

Little Carbon Black is found in Peyer`s patches after oral exposure. It is unlikely that the insoluble particles are capable of skin penetration. Uptake and retention of carbon black particles in lung macrophages have been observed following inhalation. In rats, clearance of carbon black particles from the respiratory tract is delayed at lung burdens equal or greater than 0.5 - 1.0 mg carbon black/g lung or 7 mg carbon black / m3 (“lung overload”).
No evidence of a quantitatively important translocation of “ultrafine” (around 100 nm) carbonaceous particles from the lungs to the systemic circulation was found.

Acute toxicity

Substance name	Exposure	Value	Exposure time period	Species	Method (as is, equivalent or similar)
Carbon black	oral	LD50 > 8000 mg/kg bw	gavage	rat	OECD Guideline 401
	inhalation	LC0 > 4.6 mg/m³	4 hours	rat	Acceptable, well-documented publication

Irritation	**Skin**	Not irritating. Based on available data, the substance does not meet the classification criteria.
	Eye	May be slightly irritating mechanically and may cause discoloration of lids and conjunctivae in humans. Based on available data, the substance does not meet the classification criteria.
	Respiratory tract	Not irritating. Based on available data, the substance does not meet the classification criteria.
Respiratory or skin sensitization	Based on available data, the substance does not meet the classification criteria	

Mutagenicity	Based on available data, the substance does not meet the classification criteria
Carcinogenicity	Based on available data, the substance does not meet the classification criteria IARC classified Carbon Black in Group 2B but another reliable studies show the inadequacy of such classification.
Toxicity for reproduction	Based on available data, the substance does not meet the classification criteria
STOT-SE, STOT-RE	STOT toxic effects are not expected. According to available data the substance doesn't meet the classification criteria.

Repeated dose toxicity

Substance name	Exposure	Value	Exposure time period	Species	Method (as is, equivalent or similar)
Carbon black	inhalation	NOAEL= 1.1 mg/m3	13 weeks	rat	Acceptable, well-documented publication

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Aquatic toxicity:

Chemical name	Aquatic toxicity	Effect dose	Exposure time	Species	Method (as is, equivalent or similar)
Carbon black	Acute toxicity to fish	LC50 > 5000 mg/L	96 hours	Brachydanio rerio	OECD Guideline 203
	Acute toxicity to aquatic invertebrates	EC50 > 5600 mg/L	48 hours	Daphnia magna	OECD Guideline 202
	Toxicity to aquatic algae and cyanobacteria	EC50 >10,000 mg/L	72 hours	Desmodesmus subspicatus	OECD Guideline 201
	Toxicity to microorganisms	EC10 = 800 mg/L	3 hours	Activated sludge	Deutsche Einheitsverfahren zur Wasseruntersuchung (1975) DEV L3 (TTC-Test)

12.2 Persistence and degradability

Abiotic Degradation

Carbon black is substantially elemental carbon it is inert, inorganic and contains no water-soluble groups, and is therefore insoluble in water.
It cannot be further degraded by hydrolysis, light or by photodegradation in air or in surface water.

Biodegradation

In accordance with column 2 of REACH Annex VII, the ready biodegradability study (required in section 9.2.1.1.) does not need to be conducted, as the substance is inorganic.

12.3 Bioaccumulative potential

Based on the physical-chemical properties of carbon black as an inert solid, its insolubility and stability in water and in organic solvents, and its particular character and forming of aggregates and agglomerates, the substance will not cross biological membranes. Bioaccumulation is not expected to occur.
12.4 Mobility in soil
Based on the physical chemical properties (insolubility, no vapour pressure) it is expected that carbon black will not occur in air or water in relevant amounts. Also potential for distribution via water or air, respectively, can be dismissed. The deposition in soil or sediments is therefore the most relevant compartment of fate of carbon black in the environment. Carbon is widely distributed in nature and an essential element in the components of all living organisms.
12.5 Results of PBT and vPvB assessment
It is concluded that carbon black is not a PBT/vPvB substance.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods	
Appropriate disposal / Product	Product can be burned in suitable incineration plants or disposed of in a suitable landfill in accordance with the regulations issued by the appropriate federal, provincial, state and local authorities.
Waste codes / waste designations according to EWC / AVV	EU Waste Code No. 61303 per Council Directive 75/422/EEC Waste of carbon black is not classified as hazardous according to US RCRA, 40 CFR 261.
Appropriate disposal /Packaging	Return reusable containers to manufacturer. Paper bags may be incinerated, or recycled, or disposed of in an appropriate landfill in accordance with national and local laws.

