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| Carbon black for rubber manufacture of grades N 762, N 772, N 774, N 990, N 991, K-354 | Safety Data Sheet Register No 001590252108111 Valid till "03" August 2006y |
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1. Name (title) and substance (material) composition

Name:

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| Technical (on ND): | Carbon soots, used in rubber products - classification system. |
| Chemical (IUPAK): | Carbon black |
| Trading: | Carbon black (technical) for rubber manufacture of grades N 762, N 772, N 774, N 990, N 991 |
| Synonyms: | Soot |
| Used raw material (the basic components): | Natural gas (CH) |
| Chemical compound (the basic components): | C |
| Components: | Carbon - 89-99% hydrogen - 0,3-0,8% oxygen - up to 10% mineral impurities - 0,05-0,5% maximum permissible concentration (MPC) in working zone = 4mg/m ³ |
| Class of hazard: | 3 |
| Degree of hazard of product in whole: | Combustible substance, dust is explosive, pollutes the environment. |
| Additional data: | Ash content not more than 0,4% of mass Raw material: natural gas and gas condensate of the Vuktyl gas condensate field. |

2. Data on the organization (person) - the manufacturer or the supplier

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| The manufacturer of the product: | Limited liability company "Severgazprom", Sosnogorsk gas processing plant. |
| The address: | 39/2 pr. Lenina, Ukhta, Republic Komi, Russia 169300 |
| The supplier of the product: | Prodexim s.r.o. |
| The address: | Pod Vachmajstrom 12791/8 831 01 Bratislava Slovakia ICO: 47156091 |
| Phone: | +421 918 178 310 |
| Phone for emergency | +421 918 178 310 |

3. Forms of dangerous influence and conditions of their origin

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| Data on dangerous properties of substance: | Danger from carbon of technical grades N 762, N 772, N 774, N 990, N 991 is caused by long inhalation of its aerosol, and also by local action of carbon dust on the skin, mucous membranes of oral cavity, nasopharynx, eyes. |
| membranes of | Carbon dust possesses by fibrogenous action. |
| Influence on organism: | At inhalation, hit on skin and in eyes, casual swallowing. |
| Most affected organs and systems: | The upper respiratory tract, bronchial tubes, lungs, mucous membranes of oral cavity and nasopharynx, teeth, heart, female genitals, skin, eyes, liver, organs of digestion, kidney. |
| Symptoms and manifestations: | Undue fatiguability, cough, short wind, pain in thorax. Development of pneumoconiosis at minimalexperience of work - 5 years. At hit in eyes - epiphora, pain, spasm. At hit on skin - dryness in mouth. |
| Influence on environment (air, water, ground): | The product is stable. It doesn't transform in the environment. At infringement of rules of transportation and recycling it pollutes the atmospheric air, reservoirs, ground. Smell is absent. |
| Hygienic specifications (maximum permissible concentration, MPC, in air of working zone and atmospheric air, water objects, ground): | <p>Maximum permissible concentration (MPC) in working zone = 20-30 minutes concentration 4 mg/m³, aerosol mainly of fibrogenic action, cancerogene, 3 class of hazard (soot black industrial with content of benzapyrene not more than 35 mg/kg.</p> <p>MPC in atmospheric air = 20-30minutes concentration - 0,15mg/m³, 3 class of hazard (soot).</p> <p>MPC in atmospheric air = mean-daily - 0,05 mg/m³, 3 class of hazard (soot).</p> <p>Class of hazard on MPC: atmospheric air - 3, working zone - 3, water, ground - are not normalized.</p> <p>Limiting harmful index (LHI) - sanitary-toxicological.</p> <p>At discharge of returned (waste) waters by the concrete water-consumer, at performing the works on the water objects and in the coastal zone the content of weighted substances in the control location (point) should not increase in comparison with the natural conditions more than on:</p> <ul style="list-style-type: none"> - 0,25 mg/dm³ - for the maximum and first category of water use; - 0,75 mg/dm³ - for the second category of water use. <p>For the reservoirs, containing in low-water more than 30 mg/dm³ of natural weighted substances, the increase in their content in water supposed in the limits of 5%.</p> |
| is | |
| forbidden to more than | Returned (waste) waters containing the weighted substances with the speed of sedimentation more than 0,4 mm/sec are be discharged into the water-drains and at speed 0,2 mm/sec - into the reservoirs. |

4. Measures of first aid

First aid.

