JOINT - STOCK COMPANY
«YAROSLAVSKIY TEKHNICHESKIY UGLEROD named after V. U. ORLOV»

SAFETY DATA SHEET

(Regulation (EC) No 1907/2006 / ISO 11014-1 / ANSI Z400.1)

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

1.1 **Product identifier:**

Substance Name:	**CARBON BLACK**
EC No.:	215-609-9
Registration Number	**01-2119384822-32-XXXX** (according to Article 20(3) Regulation (EC) No 1907/2006)
CAS No.:	1333-86-4
This SDS is valid for the following grades:	N121, N134, N220, N231, N234, N299, N326, N330, N339, N347, N375, N539, N550, N650, N660, N750, N762, N772, N774, П234, П245, П324, П514
Synonyms:	Furnace Black, Lamp Black
Product Type:	Elemental Carbon (mineral origin)
Nanoform:	*Carbon black is classified as a nanoform by Commission Regulation (EU) 2018/1881.**

1.2 **Relevant Identified Uses of Substance or Mixture and uses advised against:**

Relevant Identified Uses	Additive/Filler for plastic and rubber, Pigment, Chemical reagent, Various.
Uses advised against	Human tattooing pigment.

1.3 **Details of the Supplier of the Safety Data Sheet:**

Manufacturer: Joint-Stock Company «Yaroslavskiy tekhnicheskiy uglerod named after V. U. Orlov» (JSC «YATU named after V. U. Orlov»)
Gagarin St. 74a, Yaroslavl, 150023, Russia
Tel.: + 7 4852 42-51-03
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E-mail: info@yatu.ru
E-mail address of competent person responsible for the SDS: SDS@yatu.ru

Only Representative: *PanaSystem Handels GmbH****
*Schoenbrunner Straße 218-220/A/6.04 1120 Vienna, the Republic of Austria****
*Phone: +43 (1) 815 01 75****
*E-mail: office@panasystem.at****

1.4 **Emergency Telephone Number:**

Only Representative *+43 (1) 815 01 75 (office time, 8:00 – 16:30 CET)****

SECTION 2: HAZARDS IDENTIFICATION

2.1 **Classification of the Substance or Mixture:**

Classification according to Regulation (EC) No 1272/2008 (CLP):

Not defined as a hazardous substance according to Council Directive 67/548/EEC, Regulation (EC) No 1272/2008 (СД3) and its various amendments and adaptations.

Additional Information:

WHMIS: This material is classified as D2A under Canadian Worker Hazardous Materials Information System (WHMIS) criteria.

OSHA: Classified as hazardous.

2.2 **Label elements:**

Hazard Pictogram: None
Signal Word: None
Hazard Statements: None
Precautionary Statements: None

2.3 **Other hazard:**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Endocrine Disruptor Information: *The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.**

This substance is classified as hazardous as a combustible dust by the United States 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Hazardous Products Regulation (HPR) 2015. The signal word, hazard statement and precautionary statements in the United States and Canada are: WARNING. May form combustible dust concentrations in air. Keep away from all ignition sources including heat, sparks and flame. Prevent dust accumulations to minimize explosion hazard.

Can burn or smolder at temperatures greater than 300 ºC. Hazardous products of decomposition can include carbon monoxide, carbon dioxide, and oxides of sulfur. May cause reversible mechanical irritation to the eyes and respiratory tract. Some grades of carbon black are sufficiently electrically non-conductive to allow a build-up of static charge during handling.

Routes of Exposure: Inhalation, Eye contact, Skin contact

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 **Substance:**

Chemical Name	Classification according to Regulation (EC) No. 1272/2008 [CLP]	CAS No.	EC No.	Weight, %	REACH Registration Number
Carbon Black	Not classified	1333-86-4	215-609-9	100	01-2119384822-32-XXXX

Additional information:

*HS Code: 2803.00.00**

Particle characteristics values cover all untreated Carbon Black grades:

*Name of (set of) nanoform(s): solid: nanoform, no surface treatment**

*Number based particle size distribution (internal structure/primary particles)**

*D10: 6 - 71 nm (per ISO 15825)**

*D50: 7 - 101 nm (per ISO 15825)**

*D90: 21 - 178 nm (per ISO 15825)**

*Shape: spheroidal**

*Crystallinity: amorphous, not crystalline**

*Surface Treatment: None**

*Specific Surface Area: 21 - 200 m^2/g (per ASTM D6556)**

*Level of dustiness: High (per DIN-EN 15051-2)**

3.2 **Mixtures:** Not applicable.

