

ПАСПОРТ БЕЗОПАСНОСТИ ХИМИЧЕСКОЙ ПРОДУКЦИИ

(Safety Data Sheet)

Внесен в Регистр

РПБ № 8 1 2 7 7 1 2 0 2 1 1 9 1 9 8

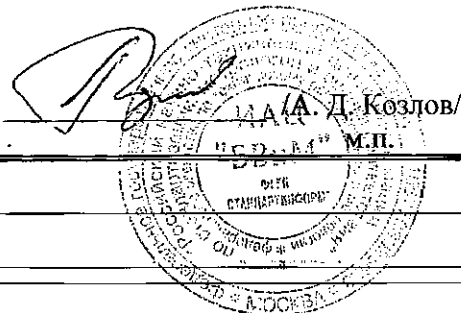
от 15 декабря 2011 г.

Действителен до 15 декабря 2017 г.

Росстандарт

Информационно-аналитический центр
«Безопасность веществ и материалов»
ФГУП «ВНИЦСМВ»

Руководитель



НАИМЕНОВАНИЕ:

техническое (по НД)

Углерод технический

химическое (по IUPAC)

не имеет

торговое

Углерод технический марки П803, П701, П805S, Т900, N550, N772, N660, N650

синонимы

не имеет

Код ОКП:

2 1 6 6 3 1 0 1 0 0

Код ТН ВЭД*:

2 8 0 3 0 0 9 0 0 0

Сведения о регистрации продукции

Условное обозначение и наименование основного нормативного, технического или информационного документа на продукцию (ГОСТ, ТУ, ОСТ, СТО, (M)SDS и т.д.)

ГОСТ 7885-86 с изм. 1,2,3,4. Углерод технический для производства резины. Технические условия

ХАРАКТЕРИСТИКА ОПАСНОСТИ:

Сигнальное слово: отсутствует

Краткая (словесная): Пожаровзрывоопасный порошкообразный продукт. Малотоксичен (по воздействию на организм).

Подробная: в 16-ти прилагаемых разделах паспорта безопасности.

| ОСНОВНЫЕ ОПАСНЫЕ КОМПОНЕНТЫ | ПДКр.з, мг/м ³ | Класс опасности | № CAS | № ЕС |
|-----------------------------|---------------------------|-----------------|-----------|----------|
| Пыль углерода | 4,0 | 3 | 1333-86-4 | Не имеет |

ЗАЯВИТЕЛЬ: ОАО «Туймазытехуглерод», Туймазы
(наименование организации) (город)

Тип заявителя: производитель, поставщик, продавец, экспортер, импортер
(ненужное зачеркнуть)

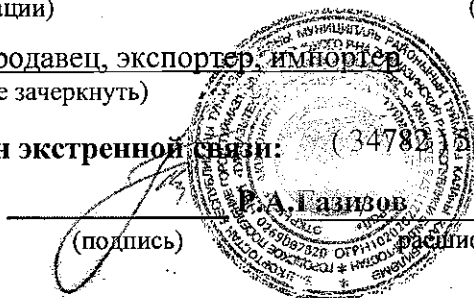
Код ОКПО: 0 0 1 4 9 5 7 0

Телефон экстренной связи: (34782) 5-13-30

Руководитель организации-заявителя:

(подпись)

М.П.



MATERIAL SAFETY DATA SHEET
(ISO 11014-1/ANSI Z 400.1-1998/2001/58/EC)

1 IDENTIFICATION OF SUBSTANCE AND COMPANY

1.1 IDENTIFICATION SUBSTANCE DATA

- 1.1.1 PRODUCT TRADE NAME:** Carbon black grades: N550, N650, N660, N772, П514, П701, П803, П705, П805
- 1.2. 1.1.2 REGISTRATION NUMBER (REACH REGULATION (EC) №1907/2006):** 01-2119384822-32-0045
- 1.2. RECOMMENDATIONS ON APPLICATION::** Tire/rubber/painting/printing industries; production of polymers and cables, building paints production
- 1.3 MANUFACTURER:** «ТУЙМАЗЫТЕKHUGLEROD» JSC
- 1.3.1 ADDRESS:** 452757, 81, Chapayeva street, Tuymazy, Russia
- 1.3.2 PHONE NUMBER:** +7 34782 5-19-80;
- 1.2.4 E-MAIL:** ttu@tehuglerod.ru
- 1.2.5 FAX:** +7 34782 7-83-31
- 1.4. EMERGENCY PHONE NUMBER:** +7 34782 5-19-90

