

SAFETY DATA SHEET

According to the Malaysian Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 (CLASS) and Industry Code of Practice on Chemicals Classification and Hazard Communication 2014 (ICoP) with Amendment 2019

SECTION 1: IDENTIFICATION OF THE HAZARDOUS CHEMICAL AND OF THE SUPPLIER

1.1 Product identifier:

Product Name: CARBON BLACK
Product Type: Elemental Carbon (mineral origin)
This SDS is valid for the following grades: N121, N220, N231, N234, N299, N326, N330, N339, N347, N375, N539, N550, N650, N660, N750, N762, N772, N774, П245, П234, П324, П514

1.2 Other means of identification:

Synonyms: Furnace Black, Lamp Black

1.3 Recommended use of the chemical and restrictions on use:

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

1.4 Supplier details:

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
Fax: + 7 4852 42-52-70, 42-52-80
E-mail: info@yatu.ru
E-mail address of competent person responsible for the SDS: SDS@yatu.ru

1.5 Emergency Telephone:

+ 48 605 232-223 (Cellular, EC)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the hazardous chemical:

Malaysia CLASS Status: This substance is classified as Suspected human carcinogens category 2 (Carc. 2) and as Specific target organ toxicants following repeated exposure (lung, inh.) category 1 (STOT RE 1) under the Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 (CLASS).

Globally Harmonized System of Classification and Labeling of Chemicals hazard identification: Not a hazardous substance or preparation under GHS. According to the criteria in GHS (UN) for classifying hazardous substances, Carbon Black is not classified for any physico-chemical, toxicological or eco-toxicological endpoint.

EU: Not defined as a dangerous substance according to Council Directive 67/548/EEC, Regulation (EC) No 1272/2008 and its various amendments and adaptations. Does not contain any of the "Candidate List of Substances of Very High Concern" (SVHC) at levels >0.1 % as defined in the REACH legislation.

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

OSHA: This chemical is considered hazardous (29 CFR 1910.1200).

2.2 Label elements:



Pictogram:

Signal Word:

Hazard statements:

Precautionary Statements:

DANGER

H351: Suspected of causing cancer (inh.)

H372: Causes damage to organs (lung) through prolonged or repeated exposure (inh.)

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P281: Use personal protective equipment as required.

P260: Do not breathe dust.

P264: Wash exposed skin thoroughly after handling.

P270: Do not eat, drink, or smoke when using this product.

P308 + P313: IF exposed or concerned: Get medical advice/attention.

P314: Get medical advice/attention if you feel unwell.

P405: Store locked up.

P501: Dispose of contents/container in accordance with local/regional/national/international regulation.

2.3 Other hazard which do not result in classification: Can burn or smolder at temperatures greater than 300 °C. Hazardous products of decomposition can include carbon monoxide, carbon dioxide, and oxides of sulfur.

Routes of Exposure: Inhalation, Eye contact, Skin contact

Eye Contact: May cause mechanical irritation. Avoid contact with eyes.

Skin Contact: May cause mechanical irritation, soiling, and skin drying. Avoid contact with skin. No cases of sensitization in humans have been reported.

Inhalation: Dust may be irritating to respiratory tract. Provide appropriate local exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

Ingestion: Adverse health effects are not expected. See Section 11.

Carcinogenicity: Carbon Black is listed as an IARC (International Agency for Research on Cancer) Group 2B substance (possibly carcinogenic to humans). See also Section 11.

SECTION 3: COMPOSITION AND INFORMATION OF THE INGREDIENTS OF THE HAZARDOUS CHEMICAL

3.1 Substance:

Chemical Name	CAS Number	EINECS / ELINCS Number	Weight, %
Carbon Black	1333-86-4	215-609-9	100

3.2 Mixture: Not applicable.

SECTION 4: FIRST-AID MEASURES

4.1 Description of necessary 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, 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 Immediate Medical Attention and Special Treatment Needed:** Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media:

Use foam, carbon dioxide (CO₂), dry chemical or water fog.

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

5.2 **Physicochemical hazards arising from the chemical:** 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.

Products of combustion include carbon monoxide (CO), carbon dioxide (CO₂) and oxides of sulfur.

5.3 **Special protective equipment and precautions for fire fighters:** 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:

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.