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| At inhalation: | Remove to fresh air. Take off the dusty clothes and personal protection means. Provide the rest and warmth. Seek for medical attention. |
| At influence on skin: | Wash skin with plenty of water and soap. Address for medical aid at symptoms of drying, redness and edema of skin, developing of allergic dermatosis. |
| At hit in eyes: | Wash out eyes at widely opened eye slit not less than 15 minutes. Address to the doctor – ophthalmologist. |
| At ingestion: | Simptomatic medical assistance. |
| Contraindications: | Absent. |
| Means of first aid (first-aid set): | Standart first-aid set. At rendering measures of first aid the special medicamentous means are not required. |

5. Measures and means of providing the fire and explosion safety

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| Fire and explosion hazard: | Carbon black of grades N 762, N 772, N 774, N 990, N 991 is the combustible substance, with tendency to self-ignition, forms explosion hazard dust - aerial mixtures. |
| Indices of fire and explosion hazard: | Temperature of ignition is 180°C; temperature of self-ignition is 405-415°C; lower concentrating limit of flame distribution is absent up to concentration of 1500 mg/m ³ . |
| Products of thermal destruction: | Carbon oxide. |
| List of means necessary for fire suppression: | At volumetric fire suppression by inert gases, process steam. At big fires - moistening by water, foam, powder ПФ. At small ignitions - by carbon dioxide and foam fire extinguishers, felting, sand, water. |
| Personal protection means at fire extinguishing: | Work clothes. Insulating respirator. At ignition - fireproof suit completed with self-rescuer СПИ-20. |
| Specificity at fire suppression: | It is forbidden to extinguish by water in the form of compact streams if carbon black is in fine-disperse state. Toxic gases can be allocated at burning. |

6. Measures on prevention and liquidation of extreme situations

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| Measures of safety provision: | Measures on prevention the extreme situations. With a view of collective protection the hermetic sealing of equipment should be provided. Industrial rooms should be equipped with plenum - exhaust ventilation providing the |
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concentration of hydrocarbon dust in air of working zone not higher than maximum permissible. Places of possible dust emission should be equipped with local suction.

Control over the dust content of product should be performed not less than one time a quarter. The carrying out of electrowelding works and contact of product with the wiring is not supposed. The process equipment should be earthed.

Recommendations on:

- fire and explosion safety:

Fire safety of the manufacture should be provided with the systems of fire prevention and of fire protection. See section.

- handling and storage:

Carbon black should be stored indoors, expelling the possibility of moistening and pollution.

- safety provision:

Hermetic sealing of equipment and containers. Ventilation of rooms. Use of personal protection means - work clothes and shoes, respirators type ШБ -1 (SHB-1), "Lepestok" and others.

- environment protection:

Carbon black does not form toxic compounds in air medium and sewage at the presence of other substances and factors. The air with product dust content should be exposed to dry or wet cleaning up to the established norms of maximum permissible discharge of pollutants. In production areas the pneumocleaning of product dust from walls, ceilings, air ducts of ventilation and floors should be done. The sewage formed after wet air purification are sent to the settlers (where the product settles as a sludge) and further into the industrial sewerage. The sludge, taken at periodic cleaning of settlers, are sent for burning or into the dump for burial.

- neutralization, utilization and burial of waste products:

Neutralization, utilization are made in furnaces of reburning at the industrial site. The burial is absent.

- transportation:

Do not allow the infringement of container integrity.

Actions of personnel:

Measures on liquidation of extreme situations.