2 HAZARDS IDENTIFICATION

- 2.1. EMERGENCY OVERVIEW** Moderately hazardous substance to humans. Causes reversible mechanical irritation to eyes and respiratory tract when dust concentration exceeds occupational exposure limits. It is put into category of hard flammable materials (decomposition temperature 3000C). Hazardous products of decomposition are carbon monoxide, carbon dioxide and oxides of sulfur.
- 2.2 SUBSTANCE CLASSIFICATION**
- 2.2.1 EU:** Not defined as a dangerous substance according to Council Directive 67/548/EEC and its various amendments and adaptations.
- 2.2.2 WHMIS:** D2A
- 2.2.3 OSHA:** Classified as hazardous.
- 2.3 POTENTIAL HEALTH EFFECTS**

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|-------------------------------------|--|
| 2.3.1 ROUTES OF EXPOSURE | Inhalation, Eye, Skin Ingestion of carbon black is not considered a likely route of exposure |
| 2.3.2 ACUTE EFFECTS: | |
| 2.3.2.1 ACUTE INHALATION | Mechanical irritation of upper respiratory tract. Temporary discomfort to upper respiratory tract may occur when exposures are well above the occupational exposure limit. May be cough and stertorous breathing. |
| 2.3.2.2 ACUTE EYE | High dust concentrations may cause mechanical irritation to eyes. |
| 2.3.2.3 ACUTE SKIN | Long and repeated contact may cause mechanical irritation, soiling, and skin drying |
| 2.3.2.4 ACUTE INGESTION | No evidence of adverse effects from available data. |
| 2.3.2.5 SENSITIZATION | No effect. |
| 2.3.3 CHRONIC EFFECTS | Long-term exposure (>40 years), when dust concentration in work environment constitutes 1.0 mg/ m ³ , may result in a small loss in one aspect of lung function (FEV1) over a working lifetime. International Agency for Research on cancer (IARC) listed: Group 2B (possibly carcinogenic to humans). Not listed as a carcinogen by US National Toxicological Program (NTP), American Conference of Governmental Industrial Hygienists (ACGIH), Occupational safety and health Administration (OSHA) or the European Union. 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. |
| 2.4 POTENTIAL ENVIRONMENTAL EFFECTS | Carbon black is very stable and does not convert in environmental. Carbon black dust pollutes atmospheric air. When getting into water reservoirs and discharging on landscape it causes mechanical pollution. See Section 12. |

3 COMPOSITION (INFORMATION ON INGREDIENTS)

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| 3.1. SUBSTANCE COMPOSITION: | Carbon black is a one-component substance (carbon >97%) |
| 3.2 CHEMICAL FORMULA | C |
| 3.3 CHEMICAL NAME ACCORDING TO IUPAC | Colloid carbon |
| 3.4 CAS NUMBER: | 1333-86-4 |
| 3.5 EINECS NUMBER | 215-609-9 |

4 FIRST AID MEASURE

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| 4.1 EMERGENCY MEDICAL ASSISTANCE | Is not required. |
| 4.2 OBSERVED SYMPTOMS | |
| 4.2.1 INHALATION | Cough and stertorous breathing. |
| 4.2.2 SKIN | Irritation, xeroderma. |
| 4.2.3 EYES | Irritation, excess epiphora. |
| 4.2.4 INGESTION | Special effect is not known. |
| 4.3 FIRST-AID PROCEDURES | |
| 4.3.1 INHALATION | Take affected persons out in fresh air. If necessary, restore normal breathing through standard first aid measures. |
| 4.3.2 SKIN | Wash skin with mild soap and water. If symptoms develop, seek medical attention. |
| 4.3.3 EYES | Rinse eyes thoroughly with large volumes of water keeping eyelid open. If symptoms develop, seek medical attention. |
| 4.3.4 INGESTION | Do not induce vomiting. If conscious, give several glasses of water, rinse mouth with water. Never give anything by mouth to an unconscious person. |
| 4.4 AVAILABILITY OF SPECIAL MEANS TO RENDER EMERGENCY AND SPECIAL AID ON SITE | Standard first aid set. |