SECTION 4: FIRST AID MEASURES

4.1 **Description of First Aid Measures:**

Inhalation: Take affected persons out in fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.

Skin contact: Not hazardous. Wash exposed skin for hygienic purposes with mild soap and water and use a soft wash cloth or towel. If symptoms develop, seek medical attention.

Eye contact: Immediately rinse eyes thoroughly with large volumes of water for 10-15 minutes keeping the eyelid open. If symptoms develop, seek medical attention.

Ingestion Do NOT induce vomiting. If conscious, rinse mouth with water. Never give anything by mouth to an unconscious person.

4.2 **Most Important Symptoms and Effects, Both Acute and Delayed:**

Inhalation: Temporary discomfort to upper respiratory tract may occur due to mechanical irritation when exposures are well above the occupational exposure limit. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also section 8.

Acute Ingestion: No evidence of adverse effects from available data. Low hazard for usual industrial and commercial handling.

Acute eye: High dust concentrations may cause mechanical irritation to eye. Low hazard for usual industrial and commercial handling.

Acute skin: May cause mechanical irritation, soiling, and skin drying.

Sensitization: No cases of sensitization in humans have been reported.

Carcinogenicity: IARC listed; **Group 2B (possibly carcinogenic to humans).** Not listed as a carcinogen by NTP, ACGIH, OSHA or the European Union. See also section 11.

4.3 **Indication of Any Immediate Medical Attention and Special Treatment Needed:** Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 **Extinguishing Media:**

Suitable Extinguishing Media: Use foam, carbon dioxide (CO_2), dry chemical or water fog. *Use of atomized spray is recommended if water is used, such as fire sprinkler systems.***

Unsuitable Extinguishing Media: DO NOT USE high pressure water stream as this may spread burning powder (burning powder will float).

5.2 **Special Hazards Arising from the Substance or Mixture:** 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. Burning produces irritant fumes. The product is insoluble and floats on water. If possible, try to contain floating material. This material creates a fire hazard because it floats on water.

Hazardous Combustion Products: Includes carbon monoxide (CO), carbon dioxide (CO_2) and oxides of sulfur.

5.3 **Advice for Firefighters:** Wear full protective fire fighting gear including self-contained breathing apparatus (SCBA). Wet carbon black produces very slippery walking surfaces.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 **Personal Precautions, protective equipment and emergency procedures:**

6.1.1 **For Non-emergency personnel**: CAUTION: Wet carbon black produces slippery walking surfaces. Avoid dust formation. Ensure adequate ventilation. Use personal protective equipment. See also section 8. Eliminate all source of ignition. No smoking.

6.1.2 **For Emergency Responders**: Use personal protection recommended in Section 8.

6.2 **Environmental Precautions:** Carbon black poses no significant environmental hazards. Do not allow material to contaminate ground water system. The product is insoluble and floats on water. If possible, try to contain floating material. Local authorities should be advised if significant spillages cannot be contained.

6.3 **Methods and Material for Containment and Cleaning Up:**

6.3.1 **Methods for containment:** Prevent further leakage or spillage if safe to do so.

6.3.2 **Methods for Cleaning Up:** Small spills should be vacuumed when possible. Dry sweeping is not recommended. A vacuum equipped with HEPA (high efficiency particulate air) filtration is recommended. If necessary**,** light water spray will reduce dust for dry sweeping. Large spills may be shoveled into containers. Dispose according to valid regulations (see section 13). If needed, to remove released product, use specialized company for disposing / transporting wastes.

6.4 **Reference to Other Section:** See section 8 for more information. See section 13 for more information.

SECTION 7: HANDLING AND STORAGE

7.1 **Precautions for Safe Handling:** Avoid dust exposures above the occupational exposure limit. Use local exhaust ventilation or other appropriate engineering controls to maintain exposures below occupational exposure limit. Do not create a dust cloud by using a brush or compressed air. Dust may form explosible mixture in air. Avoid contact with skin and eyes. If exposed, wash to avoid mechanical irritation and soiling. Keep the containers closed when not in use.

Dust may cause electrical shorts if capable of penetrating electrical equipment. Ensure equipment is tightly sealed.

If hot work (welding, torch 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 the build up of electrostatic charge, such as ensuring all equipment is electrically grounded/earthed.

Handle in accordance with good industrial hygiene and safety practice.

7.2 **Conditions for Safe Storage, including any Incompatibilities:** *CAUTION*: Some carbon black grades may have significant amounts of carbon monoxide on the particle surface. Before storing in closed areas, test for possible elevated levels of carbon monoxides and dioxides. Observe safety measures while entering closed areas.