Remove from the dangerous zone the personnel which is not engaged in liquidation of extreme situations. Use personal protection means. Remove the sources of fire, sparks, do not smoke. Isolate the dangerous zone in radius of 50 m. Collect the spilled pure product into the special container and transfer on destination. Collect the contaminated product into the special container with earth cover 5-10 sm depth and transfer for burning or into the dump for burial. The place of spilling indoors should be subjected to pneumocleaning. At fire - do the isolation of the dangerous zone in radius of 200 m, use complete protective clothes. At fire suppression by moistening with atomized water, powder ПФ, at volumetric fire suppression - by steam, inert gases. At liquidation the consequences of extreme situations carry out the measurements of maximum

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| Measurements of protection provision: | permissible concentration level in working zone before the beginning of work of personnel. Respirators of type ШБ-1 (Shb-1) "Lepestok", Ф-62Ш (F-62Sh), У-2К (U-2K), "Astra-2", ПЦ-60 (RTS-60), ГРШ-2 (GRSH-2). Hermetic sealing of equipment, ventilation of rooms. |
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7. Rules of handling and storage

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| Safety measures and protection means at work with substance: | Observe safety measures, use measures of personal protection. |
| Storage conditions: | The packed carbon black should be stored in enclosed store room expelling the possibility of moistening and pollution. Unpacked product should be stored in special bunker storehouse at temperature not above 60°C. |
| Conditions and terms of safety storage: | Store in dry place without influence of moist air. Storage together with oxidizing agents is not supposed. A warranty period of storage - one year from the data of product manufacture. |
| Incompatibility at substance (material) storage: | The carrying out of electrowelding works, use of open flame and contact of product with wiring is not supposed. |
| Requirements providing the transportation safety: | Do not permit the infringement of container integrity. Transportation with all dangerous cargoes is forbidden. At loading and unloading the safety requirements according to normative documentation should be observed. Use work clothes and shoes, antidust protective devices. |
| Materials recommended for container and packing: | Carbon black is packed into the paper open and valved sacks, rubber-cord container and valved polyethylene sacks. Open paper sacks are stitched by machine way. |

8. Requirements on labour protection and measures on personnel safety provision

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| Parameters of working zone with obligatory control, their maximum permissible values, biologically safe for the personnel: | Relative humidity - 40-60%, temperature not higher than 60°C, speed of air motion not more than 0,1 m/sec. |
| Maximum permissible concentration of carbon black in the air of working zones: | Maximum permissible concentration in working zone/reference safe exposure level = 4 mg/m ³ , 3 class of hazard F(aerosol mainly of fibrogenic action); possible C(cancerogene). |
| Measures of control and provision of product content in permissible concentrations: | Hermetic sealing of equipment. Total plenum-exhaust ventilation. Local suction near the places of possible dust emission . Control over the product content in air not less than one time a quater. |
| Measures and means of personnel protection: | |

a) general recommendations:

Use of personal protection means of organs of breathing, skin and eyes is required. The carrying out of electrowelding works, use of open flame and contact of product with wiring is not supposed. The process equipment should be earthed. In production areas the pneumocleaning of product dust from walls, ceilings, equipment, air dust of ventilation and floors should be done.

b) respiratory protection:

Antiaerosol respirators of types: ШБ-1(Shb-1), "Lepestok".

c) eyes protection:

Goggles of type "Progress-2", "C33-TP"(SZZ-TR), "C33-БЛ" (SZZ-BTS) and others .

d) hands protection:

Protective mittens from cotton, type B.

e) protective clothes:

Work clothes from cotton, work shoes.

Measures of personal hygiene:

Observe the personal hygiene rules. Take food in specially allocated places. Wash hands before taking the food. Wash under the shower is obligatory after finishing the labour shift.

9. Physical and chemical properties

Physical state:

Solid substance (powder, granules). Average sizes of particles from 13 up to 235 nm of black colour, odourless.