5 FIRE - FIGHTING MEASURES

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| 5.1. GENERAL DESCRIPTION OF FIRE AND EXPLOSION DANGER | Carbon black is hardly combustible substance. 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. Product decomposition temperature >300°C. Carbon blacks containing more than 8% volatile materials may form an explosive dust-air mixture. Manufactured carbon blacks do not exceed 8% volatile materials content. |
| 5.2 EXTINGUISHING MEDIA | Use foam, carbon dioxide (CO ₂), dry chemical, or water fog. |
| 5.3 EXTINGUISHING MEDIA TO AVOID | DO NOT USE high pressure water stream as this may spread burning powder (burning powder will float). |
| 5.4 SPECIAL HAZARDS ARISING FROM THE CHEMICAL AND ITS COMBUSTION PRODUCTS | Special hazards arise from such carbon black combustion products as carbon monoxide (CO) and |

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| | carbon dioxide (CO ₂). |
| 5.5 PROTECTION OF FIGHTERS | Respirator protecting from carbon monoxide (CO) carbon dioxide (CO ₂) and sulfur oxides; protective fire fighting gear. |

6 ACCIDENTAL RELEASE MEASURES

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| 6.1 PERSONAL PRECAUTIONS | <p>Avoid contacting the product with open ignition sources, sparks, high-temperature objects, strong oxidizers (chlorates, bromates and nitrates).</p> <p>Do not heat the product to a temperature >3000C</p> <p>Control of the material content in the air in the working area.</p> <p>Wear personal protective equipment and use respiratory protection.</p> <p>See Section 8.</p> |
| 6.2 ENVIRONMENTAL PRECAUTIONS | <p>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.</p> <p>Carbon black is not a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 40 CFR 302), or the Clean Water Act (40 CFR 116), or a hazardous air pollutant under the Clean Air Act Amendments of 1990 (CAAA-90, 40 CFR 63).</p> <p>See Section 12.</p> |
| 6.3 METHODS FOR CLEANING UP | <p>Small spills should be vacuumed when possible. Dry sweeping is not recommended except with HEPA equipped machinery. A vacuum equipped with HEPA (high efficiency particulate air) filtration is recommended. If necessary, light water spray will reduce dust for dry sweeping but over-wetting may produce very slippery walking surfaces.</p> <p>Large spills may be shoveled into containers.</p> <p>See Section 13.</p> <p>While working use respiratory protection and skin protection from mechanical effect. See Section 8.</p> |
| 6.1 PERSONAL PRECAUTIONS | <p>Avoid contacting the product with open ignition sources, sparks, high-temperature objects, strong oxidizers (chlorates, bromates and nitrates).</p> <p>Do not heat the product to a temperature >3000C</p> <p>Control of the material content in the air in the working area.</p> <p>Wear personal protective equipment and use respiratory protection.</p> |

6.2 ENVIRONMENTAL PRECAUTIONS

See Section 8.

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.

Carbon black is not a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 40 CFR 302), or the Clean Water Act (40 CFR 116), or a hazardous air pollutant under the Clean Air Act Amendments of 1990 (CAAA-90, 40 CFR 63).

See Section 12.

7 STORAGE AND HANDLING

7.1 HANDLING

Use local exhaust ventilation in working zones of intensive dusting (e.g. in zone of bags unpacking/packing); use sealed systems for compounding as well as for product processing and conveying; vacuum carbon black dust regularly.

Prevent product contact with open fire sources, sparks, high-temperature objects, strong oxidizers.

Do not heat the product to a temperature $>3000\text{C}$

Fine dust may cause electrical shorts and is capable of penetrating electrical equipment unless tightly sealed.