Store in original, properly labeled and tightly closed containers in dry, ventilated place. Protect against water and moisture. Store away from sources of heat and ignition. Store separately from oxidizers. Do not store together with volatile chemicals as they may be adsorbed onto product.

Carbon black is not classifiable as a Division 4.2 self-heating substance under the UN test criteria. However, the UN criteria for determining if a substance is self-heating is volume dependent, i.e., the auto-ignition temperature decreases with increasing volume. This classification may not be appropriate for large volume storage containers.

Carbon black in bags should be placed on palette or dry basis in the way not to get spread, deformed or damaged during storage. Keep distance between bags to allow circulation of air – cooling.

Carbon black can be stored in silos equipped with devices for mechanical or pneumatic translocation of carbon black.

CAUTION: Emptied, unclean containers can contain residues of carbon black and can create fire/explosion hazard.

7.3 **Specific end use(s):** See subsection 1.2. Per Article 14.4 of the REACH Regulation no exposure scenario has been developed as the substance is not hazardous.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 **Control parameters:**

Exposure Limit Values:

Country		Occupational Exposure Limit, mg/m^3
Belgium		3.5 TWA
Bulgaria	ACGIH TLV	3.5 TWA
Canada		3.5 TWA
Czech Republic		2.0 TWA
Finland		3.5 TWA, 7.0 STEL
France		3.5 TWA
Germany	AGW	1.5 TWA (respirable), 4.0 TWA (inhalable)
	TRGS 900	3.0 TWA (respirable), 10.0 TWA (inhalable)
Greece		3.5 TWA, 7.0 STEL

Hungary		3.5 TWA, 7.0 STEL
Italy		3.5 TWA
Netherlands		3.5 TWA
Poland		4.0 TWA
Portugal		3.5 TWA
Russia		4.0 TWA
Slovakia		2.0 TWA (respirable), 10.0 TWA (total aerosol)
Spain		3.5 TWA
Sweden		3.0 TWA
United Kingdom		3.5 TWA (inhalable) OES, 7.0 (10 minutes) STEL
United States	OSHA-PEL	3.5 TWA
	ACGIH-TLV	3.5 TWA
	NIOSH -REL	3.5 TWA (see section 11)

TWA = 8-hour time-weighted-average, except as noted. AGW = Arbeitsplatzgrenzwerte (occupational exposure limits). TRGS = Technische Regeln fur Gefahrstoffe (regulatory limits). OES = occupational exposure standard. STEL = short-term exposure limit. OSHA-PEL = Occupational Safety and Health Administration - permissible exposure limit. ACGIH-TLV = American Conference of Governmental Industrial Hygienists–Threshold Limit Value. NIOSH-REL = National Institute of Occupational Safety and Health - recommended exposure limit.

Biological Limit Values: Not applicable.

DNEL: 2 mg/m^3 inhalable based on human health studies and 0.5 mg/m^3 respirable based on animal studies.

PNEC: Not Applicable.

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 (PPE):**

Eye/Face Protection: Wear eye/face protection. Safety glasses with side-shields. Goggles.

Skin Protection: Wear general protective clothing to minimize skin contact. Work clothes should NOT be taken home and should be washed daily.

Hand Protection: Wash hands and other exposed skin with mild soap. Use of a barrier cream may help to prevent skin drying. Use of protective gloves is recommended to avoid hand contamination.

Respiratory Protection: An approved air-purifying respirator (APR) for particulates may be permissible where airborne concentrations are expected to exceed occupational exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any circumstances where air-purifying respirators may not provide adequate protection. Use of respirators must include a complete respiratory protection program in accordance with national standards and current best practices.

The following agencies/organizations approve respirators and/or criteria for respirator programs:

US: NIOSH approval under 42 CFR 84 required. OSHA (29 CFR 1910.134). ANSI Z88.2-1992 (Respiratory Protection).

EU: CR592 Guidelines for the Selection and Use of Respiratory Protection.

Germany: DIN/EN 143 Respiratory Protective Devices for Dusty Materials.

UK: BS 4275 Recommendations for the Selection, Use and Maintenance of Respiratory Protective Equipment. HSE Guidance Note HS (G)53 Respiratory Protective Equipment.

Hygiene Considerations: Emergency eyewash and safety shower should be in close proximity. Wash hands and face thoroughly with mild soap before eating and drinking.

