

SAFETY DATA SHEET

Registered under	
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Rosstandart	
Information Analysis Center Substance and Material Safety FGUP VNITsSMV	Director  /A.D. Kozlov/

NAME:

Technical name (as per regulatory documents)

Korund Series Ceramic Thermal Insulation Fluid Coatings

Chemical name (as per IUPAC)

N/A

Trade name

Korund Series Ceramic Thermal Insulation Fluid Coatings

Synonyms

N/A

OKP Code:

5 7 6 0 0 0

TN VED Code:

3 4 1 4 9 0 0 0 0 0

Name and code of the main regulatory, technical or information document for the product (GOST, TU, OST, STO, (M)SDS, etc.)

TU 5760-001-83663241-2008

HAZARD DESCRIPTION

Signal word:

Brief (in words): Water-based fluid mixture of styrene-acrylic polymers. In regard of human exposure, it has safety class IV (low-hazard substances) as per GOST 12.1.007-76. It may cause irritation of mucous membranes and skin on contact. In case of emergencies, accidents and unauthorized emissions, it may pollute the environment.

Detailed: in 16 sections of the datasheet attached.

MAIN HAZARDOUS COMPONENTS	OEL, mg/m ³	Hazard rating	CAS No.	EC No.
Formaldehyde	0.5	2	50-00-0	-
Methyl Methacrylate	20/10	3	80-62-6	-
Styrene	30/10	3	100-42-5	-

APPLIED BY:

NPO FULLEREN LLC,

Volgograd

(company name)

(city)

Type of applicant:

manufacturer, ~~supplier, seller, exporter, importer~~

(strike out as applicable)

OKPO Code:

8 3 6 6 3 2 4 1

Emergency tel:

+7(8442) 38-44-66

Director of the applying company:

(signature)

/ A.S. Platov/

initials

IUPAC – International Union of Pure and Applied Chemistry

GHS – UN Recommendations ST/SG/AC.10/30 Globally Harmonized System of Classification and Labelling of Chemicals

OKP – All-Russian Classification of Products

OKPO – All-Russian Classification of Businesses and Organizations

TNVED – Foreign Economic Activity Commodity Nomenclature

CAS No. – Product Number in the Chemical Abstracts Service Register

EC No. – Product Number in the European Chemicals Agency Register

OEL is an upper limit on the acceptable concentration of a hazardous substance in workplace air, mg/m³ (maximum single/shift average)

Safety Data Sheet is a safety data sheet for chemical products (substance, mixture, material, waste products)

Safety Data Sheet complies with:

- UN Recommendations, GHS ST/SG/AC. 10/30;
- Regulation EC No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex II

Signal word: specifies either of two words "**Danger**" or "**Warning**" (or "**None**") according to GOST 31340-2007 Labeling of Chemicals. General Requirements.

1. Identification of the chemical product and of the company/undertaking

1.1. Chemical Product Identifier

1.2.

1.1.1. Technical name: Korund Series Ceramic Thermal Insulation Fluid Coatings acc. to TU 5760-001-83663241-2008

1.1.2. Brief usage guidelines (including application limitations): For heat insulation of pipe surfaces in heating systems; steam and water heating boilers; railway and subway cars; enclosing building structures of residential, public, industrial and community facilities; process equipment.

1.2. Manufacturer or Supplier Details

1.2.1. Full legal name of the company: NPO FULLEREN LLC

1.2.2. Mailing address: 33 Marshala Chuykova Str.,
Volgograd, Volgograd region,
400131, Russia

1.2.3. Telephone, including for emergency calls and time limitations: +7(8442) 38-44-66

1.2.4. Fax: +7(8442) 50-40-13

1.2.5. E-mail:

2. Hazard(s) Identification

2.1. Hazard level acc. to GOST 12.1.007: Class 4 (low hazard)

2.2. Hygienic rates in workplace air (OEL or SRLI): N/A

2.3. Label elements (acc. to GOST 31340-07)







2.3.1. Hazard description: Can irritate the eyes on contact.

2.3.2. Hazard prevention measures:
- hazard symbol N/A
- signal word Warning!
- prevention measures
- Use eye/face protection.
- In case of eye contact, carefully flush your eyes with water for several minutes. Remove contact lenses if you are wearing any and if it is easy to do. Proceed with eye flushing.

- If irritation persists, seek medical help.
- Wash your hands after use.