Some carbon black grades are sufficiently electrically non-conductive to allow a build-up of a static charge. In some cases equipment and conveying systems earth is required.

7.2 STORAGE

Carbon black storage conditions must prevent moisture adsorbing and contaminating.

Bin storages should be used for unpacked carbon black.

Particular requirements to storages construction are not established.

Store product under ambient temperature and moisture.

Specific requirements to illumination level are not established

Electrical equipment in warehouses should be explosion-proof.

Electrical equipment with dust penetration risk should be sealed or subjected to periodic clean air purge.

Limitations on stored product volume are not

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| | <p>established.</p> <p>Carbon black shelf life is 12 months of the date of production.</p> <p>Before entering bins, silos, rail tank cars, tank trucks or other confined spaces used to ship/store carbon black test for adequate oxygen percent content, flammable gases and potential toxic air contaminants (CO, SO₂). Follow safe practices when entering confined spaces.</p> |
| 7.2.1 SUBSTANCES AND MATERIALS TO AVOID | <p>Store away from strong oxidizers (chromates, bromates and nitrates).</p> |
| 7.2.2 RECOMMENED PACKING MATERIALS | <p>Paper and polyethylene valve bags, flexible polypropylene containers of big-bag type.</p> <p>Use of other containers and packages is permitted provided they prevent product moistening and keep it safe while transporting and storing.</p> |
| 7.1 HANDLING | <p>Use local exhaust ventilation in working zones of intensive dusting (e.g. in zone of bags unpacking/packing); use sealed systems for compounding as well as for product processing and conveying; vacuum carbon black dust regularly.</p> <p>Prevent product contact with open fire sources, sparks, high-temperature objects, strong oxidizers.</p> <p>Do not heat the product to a temperature >3000C</p> <p>Fine dust may cause electrical shorts and is capable of penetrating electrical equipment unless tightly sealed.</p> <p>Some carbon black grades are sufficiently electrically non-conductive to allow a build-up of a static charge. In some cases equipment and conveying systems earth is required.</p> |
| 7.2 STORAGE | <p>Carbon black storage conditions must prevent moisture adsorbing and contaminating.</p> <p>Bin storages should be used for unpacked carbon black.</p> <p>Particular requirements to storages construction are not established.</p> <p>Store product under ambient temperature and moisture.</p> <p>Specific requirements to illumination level are not established</p> <p>Electrical equipment in warehouses should be explosion-proof.</p> <p>Electrical equipment with dust penetration risk should be sealed or subjected to periodic clean air</p> |

purge.

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Before entering bins, silos, rail tank cars, tank trucks or other confined spaces used to ship/store carbon black test for adequate oxygen percent content, flammable gases and potential toxic air contaminants (CO, SO₂). Follow safe practices when entering confined spaces.

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7.2.2 RECOMMENED PACKING MATERIALS

Paper and polyethylene valve bags, flexible polypropylenc containers of big-bag type.

Use of other containers and packages is permitted provided they prevent product moistening and keep it safe while transporting and storing.

8 EXPOSURE CONTROLS AND PERSONNEL PROTECTION

8.1. OCCUPATIONAL EXPOSURE LIMITS

Carbon black dust concentrations

Argentina - 3.5 mg/m³ TWA (ACGIH-TLV)

Brazil - 3.5 mg/m³ TWA

Belgium - 3.5 mg/m³ TWA

Bulgaria - 3.5 mg/m³ TWA (ACGIH-TLV)

Vietnam- 3.5 mg/m³ TWA (ACGIH-TLV)

Great Britain - 3.5 mg/m³ TWA OES

-7.0 mg/m³ STEL (10 min)

Germany:

MAK: 1.0 mg/m³ respirable, as annual average

4.0 mg/m³ inhalable, as annual average

TRGS 900:

6.0 mg/m³ respirable

10 mg/m³ inhalable, as 8-hr TWA

Italy - 3.5 mg/m³ TWA

Spain - 3.5 mg/m³ TWA

Korea - 3.5 mg/m³ TWA

China - 4.0 mg/m³ TWA

8.0 mg/m³ TWA STEL (15 min);