8.2.3 **Environmental Exposure Controls:** In accordance with all local legislation and permit requirements.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 **Information on Basic Physical and Chemical Properties:**

Physical state:	*solid**
Appearance:	powder or pellet
Color:	black
Odor:	odorless
Odor threshold:	*not applicable**
Melting point/freezing point:	not applicable
Boiling point/boiling range:	not applicable
Flammability (solid, gas):	> 45 seconds not classifiable as "Highly Flammable", or "Easily Ignitable"
Flammability Limit in Air:	not applicable
Flash point:	not applicable
Autoignition temperature:	> 140 °C (transport) IMDG-Code
Decomposition temperature:	*> 400 °C VDI 2263 (smoulder temperature)**
pH value:	6 - 10 [50 g/l water, 20 ºC] ASTM D1512.

Kinematic viscosity:	not applicable
Dynamic viscosity:	not applicable
Water solubility:	insoluble
Solubility(ies):	insoluble
Partition coefficient (n-octanol/water):	not applicable
Vapor pressure:	not applicable
Relative density:	1.7 - 1.9 @ 20 °C (water = 1)
Bulk density:	*300-550 kg/m³**
Relative vapor density:	not applicable

Particle characteristics:

Particle Size Distribution: *Number based particle size distribution (internal structure/primary particles)**	
D10:	*6 - 71 nm (per ISO 15825)**
D50:	*7 - 101 nm (per ISO 15825)**
D90:	*21 - 178 nm (per ISO 15825)**
Shape:	*spheroidal**
Crystallinity:	*amorphous, not crystalline**
Dispersion stability:	*intermediate Stability, OECD 318**
Dissolution rate:	*not soluble**
Agglomeration state:	*micron-sized agglomerates**
Specific Surface Area:	*21 - 200 m²/g**
Level of dustiness:	*high (per DIN-EN 15051-2)**

9.2 **Other Information:**

9.2.1 ***Information with regard to physical hazard classes:*** *Not applicable**

9.2.2 **Other safety characteristics:**

Explosive Properties:		
Explosive Limits (dust): (VDI 2263)	Lower:	50 g/m³
	Upper:	not determined
Dust Explosion Class (VDI 2263, EC 84/449)		ST 1
Maximum Absolute Explosion Pressure		10 bar
Maximum Rate of Pressure Rise		30 - 400 bar/sec
Oxidising Properties:		not applicable
Flammable and Explosive Properties		
Minimum Ignition Temperature (VDI 2263)		
Furnace Black, Method: BAM Furnace		>500 ºC
Furnace Black, Godberg-Greenwald Furnace		>315 ºC
Minimum Ignition Energy (VDI 2263)		>10 J
Burn Rate (VDI 2263, EC 84/449)		>45 seconds (not classifiable as "Highly Flammable", or "Easily Ignitable")
Ignition Energy (VDI 2263):		>1 kJ
% Volatile (by Weight):		< 2.5 % @ 950 ºC, untreated carbon black

SECTION 10: STABILITY AND REACTIVITY

10.1 **Reactivity:** May react exothermically with strong oxidizers.

10.2 **Chemical Stability:** Stable under normal ambient conditions of use and storage.

Explosion data:

Sensitivity to mechanical impact: *None.**

Sensitivity to static discharge: *Dust can form an explosive mixture with air. Avoid generation of dust. Do not create a dust cloud by using a brush or compressed air. Take precautionary measures against static discharges. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations.**

10.3 **Possibility of Hazardous Reaction:** None under normal processing. Hazardous polymerization will not occur. See subsection 10.1.

10.4 **Conditions to Avoid:** Prevent exposure to high temperatures > 400 ºC and sources of heat and ignition. Avoid dust formation. See section 7.

10.5 **Incompatible Materials:** Strong oxidizers such as chlorates, bromates and nitrates – may react exothermically. See section 7.

10.6 **Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, organic products of decomposition, oxides of sulfur (sulfoxides) form if heated above decomposition temperature. See subsection 5.2.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 **Information on hazard classes as defined in Regulation (EC) No 1272/2008:**

Acute toxicity:

Acute oral toxicity: LD50 (rat), > 8000 mg/kg (Equivalent to OECD TG 401).