Parameters describing the main properties of substance:

pH=7-9 mg/l, insoluble in water, capable to oxidize, non dangerously explosive, specific geometrical surface 50-100 m²/g.
Fire and explosion hazard.

| Designation ISO/ASTM | N 762 | N 772 | N 774 | 990 | N 991 |
|---|-------|-------|-------|------|-------|
| Iodic number of adsorption g/kg | 27 | 30 | 29 | - | - |
| DBP number 10 m ³ /kg | 65 | 65 | 72 | 43 | 35 |
| DBP number of compressed sample 10 m ³ /kg | 57 | 58 | 62 | 40 | 38 |
| CTAB 10 m ² /kg | 29 | 33 | 29 | 9 | 8 |
| Nitrogen adsorption 10 m ² /kg | 28 | 32 | 29 | 9 | 7 |
| Bulk density kg/m ³ | 505 | 505 | 495 | - | - |
| Difference of stress at 300% elongation MPa | -2,6 | -2,6 | -1,4 | -5,5 | -7,0 |

10. Stability and chemical activity

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| Stability: | Stable |
| Reactive capacity: | Oxidizes at temperature above 400°C |
| Conditions to avoid: Working life: | Open sources of flame, spark formation. It is not established by GOST 7885 |

11. Toxicity

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| The basic toxicological indices and their value. | |
| Acute toxicity: | DL ₅₀ more than 5000 mg/kg, rats. Substance is low toxic for evolution of acute poisonings. |
| The doses (concentrations) with minimal toxic action: | Minimum accumulated dose (totally) 180000-240000 mg/animal (mice with food for 12-18 months) (on integral indices). Minimum permissible dose 50/animal, intratracheal, one time, rats (not sharply expressed pneumoconiotic changes). |
| Data on harmful affects on the health: Irritation of skin and eyes: | Calls dryness, pustular disease of skin and hypoderm, dermatitis, epidermophytosis, allergic dermatosis. At action on eyes tattoo of conjunctiva and cornea irritation are possible. |
| Skin-resorptive action: | Doesn't suck through the undamaged skin. |
| Action on upper respiratory tract and lungs: | Irritates the respiratory tract. Long repeated affects can lead to chronic inflammatory diseases of upper respiratory tract of atrophic type and to pneumoconiotic changes of lung tissue. |
| Sensitization action: | Prolonged and repeated contacts can cause the raise of skin sensitivity and allergic dermatosis. |
| Other toxic manifestations: | In carbon black the 1,2-benzopyrene is detected, in this connection the possible etiological factor of developing the malignant tumors of upper respiratory tract, lungs, skin and gullet is observed. It is supposed that gas carbon black is less carcinogenic than usual soot by virtue of smaller polyaromatic hydrocarbon content, which are strongly connected with particles of carbon black and very slowly eliminated by biological liquids. The content of benzopyrene in carbon black is 35 mg/kg (see "Hygienic conclusion"). |
| Data on dangerous distant consequences of effect on organism: | Moderate cumulativity. Skin-resorptive action (TL50) is absent; embryotropic, gonadotropic, teratogenic and mutagenic action were not studied. At the benzopyrene content less than 35 mg/kg the permissible concentration of 20-30 minutes concentration / mean daily equals to 0,15/0,05 mg/m ³ . |

12. Influence on environment

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| Estimation of possible influences on the environment: | Stable in environment. Values of maximum permissible concentrations in atmospheric air, water, ground are given in section 3. Indices of ecotoxicity are absent. Value of maximum permissible discharges at the boundary of sanitary buffer equals to 0,002 mg/m ³ . |
| Migration and transformation in the environment: | It does not transform. Pollutes the environment: ground, reservoirs . |
| Hygienic specifications in different spheres: | MPC in atmospheric air = 20-30 minutes concentration = 0,15 mg/m ³ , 3 class of hazard (soot). MPC in atmospheric air = mean-daily = 0,05mg/m ³ , 3 class of hazard (soot). Class of hazard on MPC: atmospheric air - 3, working zone - 3, water, ground - are not normalized. Limiting harmful index (LHI) – sanitary-toxicological. At discharge of returned (waste) waters by the concrete water-consumer, at performing the works on the water objects and in the coastal zone the content of weighted substances in the control location (point) should not increase in comparison with the natural conditions more than on: - 0,25 mg/dm ³ - for the maximum and first category of water use; - 0,75 mg/dm ³ - for the second category of water use. For the reservoirs, containing in low-water more than 30 mg/dm ³ of natural weighted substances, the increase in their content in water is supposed in the limits of 5%. Returned (waste) water containing the weighted substances with the speed of sedimentation more than 0,4 mm/sec are forbidden to be discharged into the water-drains and with the speed of sedimentation more than 0,2 mm/sec - into the reservoirs. |
| Indices of acute toxicity: | The high content of substances in atmospheric aerosols brings to the increase of inhabitants morbidity. |