Canada - 3.5 mg/m³ TWA

Norway - 3.5 mg/m³ TWA

Netherlands - 3.5 mg/m³ MAC-TGG

Russia - 4.0 mg/m³ TWA

USA - 3.5 mg/m³ TWA (ACGIH-TLV)

-3.5 mg/m³ TWA (NIOSH-REL)

-3.5 mg/m³ TWA (OSHA-PEL)

Finland - 3.5 mg/m³ TWA

7.0 mg/m³ STEL

France - 3.5 mg/m³ TWA

Sweden - 3.0 mg/m³ TWA

Japan - OEL - 1.0 mg/m³,

respirable - 4.0 mg/m³, total.

TWA - time weighted average, 8 hours;
MAK/MAC - maximum allowable concentration;
STEL - short-term exposure limit;
OES - occupational exposure standard;
OEL - occupational exposure limit;
PEL - permissible exposure limit;
TLV - threshold limit value;
REL - recommended exposure limit;
TRGS - Technical Rules for hazardous Substances;
ACGIH - American Conference of Governmental Industrial Hygienists;
NIOSH - National Institute for Occupational Safety and Health;
OSHA - Occupational safety and health Administration

8.2. EXPOSURE CONTROL

Periodic carbon black dust monitoring in work environment.

Use ventilation hoods for controlling exposures to personnel engaged in handling samples.

Use proper process equipment and exhaust ventilation to keep hazardous substances concentrations in work environment to below occupational exposure limit.

8.3. PERSONAL PROTECTION

8.3.1 RESPIRATORY PROTECTION

Use dust mask corresponding to national standards requirements to respiratory protection where dust concentrations are expected to exceed occupational exposure limit.

Use respirators to protect from CO exposure when the product catches fire.

8.3.2 EYES PROTECTION

Safety glasses or goggles are recommended

8.3.3 SKIN PROTECTION

It is recommended to wear usual working clothes for protection from mechanical exposures and general manufacturing contamination; protective mittens. Spread protective cream on open areas of skin.

8.3.4 PERSONAL HYGIENE

Have meal in specially assigned places. Wash hands before food intake. Take a shower after shift termination. Daily change of working clothes. Use means for eyes washing in an emergency.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 PHYSICAL STATE

9.1.1 AGREGATE STATE

Hard substance

9.1.2 COLOR

Black

9.1.3 ODOR

Odorless

9.2 PARAMETERS CHARACTERIZING THE MAIN DANGEROUS PRODUCT PROPERTIES

MATERIAL SAFETY DATA SHEET
 - Carbon Black -
 «ТУЙМАЗЫТЕKHУГЛЕРОД» JSC

| | |
|--|---|
| 9.2.1 pH OF WATER SOLUTION (concentration: 50g/dm ³) | 6-9 |
| 9.2.2 BOILING POINT/RANGE | Not applicable |
| 9.2.3 MELTING POINT/RANGE | Not applicable |
| 9.2.4 FLASH POINT | Not applicable |
| 9.2.5 FLAMMABILITY | |
| SPONTANEOUS IGNITION TEMPEATURE | >140°C |
| MINIMUM IGNITION TEMPERATURE (VDI 2263) | |
| -BAM FURNACE | >500°C |
| - GODBERT-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") |
| 9.2.6 EXPLOSIVE PROPERTIES | 50 g/m ³ |
| LOWER EXPLOSIVE LIMIT (VDI 2263) | |
| DUST EXPLOSION CLASS (VDI 2263, EC 84/449) | ST 1 |
| MAXIMUM ABSOLUTE EXPLOSION PRESSURE | 10 bar |
| MAXIMUM RATE OF PRESSURE RISE | 30-100 bar/sec |
| 9.2.7 OXIDIZING PROPERTIES | Not applicable |
| 9.2.8 VAPOR PRESSURE | Not applicable |
| 9.2.9 DENSITY AT 20°C | 1,7-2,1 g/cm ³ |
| 9.2.10 SOLUBILITY | Not soluble in water and fats |
| 9.2.11 PARTITION COEFFICIENT (n-OCTANOL/WATER) | Not applicable |
| 9.2.12 VISCOSITY | Not applicable |
| 9.2.13 VAPOR DENSITY | Not applicable |
| 9.2.14 EVAPORATION COEFFICIENT | Not applicable |