*Dermal LD50: No data available.**

*Inhalation LC50: No data available.**

Skin corrosion/irritation:

*Rabbit: not irritating. (Equivalent to OECD TG 404). Edema = 0 (max. attainable irritation score: 4).**

*Erythema = 0 (max. attainable irritation score: 4).**

*Assessment: Not irritating to skin.**

Serious eye damage/eye irritation:

*Rabbit: not irritating. (OECD TG 405). Cornea: 0 (max. attainable irritation score: 4). Iris: 0 (max. attainable irritation score: 2). Conjunctivae: 0 (max. attainable irritation score: 3). Chemosis: 0 (max. attainable irritation score: 4).**

*Assessment: Not irritating to the eyes.**

Respiratory or skin sensitization:

*Guinea pig skin (Buehler Test): Not sensitizing (OECD TG 406).**

*Assessment: Not sensitizing in animals. No cases of sensitization in humans have been reported.**

Germ Cell Mutagenicity:

In Vitro: Carbon black is not suitable to be tested in bacterial (Ames test) and other in vitro systems because of its insolubility. However, when organic solvent extracts of carbon black have been tested, results showed no mutagenic effects. Organic solvent extracts of carbon black can contain traces of polycyclic aromatic hydrocarbons (PAHs). A study to examine the bioavailability of these PAHs showed that PAHs are very tightly bound to carbon black and not bioavailable (Borm, 2005).

In Vivo: In an experimental investigation, mutational changes in the hprt gene were reported in alveolar epithelial cells in the rat following inhalation exposure to carbon black. This observation is believed to be rat specific and a consequence of "lung overload" (Driscoll, 1997) which led to chronic inflammation and release of reactive oxygen species. This is considered to be a secondary genotoxic effect and, thus, carbon black itself would not be considered to be mutagenic.

Assessment: In vivo mutagenicity in rats occurs by mechanisms secondary to a threshold effect and is a consequence of "lung overload", which leads to chronic inflammation and the release of genotoxic oxygen species. This mechanism is considered to be a secondary genotoxic effect and, thus, carbon black itself would not be considered to be mutagenic.

Carcinogenicity:

Animal toxicity:

Rat, oral, duration 2 years	Effect: no tumors
Mouse, oral, duration 2 years	Effect: no tumors
Mouse, dermal, duration 18 months	Effect: no skin tumors
Rat, inhalation, duration 2 years	Target organ: lungs. Effect: inflammation, fibrosis, tumors

Note: Tumors in the rat lung are considered to be related to the "particle overload phenomenon" rather than to a specific chemical effect of carbon black itself in the lung. These effects in rats have been reported in many studies on other inorganic insoluble particles and appear to be rat specific. Tumors have not been observed in other species (i.e., mouse and hamster) for carbon black or other insoluble particles under similar circumstances and study conditions.

Mortality studies (human data):

*A study on carbon black production workers in the UK (Sorahan, 2001) found an increased risk of lung cancer in two of the five plants studied; however, the increase was not related to the dose of carbon black. Thus, the authors did not consider the increased risk in lung cancer to be due to carbon black exposure. A German study of carbon black workers at one plant (Morfeld, 2006; Buechte, 2006) found a similar increase in lung cancer risk but, like the Sorahan, 2001 (UK study), found no association with carbon black exposure. A large US study of 18 plants showed a reduction in lung cancer risk in carbon black production workers (Dell, 2006). Based upon these studies, the February 2006 Working Group at the International Agency for Research on Cancer (IARC) concluded that the human evidence for carcinogenicity was inadequate (IARC, 2010).**

*Since the IARC evaluation of carbon black, Sorahan and Harrington (2007) have re-analyzed the UK study data using an alternative exposure hypothesis and found a positive association with carbon black exposure in two of the five plants. The same exposure hypothesis was applied by Morfeld and McCunney (2009) to the German cohort; in contrast, they found no association between carbon black exposure and lung cancer risk and, thus, no support for the alternative exposure hypothesis used by Sorahan and Harrington.**

*Overall, as a result of these detailed investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated.**

In 2006 IARC re-affirmed its 1996 classification of carbon black as, Group 2B (possibly carcinogenic to humans). 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 in 1995 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 (IARC, 2010).

Solvent extracts of carbon black were used in one study of rats in which skin tumors were found after dermal application and several studies of mice in which sarcomas were found following subcutaneous injection. IARC concluded that there was "sufficient evidence" that carbon black extracts can cause cancer in animals (Group 2B).

The American Conference of Governmental Industrial Hygienists (ACGIH) confirmed carbon black as Animal Carcinogen with Unknown Relevance to Humans (Category A3 Carcinogen).

Applying the guidelines of self-classification under the Globally Harmonized System of Classification and Labeling of Chemicals, carbon black is not classified as a carcinogen. Lung tumors are induced in rats as a result of repeated exposure to inert, poorly soluble particles like carbon black and other poorly soluble particles. Rat tumors are a result of a secondary non-genotoxic mechanism associated with the phenomenon of lung overload. This is a species-specific mechanism that has questionable relevance for classification in humans. In support of this opinion, the CLP Guidance for Specific Target Organ Toxicity– Repeated Exposure (STOT-RE), cites lung overload under mechanisms not relevant to humans. Human health studies show that exposure to carbon black does not increase the risk of carcinogenicity.