13. Utilization and/or waste (residues) removal

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| Precautions: | Observe safety measures analogous to the work with product. |
| Waste removal: | Collect the waste of product into the special container and return into the process for use. |
| Liquidation of waste products: | Collect the waste into the special container and transfer for burning in specially allocated place, agreed upon the bodies of State Sanitary Epidemiological Inspection (SSEI) and State Committee on Ecology. |
| Treatment of container and methods of its utilization: | Multireturnable container should be subjected for cleaning from the product (pneumocleaning). Irrecoverable container is transferred for burning. Do not use for food! |

14. Requirements on safety at transportation

Transportation is carried out in view of GOST 19433 requirements and in accordance with the Rules of dangerous cargoes transportation.

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| Transport name: | Carbon black for rubber manufacture of grades N 762, N 772, N 774, N 990, N 991. |
| Type of transport facilities: | Covered automobile, railway and sea according to the rules of combustible materials transportation that act at the given type of transport. |
| Classification of dangerous cargo: | Class 4, subclass 4.2, classification code 4213, sign of danger on drawing 4. |
| Serial number of UNO: | 1361 . According to the carried out JMDG tests it is established that nonactivated carbon black of natural origin was subjected to test for self-heating, described in JMDG (p. 4225) - the temperature during 12 hours did not exceed 200°C. |
| Code of danger: | By railway transportation - 40. |
| Number of emergency card: | 405 |
| Data on environment contamination: | The substance pollutes the atmospheric air, river and sea medium, reservoirs of economic-household purpose. |
| Manipulation sign: | “Avoid damp”. |
| Transport marking: | The name of the enterprise - manufacturer; name of carbon black grade; net weight; designation of normative documentation. For marking the carbon black grades N 762, N 772, N 774, N 990, N 991 the green interrupted strips are marked from both sides of the paper sacks. At marking the polyethylene sacks, used for all grades of carbon black, the strips should be of yellow colour. In the rupture of each strip the designation of corresponding carbon black grade should be represented by printed letters of the same colour. It is authorized to put the colour strips and marking vertically on the edges of the label, pasted on each unmarked paper sack. No marking is made on special vans, tank trucks, rubber-cord containers and bags. Marking of carbon black for export should match the orders - warrants of foreign trade union. |

15. International and national legislation

In any case follow the acting instructions of Russian Laws or local decrees (the law “About protection of consumer`s rights”, “About nature protection” and others).
In legislation on Dangerous Substances Classification and Labelling in the European Communities, Brussel - Luxemburg, 1987 and Recommendation on the Transport of Dangerous Goods, United Nation, New York, 1993, the given substance is not held.

UNO class of danger: 4.2.

Symbol of danger: R-;

Precautionary marking is according to acting normative documentations.

Documentation, regulating the requirements on person and environment protection:

Hygienic conclusion of Ministry of Public Health of RF No 77.01.03.260.17.25805.07.9

16. Additional information

The field of application:

Carbon black of grades N 762, N 772, N 774, N 990, N 991, being the product of thermal decomposition of hydrocarbons in gas phase, is applied as the amplifier at manufacturing the rubber for national economy and export.

Limitations on application:

It is the product of production purpose. It is not destined as national consumer goods.