3. Composition (Information on Ingredients)

- 3.1. General Product Data Mixed product
- 3.1.1. Chemical name (acc. to IUPAC): N/A
- 3.1.2. Chemical formula: N/A
- 3.1.3. General composition data (with the brand range and additives specified): Water-based fluid mixture of styrene-acrylic polymers. Contains coloring agents, fire-retardants, inhibitors and microgranular closed-cell ceramic additive:

Hazardous component(s)	CAS	Hazard symbol(s)	Hazard R-phrases	wt. %
Latex – water-based dispersion of butyl acrylate and styrene	Patent	-	-	Patent
Titanium dioxide	13463-67-7		H315, H319, H332, H335	Patent
Soda ash	497-19-8		H319	Patent
Sodium nitrite	7632-00-0		H272, H301, H400	Patent
Zinc oxide	1314-13-2		H410	Patent
Ammonium hydroxide	1336-21-6		H335, H400, H314	Patent
Sodium borosilicate hollow glass microspheres	65997-17-3		H315, H319, H335	Patent

Note: H315 - Causes skin irritation. H319 - Causes serious eye irritation. H332 - Harmful if inhaled. H335 - May cause respiratory irritation. H272 - May intensify fire; oxidizer. H301 - Toxic if swallowed. H400 - Very toxic to aquatic life. H410 - Very toxic to aquatic life with long lasting effects. H314 - Causes severe skin burns and eye damage.

4. First Aid Measures

- 4.1. Observed symptoms
- 4.1.1. In case of intoxication by inhalation: Irritant effect: throat irritation, cough.
- 4.1.2. In case of skin contact: Irritation: itching, redness, swelling.
- 4.1.3. In case of eye contact: Irritation: itching, sandy-feeling, redness, conjunctiva swelling, eyelid swelling and tenderness.

4.1.4.	In case of intoxication by ingestion (swallowing):	Throat and mouth irritation, burning feeling in the esophagus, pains in stomach, sickness, vomiting, dizziness, dyspeptic disorders.
4.2.	First aid measures	
4.2.1.	In case of intoxication by inhalation:	Take the affected person to fresh air, provide expectant treatment. If any symptoms appear, seek medical attention.
4.2.2.	In case of skin contact:	Immediately wash the affected area with plenty of water. For larger affected areas, use shower. If irritation signs appear, seek medical attention.
4.2.3.	In case of eye contact:	Immediately flush the eyes with the lids open and eye-balls moving for at least 15 minutes with plenty of running water using an eye-wash station or an eye bath. If the contact lenses are on, they must be removed before flushing. Seek immediate attention from an eye doctor.
4.2.4.	In case of intoxication by ingestion (swallowing):	Do not induce vomiting unless instructed by a doctor. If the affected person remains conscious, rinse his/her mouth with water and have him/her drink one or two glasses of water. If this causes the vomiting reflex, repeat the previous step. Seek medical attention.
4.2.5.	Contra indications:	None.
4.2.6.	First aid kit:	Standard first aid kit.
5.	Fire and Explosion Safety Measures and Extinguishing Media	
5.1.	General fire and explosion safety description:	Non-flammable fluid
5.2.	Fire and explosion safety rating:	
	- acc. to GOST 12.1.044	N/A
	- acc. to GOST 30244-94	Combustibility class – G1
	- acc. to GOST 30402-96	Flammability class – B1
	- acc. to GOST 12.01.044	Smoke-developed index – D1
	- acc. to GOST 12.01.044	Flame spread index – 0 (zero)
5.3.	Combustion and/or thermal degradation products hazard:	Carbon oxides (CO _x) may emerge during a fire
5.4.	Suitable extinguishing media:	Use the media as applicable to the overall fire situation.
5.5.	Unsuitable extinguishing media:	None