Reproductive toxity: No effects have been reported in long-term animal studies.

STOT-single exposure (STOT-SE): Based on available data, specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.

STOT-repeated exposure (STOT-RE):

Animal toxicity:

*Repeated dose toxicity: inhalation (rat), 90 days, No Observed Adverse Effect Concentration (NOAEC) = 1.1 mg/m^3 (respirable).**

*Target organ/effects at higher doses are lung inflammation, hyperplasia, and fibrosis.**

*Repeated dose toxicity: oral (mouse), 2 yrs, No Observed Effect Level (NOEL) = 137 mg/kg (body wt.)**

*Repeated dose toxicity: oral (rat), 2 yrs, NOEL = 52 mg/kg (body wt.).**

*Although carbon black produces pulmonary irritation, cellular proliferation, fibrosis, and lung tumors in the rat under conditions of lung overload, there is evidence to demonstrate that this response is principally a species-specific response that is not relevant to humans.**

Morbidity studies (human data):

Results of epidemiological studies of carbon black production workers suggest that cumulative exposure to carbon black may result in small decrements in lung function, as measured by FEV1. A recent U.S. respiratory morbidity study suggested a 27 ml decline in FEV1 from a 1 mg/m^3 (inhalable fraction) exposure over a 40-year period. An older European investigation suggested an exposure to 1 mg/m^3 (inhalable fraction) of carbon black over a 40-year working-lifetime will result in a 48 ml decline in FEV1. In contrast, normal age related decline over a similar period of time would be approximately 1200 ml.

In the U.S. study, 9% of the highest exposure group (in contrast to 5% of the unexposed group) reported symptoms consistent with chronic bronchitis. In the European study, methodological limitations in the administration of the questionnaire limit the drawing of definitive conclusions about symptoms. This study, however, indicated a link between carbon black and small opacities on chest films, with negligible effects on lung function.

Inhalation assessment: *Applying the guidelines of self-classification under GHS, carbon black is not classified under STOT-RE for effects on the lung. Classification is not warranted on the basis of the unique response of rats resulting from the "lung overload" following exposure to poorly soluble particles such as carbon black. The pattern of pulmonary effects in the rat, such as inflammation and fibrotic responses, are not observed in other rodent species, non-human primates, or humans under similar exposure conditions. Lung overload does not appear to be relevant for human health. Overall, the epidemiological evidence from well-conducted investigations has shown no causative link between carbon black exposure and the risk of non-malignant respiratory disease in humans. A STOT-RE classification for carbon black after repeated inhalation exposure is not warranted.**

Oral assessment: *Based on available data, specific target organ toxicity is not expected after repeated oral exposure.**

Dermal assessment: *Based on available data and the chemical-physical properties (insolubility, low absorption potential), specific target organ toxicity is not expected after repeated dermal exposure.**

Aspiration hazard: Based on industrial experience and the available data, no aspiration hazard is expected.

11.2 ***Information on other hazards:***

11.2.1 ***Endocrine disrupting properties:*** *The substance does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.**

11.2.2 ***Other information:*** *Other adverse effects - No information available.**

SECTION 12: ECOLOGICAL INFORMATION

12.1 **Toxicity:**

Acute fish toxicity: LC50 (96 h) > 1000mg/l,

Species: *Brachydanio rerio* (zebrafish) Method: OECD Guideline 203

Acute invertebrate toxicity EC50 (24 h) > 5600 mg/l.

Species: *Daphnia magna* (waterflea) Method: OECD Guideline 202

Acute algae toxicity: EC 50 (72 h) >10,000 mg/l, NOEC 50 >10,000 mg/l

Species: *Scenedesmus subspicatus* Method: OECD Guideline 201

Activated sludge EC0 (3 h) >= 800 mg/l Method: DEV L3 (TTC test)

12.2 **Persistence and degradability:** *The methods for determining biodegradability are not applicable to inorganic substances.* *****

12.3 **Bioaccumulative Potential:** Bioaccumulation is not expected due to physicochemical properties of the substance.

12.4 **Mobility in Soil:** Not soluble in water. Expected to remain on soil surface.

12.5 **Results of PBT and vPvB assessment:** This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 ***Endocrine disrupting properties:*** *The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.* *****

12.7 **Other adverse effects:** No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 **Waste Treatment Methods:** Waste should not be released to sewers. Product can be burned in suitable incineration plants or disposed of in accordance with the regulations issued by the appropriate federal, state and local authorities.