14. TRANSPORT INFORMATION

The product is not considered as dangerous goods under TDG regulations.	
14.1 UN number	none
14.2 UN proper shipping name	none
14.3 Transport hazard class(es)	none
14.4. Packing group	none
14.5. Environmental hazards	none
14.6. Special precautions for user	none
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	none
14.8 Additional information	Carbon black is not a hazardous in respect of ADR/RID transport regulations. No limitations according to transportation requirements for hazardous substances in Canada

	and USA (TDG, DOT).

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance
Carbon black, CAS No. 1333-86-4, is included in following inventories: ▪ All-Union Classifier of Industrial and Agricultural Products (Ukraine); ▪ U.S. Toxic Substances Control Act (TSCA); ▪ European Inventory of Existing Chemical Substances (EINESC - No. 215-609-9); ▪ Canadian Domestic Substances List (DSL); ▪ Australian Inventory of Chemical Substances (AICS); ▪ List of Existing Chemical Substances of Japanese ▪ Ministry of international Trade and Industry (MITI); ▪ Korean Toxic Chemicals Control Law (TCCL).
15.2 Chemical Safety Assessment
A chemical safety assessment has been carried out for the Carbon Black.

16. OTHER INFORMATION

Relevant R-, H-, EUH phrases	None
Training instructions	Read carefully the SDS before using the product
Abbreviations	GHS - Globally Harmonized System of Classification and Labelling of Chemicals OEL – occupational exposure limit VLEP – valeurs limites d'exposition professionnelle-occupational exposure limit values MAK - maximum workplace concentrations AK - Permissible average concentration WEL- Workplace Exposure Limits APR - Air purifying respirator SCBA - Self-contained breathing apparatus LD50 – lethal dose LC50 - lethal concentration EC50 – half maximal effective concentration NOEL - no observed effect level NOEC - no observed effect concentration NOAEL - no observed adverse effect level PBT or vPvB - persistent, bioaccumulative and toxic or very persistent very bioaccumulative
Further information	The data contained in the safety data sheet is based on the amount of information and experience available to the company at this time. A consumer of product is responsible for the consequences of its use in specific purposes. Information refers to this particular substance. It may be invalid in case this substance is used together with any other materials or any other production process.

Key literature references and sources for data	Members of the CB4REACH Consortium ECHA database on registered substances Hazardous Substances Data Bank (HSDB) GESTIS database on international limit values GESTIS database on hazardous substances Criteria for a recommended Standard - Occupational Exposure to Carbon Black DHHS/NIOSH Pub. No. 78-204; Cincinnati, OH, 1978

Disclaimer:
The information mentioned above is based on data that PentaCarbon GmbH believes to be correct. There is no warranty of accuracy or completeness of any information. The information is provided solely for your information and consideration and PentaCarbon GmbH assumes no legal responsibility for use or reliance thereon.

Annex 1
EXPOSURE SCENARIOS ACCORDING TO CHEMICAL SAFETY REPORT

Carbon black does not fulfil the hazard criteria given in Article 14 (4) of Regulation (EC) No 1907/2006 so there is no need to generate exposure scenarios.
Risk characterization
No adverse health effects could be identified after dermal exposure to carbon black and a DNEL cannot therefore be derived. As there are no health risks associated with this route of exposure, it is not necessary to perform a risk characterization. Risk characterization ratio (RCR) = Current Exposure / DNEL = < 2.0 mg/m3/2.0 mg/m3 As the exposure is below the DNEL, the risk is adequately controlled.

CEO
PentaCarbon GmbH **Marko Sonnemann**