10 STABILITY AND REACTIVITY

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|--------------------------|---|
| 10.1 STABILITY | Stable under normal ambient conditions. |
| 10.2 CONDITIONS TO AVOID | Prevent exposure to high temperatures (>3000C) and open flames. |
| 10.3 MATERIALS TO AVOID | Strong oxidizers such as chlorates, bromates and nitrates. |

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| 10.4 HAZARDOUS DECOMPOSITION PRODUCTS | Carbon monoxide, carbon dioxide, organic products of decomposition, oxides of sulfur (sulfoxides) form if heated above decomposition temperature (>300°C). |
| 10.5 HAZARDOUS POLYMERIZATION | Will not occur. |

11 TOXICOLOGICAL INFORMATION

11.1 ACUTE TOXICITY

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|----------------------|--|
| 11.1.1 ORAL TOXICITY | LD50 >8000 mg/kg (rats). |
| 11.1.2 SKIN | Rabbits: non-irritative, index score 0.6/8 (4.0 = severe edema). |
| 11.1.3 EYES | Rabbits: non-irritative, Draize score 1017/110 (100 = maximally irritating). |

11.2 SUBCHRONIC TOXICITY

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|-------------------|--|
| 11.2.1 INHALATION | Rat, inhalation, duration 90 days, NOAEL-1.0 mg/m ³ (respirable). |
|-------------------|--|

11.3 CHRONIC TOXICITY

| | |
|-------------------|---|
| 11.3.1 ORAL | Rat, oral, duration 2 years. Effect: no tumors. |
| 11.3.2 SKIN | Mouse, dermal, duration 18 months. Effect: no skin tumors. |
| 11.3.3 INHALATION | Rat, inhalation, duration 2 years Target organ: lungs. Effect: inflammation, fibrosis, tumors.* |

**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 poorly soluble inorganic 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 poorly soluble particles under similar circumstances and study conditions.*

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| 11.4 SENSITIZATION | No evidence of sensitization was found in animals. No cases of sensitization in humans have been reported. |
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| 11.5 CARCINOGENICITY | In 2006 IARC re-affirmed its 1996 classification of carbon black as, Group 2B (possibly carcinogenic to humans). In 1996 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 was that, "Carbon black is possibly carcinogenic to humans (Group 2B)". |
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11.6 MUTAGENIC EFFECTS

11.6.1 IN VITRO

Carbon black is not suitable to be tested in bacterial (Ames test) and other in vitro systems because of its insolubility. When tested, however, results for carbon black showed no mutagenic effects. Organic solvent extracts of carbon black can, however, contain traces of polycyclic aromatic hydrocarbon (PAHs). A study to examine the bioavailability of these PAHs showed that PAHs are very tightly bound to carbon black and not bioavailable.

11.6.2 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" which led to chronic inflammation and release of oxygen species. (see chronic toxicity above). This is thus considered to be a secondary genotoxic effect and thus carbon black itself would not be considered to be mutagenic.

11.7 REPRODUCTIVE EFFECTS

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

11.8 EPIDEMIOLOGY

Results of epidemiological studies of carbon black production workers suggest that cumulative exposure to carbon black may result in small decrements in lung function. A recent U.S. respiratory morbidity study suggested a 27 ml decline in FEV1 from a 1 mg/m³ (inhalable fraction) exposure over a 40-year period. An older European investigation suggested an exposure to 1 mg/m³ (inhalable fraction) of carbon black over a 40-year working-lifetime will result in a 48 ml decline in FEV1. 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.

The relationship between symptoms and exposure to carbon black is even less clear. 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 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.