- 5.6. Personal protective equipment (PPE) for fire-fighting: For fire-fighting, use regular PPE: self-contained breathing apparatus and fire protection suit.
- 5.7. Particular measures at fire-fighting: This product will not ignite until all the contained water evaporates. The residual organics may be a flammable material.
- 6. Accidental Release Measures and Emergency Control**
- 6.1. Personal precautions, protective equipment and emergency procedures
- 6.1.1. General steps to be taken: Restrict unauthorized access to the affected area until the cleaning-up procedure is completed. Use the personal protection equipment as described in section 8 (Exposure Controls/Personal Protection). Stop or limit all leaks if it can be done safely. If possible, have the leak area ventilated.
- 6.1.2. Personal protection equipment (for response teams and personnel): For fire-fighting, use regular PPE: self-contained breathing apparatus and fire protection suit.
- 6.2. Emergency procedures
- 6.2.1. Spill containment (including environmental protection measures): Put the spilled product into a container, seal it and label as appropriate. Clean the area with water and water-soluble detergents.
FOR LARGE SPILLS: Put an absorbing material or dig a trench around the affected area to limit it. Collect the spilled product into spare or empty waste containers. Wash the contaminated surfaces with water and water-soluble detergents. Have a special licensed company remove the contaminated material. Product disposal must be in line with section 13 (Waste Disposal Considerations).
- 6.2.2. Fire-fighting procedure: Keep away from any containers on fire. To cool them down, use water at a maximum possible distance (see more in it. 5.7. Fire Safety). For fire-fighting, use self-contained respiratory protection and safety clothes.

7. Handling and Storage Instructions for Chemical Products

- 7.1. Precautions for safe handling
- 7.1.1. Safety measures and collective protective equipment (including fire-fighting measures): Prevent any contact with eyes, skin or clothes. Use only in suitably ventilated areas. Not for internal use. Do not eat, drink or smoke while using the product. Keep the containers closed whenever the product is not used. All storage containers must be labeled as to the product.
- 7.1.2. Environment protection measures: The product or its waste can never be removed to storm water sewage. In case of emergency, immediately notify the Ministry of Emergency Situations, environmental protection supervisory authorities and Federal Service for Supervision of Consumer Rights Protection and Human Welfare.
- 7.1.3. Safe handling advice: Not controlled. Follow the transportation rules for hazardous shipments established by the Ministry of Transportation.
- 7.2. Conditions for safe storage
- 7.2.1. Safe storage conditions and life (including guaranteed shelf life, expiry date): Keep the product in sealed plastic containers 10 dm³ and 20 dm³. Protect the product from freezing up. The guaranteed shelf life is as specified by the manufacturer.
- 7.2.2. Incompatible substances and materials: Not controlled.
- 7.2.3. Recommended packaging materials: Supplied and stored in plastic containers.
- 7.3. Safety measures and domestic storage precautions: For commercial use only.

8. Exposure Controls/Personal Protection

- 8.1. Control parameters: exposure limits (OEL or SRLI):

Volatile components	Laboratory research results, mg/m ³	OEL, mg/m ³	Hazard rating	Reference ^{*)}
Formaldehyde CAS 50-00-0	0.01	0.5	2	RU.71.TII.01.015.E.000178. 09.11 dd. 9 Sept 2011
Methyl Methacrylate CAS 80-62-6	0.01	20/10	3	
Styrene CAS 100-42-5	0.002	30/10	3	

^{*)} According to the hygienic description annexed to the Certificate of State Registration RU.71.TII.01.015.E.000178.09.11 issued by the Directorate of the Federal Service for Supervision of Consumer Rights Protection and Human Welfare in the Tula region on 9 Sept 2011.

8.2.	Exposure controls:	For indoor use, the room must have a balanced ventilation system.
8.3.	Personal protection equipment	
8.3.1.	General	
8.3.2.	Respiratory protection (types of PPE)	For exposures exceeding the OEL level, use a gas mask type RPG-67A or an industrial filtering gas mask type BKF.
8.3.3.	Protective clothes (material, type):	HAND PROTECTION: Protective gloves made of butyl rubber acc. to TU 38-106341-82 or PVC. EYE/FACE PROTECTION: Chemical vapour/splash-proof safety glasses with side shields. SKIN PROTECTION: Petroleum or petroleum product protection suit acc. to GOST 12.4.111-82 or equivalent acc. to GOST 12.4.086-86. FOOT PROTECTION: Rubber boots acc. to GOST 12265-78 or snow-boots.
8.3.4.	PPE for domestic use	For commercial use only.

9. Physical and Chemical Properties

9.1.	Appearance:	
	- Physical state	Slurry.
	- Form	Flat homogeneous matte white film.
	- Colour	White, may vary on customer's request.
	- Odour	Faint (2 units or less).
9.2.	Physical and mechanical properties of the product:	
	- Non-volatile content, %, or more	54
	Adhesion, units, or more:	
	- steel	1
	- concrete surface	1
	- brick surface	1
	- Heat transfer, W/m, °C	0.001
	- Heat absorption, W/m, °C	1.6
	- Heat loss, W/m, °C	1.38
	- Static water resistance at 20°C after 24 hours	No changes
	- Temperature resistance at +200°C after 1.5 hours	No discolouration, cracks, peel-offs, or bubbles.
	Adhesion values at temperature +200°C after 1.5 hours, units, or more	