6.2 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: Prevent further leakage or spillage if safe to do so. 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.

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. 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.

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.

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 pallet 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.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters:

Exposure Limit Values:

Country	Occupational Exposure Limit, mg/m ³
Belgium	3.6 TWA
Canada	3.5 TWA
China	4.0, TWA 8.0, TWA, STEL (15 min)
Czech Republic	2.0 TWA
Finland	3.5 TWA, 7.0 STEL
France	3.5 TWA
Germany	1.5 TWA (respirable), 4.0 TWA (inhalable)
MAK	3.0 TWA (respirable), 10.0 TWA (inhalable)
TRGS 900	
Indonesia	3.5 TWA
Italy	3.5 TWA
Malaysia	3.5 TWA
Mexico	3.5 TWA
Netherlands	3.5 TWA
Russia	4.0 TWA
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	3.0 TWA
NIOSH -REL	3.5 TWA (see Section 11)

TWA = 8-hour time-weighted-average, except as noted. MAK = Maximale Arbeitsplatz-Konzentration (maximum workplace concentration) (advisory). TRGS = Technische Regeln für 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.

EU REACH DNEL: 2 mg/m³ inhalable based on human health studies and 0.5 mg/m³ respirable based on animal studies.

PNEC: Not Applicable.

8.2 Appropriate Engineering Controls: Use process enclosures and/or exhaust ventilation to keep airborne dust concentrations below the occupational exposure limit.

8.3 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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties:

Appearance:	powder or pellet
Color:	black
Odor:	odorless
pH value:	6 - 10 [50 g/l water, 20 °C], ASTM D1512
Melting point/range:	not applicable
Boiling point/range:	not applicable
Flash point:	not applicable
Evaporation rate:	not applicable
Flammability Classification (as defined by OSHA 1910.1200):	not applicable
Explosive Properties:	
Explosive Limits (dust): (VDI 2263)	Lower: 50 g/m ³ Upper: not determined
Dust Explosion Class (VDI 2263, EC 84/449)	ST 1
Maximum Absolute Explosion Pressure	10 bar
Maximum Rate of Pressure Rise ¹	30-100 bar m/s
Vapor pressure:	not applicable
Vapor density:	not applicable
Relative density: (20 °C)	1.7 – 1.9 g/ml (water = 1)
Solubility (in Water):	insoluble
Partition coefficient (n-octanol/water):	not applicable
Auto-ignition temperature (transport, IMDG Code)	>140 °C
Decomposition temperature:	300 °C
Viscosity:	not applicable
Oxidising Properties:	not applicable
Flammable and Explosive Properties	
Minimum Ignition Temperature (VDI 2263)	
Furnace Black, Method: BAM Furnace	>500 °C
Furnace Black, Godberg-Greenwald Furnace	>315 °C
Minimum Ignition Energy	>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

9.2 Other Information:**Bulk density:**300-450 kg/m³**% Volatile (by Weight):**

< 2.5 % @ 950 °C

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.**10.3 Possibility of Hazardous Reaction:** Dangerous polymerization will not occur.**10.4 Conditions to Avoid:** Prevent exposure to high temperatures >300 °C and open flames.**10.5 Incompatible Materials:** Strong oxidizers such as chlorates, bromates and nitrates – may react exothermically.**10.6 Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, organic products of decomposition, oxides of sulfur (sulfoxides) form if heated above decomposition temperature.**SECTION 11: TOXICOLOGICAL INFORMATION****11.1 Information on Toxicological Effects:****Acute toxicity:****Oral LD50:** LD50/oral/rat = > 8000 mg/kg. (Equivalent to OECD TG 401).**Inhalation LC50:** No data available.**Dermal LD50:** No data available.

Assessment: Non-toxic after ingestion.

Skin corrosion or 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 or 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 sensitization:

No animal data available.

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:

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).

Carbon black is not designated a carcinogen by the U.S. National Toxicology Program (NTP), the U.S. Occupational Safety and Health Administration (OSHA) or the European Union (EU).

The U.S. National Institute of Occupational Safety and Health (NIOSH) 1978 criteria document on carbon black recommends that only carbon blacks with PAH levels greater than 0.1% require the measurement of PAHs in air. As some PAHs are possible human carcinogens, NIOSH recommends an exposure limit of 0.1 mg/m³ for PAHs in air, measured as the cyclohexane-extractable fraction.