EU: Waste Code No. 06 13 03 per Council Directive 2008/98/EC.

U.S.: Not a hazardous waste under U.S. RCRA, 40 CFR 261.

Canada: Not a hazardous waste under provincial regulations.

Container/Packaging: Return reusable containers to manufacturer or recycle. Packaging to be recycled only if emptied completely. Dispose of in accordance with European, National and local waste regulations. Use only authorised companies.

SECTION 14: TRANSPORT INFORMATION

14.1 **UN Number or ID Number:** Not regulated

14.2 **UN Proper Shipping Name:** Not regulated

14.3 **Transport Hazard Class(es):** Not regulated

14.4 **Packing Group:** Not regulated

14.5 **Environmental Hazards:** No significant environmental hazards are associated with carbon black release to the environment. Carbon black is not soluble in water. See also Section 12.

14.6 **Special precautions for user:**

The following organizations do not classify carbon black as a "hazardous cargo" if it is "carbon, non-activated, mineral origin". Carbon blacks of JSC «YATU named after V. U. Orlov» meet this definition.

Canadian Transport of Dangerous Goods (TDG); European Carriage of Dangerous Goods by Rail (RID), by Road (ADR), or on the Rhine (ADNR); International Air Transport Association (IATA); International Civil Air Organization-Technical Instructions (ICAO-TI); International Maritime Dangerous Goods Code (IMDG); United Nations Recommendations on the Transport of Dangerous Goods; United States Department of Transportation Hazardous Materials Regulations (DOT)

International Transportation Identification: "Carbon black, non-activated, mineral origin".

Seven (7) ASTM reference carbon blacks were tested according to the UN method, Self Heating Solids, and found to be “Not a self-heating substance of Division 4.2”; the same carbon blacks were tested according to the UN method, Readily Combustible Solids, and found to be “Not a readily combustible solid of Division 4.1”; under current UN Recommendations on the Transport of Dangerous Goods.

14.7 **Maritime transport in bulk according to IMO instruments:** Not applicable for product as supplied.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulation/Legislation Specific for the Substance or Mixture:

EU Regulations:

Carbon black is not defined as a hazardous substance according to Regulation (EC) 1272/2008 (CLP), its various amendments and adaptations and Directive 67/548/EEC. Per Article 14.4 of the Regulation (EC) No 1907/2006 no exposure scenario has been developed as the substance is not hazardous.

Carbon Black is not on the REACH Restrictions List (Annex XVII).

Carbon Black is not on the REACH Authorisation List (Annex XIV).

Carbon Black is not on the REACH Candidate List of substances of very high concern for Authorisation.

EU Food Contact Information: This product may be acceptable for applications coming in contact with food. However, due to variations within the EU of national regulations of food contact use, the applicable laws of each Member State should be consulted. Please contact for more specific information.

Germany: VDI guideline 2580, Emission Control-Production Plants for Carbon Black in water hazard class 0. (Carbon Black is classified as not water hazardous material). WGK Number: 1742.

Swiss Poison class: -- (tested and found to be not toxic): G-8938

United Kingdom: Control of Substances hazardous to health Regulations 1994, Carbon Black is not listed under any of the schedules therein contained.

International Inventory Status: Carbon Black (CAS 1333-86-4) is listed on or exempt from the following inventories:

EU: EINECS (European Inventory of Existing Commercial Chemical Substances), RN: 215-609-9.

Australia: AICS (Australian Inventory of Chemical Substances)
Canada: DSL/NDSL (Canadian Domestic Substances List/Non-Domestic Substances List)
China: IECSC (Inventory of Existing Chemical Substances)
Japan: ENCS (List of Existing and New Chemicals Substances), No 10-3074/5-3328
Korea: KESL (Korean Existing and Evaluated Chemical Substances), KE-0488
New Zealand: NZIoC (New Zealand Inventory of Chemicals), HSR002801
Philippines: PICCS (Philippine Inventory of Chemicals and Chemical Substances)
Taiwan: TCSI (Taiwan Chemical Substance Inventory)
United States: TSCA (United States Toxic Substances Control Act Section 8(b) Inventory)

15.2 **Chemical safety assessment:**

Per Article 14.1 of the REACH Regulation a Chemical Safety Assessment has been carried out.

Per Article 14.4 of the REACH Regulation no exposure scenario has been developed as the substance is not hazardous.

SECTION 16: OTHER INFORMATION

16.1 **Polycyclic Aromatic Hydrocarbon (PAH) Content:** Manufactured carbon blacks generally contain less than 1000 ppm of solvent extractable PAH. Solvent extractable PAH content depends on numerous factors including, but not limited to, the manufacturing process, desired product specifications, and the analytical procedure used to measure and identify solvent extractable materials.