A study of carbon black workers in the U.K. (Sorahan et al. 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

(Wellmann et al. 2006, Morfeld et al. 2006(b)) found a similar increase in lung cancer risk but, like the 2001 U.K. study, found no

association with carbon black exposure. In contrast, a large U.S. study (Dell et al. 2006) of 18 plants showed a reduction in lung cancer risk in carbon black production workers. Based upon these studies, the February 2006 Working Group at IARC concluded that the human evidence for carcinogenicity was inadequate (Baan et al. 2006)

11.9 ROUTES OF EXPOSURE

11.9.1 INHALATION

Temporary discomfort to upper respiratory tract may occur when exposures are well above the occupational exposure limit. May be cough and stertorous breathing.

11.9.2 ORAL

Is not considered a likely route of exposure.

11.9.3 SKIN

Prolonged or repeated contact may cause mechanical irritation and drying of the skin

11.9.4 EYES

Carbon black is not chemically irritating substance, but it can cause mechanical irritation to eyes like any other dust.

12 ECOLOGICAL DATA

12.1 ENVIRONMENTAL EXPOSURE

Carbon black release to the environment can cause mechanical pollution.

12.2 ECOTOXICOLOGY

12.2.1 ACUTE FISH TOXICITY

LC50 (96 h) > 1000 mg/l,
Species: *Brachydanio rerio* (zebra fish),
Method: OECD Guideline 203

12.2.2 ACUTE INVERTEBRATE TOXICITY

EC50 (24 h) > 5600 mg/l.
Species: *Daphnia magna* (water flea),
Method: OECD Guideline 202

12.2.3 ACUTE ALGAE TOXICITY

EC 50 (72 h) >10,000 mg/l
NOEC 50 >10,000 mg/l
Species: *Scenedesmus subspicatus*,
Method: OECD Guideline 201

12.2.4 ACTIVATED SLUDGE

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

12.3 MOBILITY

Not soluble in water. Not expected to migrate.

12.4 DISTRIBUTION

Not soluble in water. Expected to remain on soil surface.

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- | | |
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| 12.5 BIOACCUMULATION POTENTIAL | Bioaccumulation Potential Bioaccumulation is not expected due to physicochemical properties of the substance. |
| 12.6 OTHER ADVERSE EXPOSURES | Carbon black does not contain components capable to deplete ozone layer. |

13 DISPOSAL CONSIDERATIONS

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| 13.1 INFORMATION ON SITES AND METHODS OF NEUTRALIZING, UTILIZING AND ELIMINATING WASTE, INCLUDING CONTAINERS (PACKING) | Product waste 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. Return reusable containers to manufacturer. Paper bags may be incinerated, recycled or disposed of in appropriate landfill in accordance with national and local laws. |
| 13.2 LEGISLATIVE ACTS | |
| 13.2.1 EC | EU Waste Code No. 61303 per Council Directive 75/422/EEC. |
| 13.2.2 USA | Not a hazardous waste under U.S. RCRA, 40 CFR 261. |
| 13.2.3 CANADA | Not a hazardous waste under provincial regulations. |
| 13.2.4 UNITED NATIONS (U.N.) | No U.N. Number. |

14 TRANSPORT INFORMATION

- | | |
|--|---|
| 14.1 RECOMMENDATIONS ON SAFE HANDLING AND TRANSPORTING | Observe conditions of preserving containers tightness during product transportation Packed carbon black should be transported in versatile containers and shipping packages in covered vehicles according to rules of carriage effective for appropriate transport type. Unpacked pelletized carbon black should be transported in covered hopper cars and tank trucks. Shipped material temperature must not be >600C. |
| 14.2 TRANSPORT CLASSIFICATION | Carbon black is not restricted for transport by the following regulations: *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 States Department of Transportation Hazardous Materials |

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|---|--|
| | Regulations (DOT). |
| | *United Nations Recommendations on the Transport of Dangerous Goods. |
| | *Canadian Transport of Dangerous Goods(TDG). |
| 14.3 U.N. CLASSIFICATION NUMBER | Absent |
| 14.4 CARGO DANGER CLASSIFICATION | Is not classified |
| 14.5 IDENTIFICATION DURING TRANSPORTATION | Non-activated carbon black of mineral origin. |