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 Toxicity:

Assessment: No effects on reproductive organs or fetal development have been reported in long-term repeated dose toxicity studies in animals.

STOT - single exposure:

Assessment: Based on available data, specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.

STOT - repeated exposure:

ANIMAL TOXICITY:

Repeated dose toxicity: inhalation (rat), 90 days, No Observed Adverse Effect Concentration (NOAEC) = 1.1 mg/m³ (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, non-clinical decrements in lung function. A U.S. respiratory morbidity study suggested a 27 ml decline in FEV₁ from a 1 mg/m³ 8 hour TWA daily (inhalable fraction) exposure over a 40-year period (Harber, 2003). An earlier European investigation suggested that exposure to 1 mg/m³ (inhalable fraction) of carbon black over a 40-year working lifetime would result in a 48 ml decline in FEV₁ (Gardiner, 2001). However, the estimates from both studies were only of borderline statistical significance. Normal age-related decline over a similar period of time would be approximately 1200 ml.

In the U.S. study, 9% of the highest non-smokers 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 conclusions that can be drawn about reported 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:

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

SECTION 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity:

Acute fish toxicity: LC50 (96 h) > 1000mg/l, Species: <i>Brachydanio rerio</i> (zebrafish)	Method: OECD Guideline 203
Acute invertebrate toxicity EC50 (24 h) > 5600 mg/l. Species: <i>Daphnia magna</i> (waterflea)	Method: OECD Guideline 202
Acute algae toxicity: EC 50 (72 h) >10,000 mg/l, NOEC 50 >10,000 mg/l Species: <i>Scenedesmus subspicatus</i>	Method: OECD Guideline 201
Activated sludge EC0 (3 h) >= 800 mg/l	Method: DEV L3 (TTC test)

12.2 **Persistence and degradability:** Not expected to degrade.

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

SECTION 13: DISPOSAL INFORMATION

13.1 **Disposal Methods:** 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.

EU: EU Waste Code No. 61303 per Council Directive 75/422/EEC.

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 national and local waste regulations. Use only authorized companies.

SECTION 14: TRANSPORT INFORMATION

14.1 **UN Number:** None

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

14.3 **Transport Hazard Class:** Not classified

14.4 **Packing Group:** Not classified

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".

No hazardous material of Division 4.2.

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 **Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code:** Not applicable for product as supplied.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulation Specific for the Product in Question

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: CEPA (Canadian Environmental Protection Act), domestic substance list (DSL)

China: Inventory of Existing Chemical Substances

Japan: METI (Ministry of Economy, Trade and Industry) List of Existing Chemicals Substances, No 10-3074/5-3328

Korea: TCC-ECL (Toxic Chemical Control Law Existing Chemical List), KE-0488

New Zealand: HSNO (New Zealand Hazardous Substances and New Organisms Act), HSR002801

Philippines: Philippine Inventory of Chemicals and Chemical Substances (PICCS)

Russia: OKП (All-Russian Classifier of Products), No 21 6600

United States: United States Toxic Substances Control Act (TSCA)

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.

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

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.

Russia: GOST 7885 “Carbon Black for Rubber Industry. Specifications” - Carbon black is regarded to substances of hazard class 3 according to General Sanitary Requirements for working zone air. Carbon black is not classified as dangerous goods regarding GOST 19433 “Dangerous goods. Classification and marking”

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

Food Contact Regulations:

United States: Carbon black is permitted for indirect contact with food and drugs when used as filler in rubber articles intended for repeat use under 21 CFR (Code of Federal Regulations) 177.2600.

LIMITATIONS: Total carbon black (channel process and furnace process) in the rubber may not exceed 50% by weight of the rubber products. Furnace process black content may not exceed 10% by weight of rubber product intended for use in contact with milk or edible oils. Carbon blacks of JSC «YATU named after V. U. Orlov» are furnace process blacks.

European Union: 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.

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 and 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: First Editions.

Previous Revision: N/a.

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 is on company's web site: www.yatu.ru/sds/**16.8 Main Data Sources:**

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