There are no known human carcinogenic effects related to the PAH content of carbon blacks. Recent research has shown that the PAH content of carbon blacks is not released in biological fluids and thus not available for biological activity.

16.2 **Heavy Metals and Metalloids Content:** This product is in compliance with the requirements listed in EU-Directives 94/62/EC, 2011/65/EU, 2000/53/EC and also EN 71-3 concerning content of Heavy Metals and Metalloids.

16.3 **Organic and Inorganic Impurities and Products of Animal:** These chemicals are not involved in our production and handling processes and they are not expected to be present in our carbon blacks in concentration above low ppm or less and therefore below the levels of concern.

16.4 **National Fire Protection Association (NFPA) Rating:**

Health: 1 Flammability: 1 Reactivity: 0

0 = minimal, 1 = slight, 2 = moderate, 3 = serious, 4 = severe

16.5 **Hazardous Materials Identification System® (HMIS®) Rating:**

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

0 = minimal, 1 = slight, 2 = moderate, 3 = serious, 4 = severe

HMIS® is a registered trademark of the National Paint and Coatings Association

16.6 **Reason for revision:** Updated informations about the Only Representative in subsection 1.3 «Details of the Supplier of the Safety Data Sheet» and Only Representative's emergency phone number in subsection 1.4 (A *** indicates revisions from the previous version.).

Previous Revision: Rev. 7.1 - March 20, 2023.

Prepared by: Technical & Health Safety and Environmental Departments of JSC «YATU named after V. U. Orlov».

Approved by: Production and Quality Director of JSC «YATU named after V. U. Orlov».

16.7 **Actual version of Safety Data Sheet on various languages is on company's web site: www.yatu.ru/sds/**

In the event of any conflict between the English and other language versions, the English version shall prevail.

16.8 **Main Data Sources:**

- IUCLID International Uniform Chemical Information Database. Existing Chemicals – 2000.
- IUPAC Recommendations, 1995 (Recommended terminology for the description of carbon as a solid, p.479).
- IARC Monographs on the evaluation of carcinogenic risks to humans. –France, IARC, 2010.-V.93.-p. 43-192.
- NIOSH: Criteria for a recommended Standard – Occupational Exposure to Carbon Black; DHHS/NIOSH Pub. No. 78-204; Cincinnati, OH, 1978.
- Proposition 65 List of Chemicals. – State California, 2007.
- American Conference of Governmental Industrial Hygienists, Committee on Industrial Ventilation: Industrial Ventilation, A Manual of Recommended Practice, 24th edition; ACGIH, Cincinnati, OH, 2001.
- American Conference of Governmental Industrial Hygienists: Threshold Limit Values and Biological Exposure Indices for 2003; ACGIH, Cincinnati, OH, 2003.
- American National Standards Institute: American National Standard for Respiratory Protection; ANSI Z88.2-1992, New York, NY, 1992.
- Confined Space Entry, An AIHA Protocol Guide; American Industrial Hygiene Association, Fairfax, VA, 1995.
- Morfeld P and McCunney RJ, Carbon Black and lung cancer testing a novel exposure metric by multi-model inference: Am. J. Ind. Med. 52: 890-899, 2009.
- Sorahan T, Hamilton L, van Tongeren M, Gardiner K, Harrington JM. A cohort mortality study of U.K. carbon black workers, 1951-1996: Am. J. Ind. Med. 39(2):158-170, 2001.

- Sorahan T, Harrington JM (2007) A ‘‘Lugged’’ Analysis of Lung Cancer Risks in UK Carbon Black Production Workers, 1951–2004: Am. J. Ind.Med. 50, 555–564, 2007.
- Crosbie, W.: Respiratory Survey on Carbon Black Workers in the U.K. and the U.S.; Archives of Environmental Health, 41:346-53, 1986.
- Donnet, J., R. Bausal, and M. Wang (eds.): Carbon Black, Science &Technology, 2nd edition; Marcel-Dekker, New York, NY, 1993.
- Gardiner, K., N. Trethowan, J. Harrington, C. Rossiter, and I. Calvert: Respiratory Health Effects of Carbon Black: A Survey of European Carbon Black Workers; British Journal of Industrial Medicine, 50:1082-1096, 1993.
- Gardiner, K.: Effects on Respiratory Morbidity of Occupational Exposure to Carbon Black: A Review; Archives of Environmental Health, 50: (1) 44-59, 1995.

Disclaimer

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