15 REGULATORY INFORMATION

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|---|---|
| 15.1 WARNING MARKING IN EC | Carbon black is not defined as dangerous substance or preparation according to Council Directive 67/548/EEC and its various amendments and adaptations. Symbol is not required. |
| 15.2 GERMANY WATER HAZARD CLASSIFICATION (WGK) | Non-hazardous to waters |
| 15.3 CANADA CLASSIFICATION ACCORDING TO WORKPLACE HAZARDOUS MATERIAL INFORMATION SYSTEM (WHMIS) | WGK Number: 1742. D2A |
| 15.4 USA | American Conference of Governmental Industrial Hygienists (ACGIH) classifies carbon black as A4 (not classifiable as human carcinogen). Carbon black corresponding to three criteria (airborne, unbound particulates of respirable size) was added to the Proposition 65 substances list (California Safe Drinking Water and Toxics Enforcement Act of 1986) on February 21, 2003. |

Carbon black (CAS Number: 1333-86-4) is on the following inventories:

- >OKPI - All-Russian Classifier of Products: (№21 6600);
- >TSCA - Toxic Substances Control Act (USA);
- >EINECS - European Inventory of Existing Commercial Chemical Substances: № 215-609-9;
- >CEPA - Canadian Environmental Protection Act;
- > AICS - Australian Inventory of Chemical Substances;
- >MITI - (Ministry of International Trade and Industry) List of Existing Chemical Substances: № 10-3074/53328 и № 10-3073/5-5222 (Japan);
- >TCC-ECL - Toxic Chemical Control Law - Existing Chemical List: № KE-04882 (Korea);
- >PICCS - Philippine Inventory of Chemicals and Chemical Substances;
- >ECS - Inventory of Existing Chemical Substances (China).

16 ADDITIONAL INFORMATION

16.1 POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) CONTENT

National Institute for Occupational Safety and Health (NIOSH) recommends in its normative documents (1978) to measure PAHs concentration in air, when PAHs content in carbon black >0.1%.

Manufactured carbon blacks generally contain less than 0.1% of solvent extractable polycyclic aromatic hydrocarbons (PAHs). Solvent extractable PAHs 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.

16.2 R-PHRASES, S-PHRASES

S22 (not breath in dust)

S33* (take precautions against static charge)

**Phrase S33 is applicable only to carbon black grades, characterized by enough nonconductivity for static charge formation when using the product.*

16.3 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATING

Health: 0
 Flammability: 1
 Reactivity: 0

16.4 HAZARDOUS MATERIALS IDENTIFICATION SYSTEM® (HMIS®)

Health: 1*
 Flammability: 1
 Physical Hazard: 0

0= minimal; 1=slight; 2=moderate; 3=serious; 4=severe.

*Designates chronic hazard (IARC carbon black classification).

16.5 GENERAL INFORMATION

The data presented in MSDS corresponds to the present state of our knowledge and experience. The users of this product have responsibility for consequences of its application for their specific purposes.

The users of the product should conduct their own researches to determine the objectivity of the presented data and suitability of the material for

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their specific applications.

Furthermore, none of the data reported here are to be understood as permission, suggestion or recommendation for infringement of any laws and set standards.

MSDS is updated as receiving new information on carbon black safety and health effects. MSDS is updated as receiving new information on carbon black safety and health effects. Actual version of MSDS is on web site: www.tztu.ru

16.6 MAIN DATA SOURCES

- 1 IUCLID International Uniform Chemical Information Database. Existing Chemicals - 2000.
- 2 User's Guide. -Belgium, ICBA, 2004.
- 3 IUPAC Recommendations, 1995 (Recommended terminology for the description of carbon as a solid, p.479).
- 4 IARC Monographs on the evaluation of carcinogenic risks to humans. -France, IARC, 1996.-V.65.- p.149.
- 5 NIOSH: Criteria for a recommended Standard - Occupational Exposure to Carbon Black; DHHS/NIOSH Pub. No. 78-204; Cincinnati, OH, 1978.
- 6 Proposition 65 List of Chemicals. - State California, 2007.

General Director _____

R.A. Gazizov

Technical Director _____

A.I. Magdych