	- steel	1
	- concrete surface	1
	- brick surface	1
	- Elongation at break, %	20
	Tensile strength, MPa, or more	1.5
	Freezing resistance after 10 freeze-thaw cycles:	
	- appearance	No visible changes
	- steel adhesion, units	1
9.3.	Parameters defining the main properties of chemical products, primarily hazardous ones:	
	- pH	> 7
	- Melting point	Same as water
	- Vapour density	Same as water
	- Vapour pressure	Same as water
	- Solubility in water	Mixed in any proportion

Note: These physical properties are typical for the product and may vary in separate shipments.

10. Stability and Reactivity

- | | | |
|-------|---|---|
| 10.1. | Chemical stability: (specify decomposition products for unstable materials) | Substance is stable under normal conditions of storage and use. |
| 10.2. | Reactivity: | Reacts with oxidizing materials. |
| 10.3. | Conditions to be avoided: | Extreme temperatures. Protect from freezing up. |

11. Toxicological information

- | | | |
|-------|---|---|
| 11.1. | General information on toxicological effects (assessment of hazard (toxicity) level of the body exposure): | Hazard class 4 (low hazard, GOST 12.1.007) |
| 11.2. | Exposure routes: | Via vapour/aerosol inhalation, local action. |
| 11.3. | Affected organs, tissues and body systems: | Respiratory system, eyes, skin. |
| 11.4. | Information on the harmful exposure during direct contact with the substance and consequences of such exposure: | |
| | - irritant effect on upper airway | This exposure route has a low potential under normal conditions. Irritation signs will appear on mucous membranes of eyes and upper airway. |
| | - on eyes | Strong irritation. |
| | - on skin | Only after prolonged contact. |

- skin-resorptive action
 - sensitization
 - internal use
- N/A
Allergenic effect may arise provided that hand protection and warning signs are required.
This exposure route is unlikely under production conditions. Irritation signs will appear on mucous membranes of gastrointestinal tract; the bowel obstruction is also possible.
- 11.5. Information on distant hazardous effects on the body:
- impact on reproduction
 - cumulativity
 - carcinogen effects
- N/A
None
Potential hazard for chronic inhalation exposures to concentrations exceeding the OEL level (see it. 3.1.3 and it. 8.1.)
- 11.6. Acute toxicity:
- Product details:
- LD₅₀ (rat, stomach)
 - LD₅₀ (rat, skin)
 - LC₅₀ (rabbit, skin)
- 11.7. Doses (concentrations) having minimum toxic effect:
- Product details: None
- 12. Ecological Information**
- 12.1. General description of the environmental impact (atmospheric air, water bodies, soil):
- Moderate hazard
- 12.2. Routes of environmental exposure:
- Accidental release, emergency, improper use and disposal.
- 12.3. Observable pollution indicators:
- Toxic to aquatic life. May impact the hydrologic and hygiene conditions of the body of water.
- 12.4. Critical environmental impact description
- 12.4.1. Hygienic regulations, hazard rating, TLV ¹⁾:

Components	TLV in atm. air ²⁾ , mg/m ³	TLV in house water ³⁾ , mg/l	TLV in fish water ⁴⁾ , mg/dm ³	TLV in soil ⁵⁾ , mg/kg	Reference
Formaldehyde CAS 50-00-0	0.035/0.003 Haz. rt. 2 (refl.-res.)	0.05 Haz. rt. 2 (s.-t.)	-	-	GN 2.1.5.1315-03 GN 2.1.6.1338-03
Methyl Methacrylate CAS 80-62-6	0.1/0.01 Haz. rt. 3 (res.)	0.01 Haz. rt. 2 (s.-t.)	0.001 Haz. rt. 3	-	

Styrene CAS 100-42-5	0.04/0.002 Haz. rt. 2 (refl.-res.)	0.02 Haz. rt. 1 (s.-t.)	-	-	Order No. 20 of the Russian Federal Fisheries Agency dd. 18 Jan 2010
Soda ash CAS 497-19-8	0.15/0.05 Haz. rt. 3 (res.)	-	0.5 Haz. rt. 3	-	
Zinc oxide CAS 1314- 13-2	- / 0.05 Haz. rt. 3 (res., from Zn)	-	-	-	
¹⁾ TLV – Threshold Limit Value (tox. – toxicological; s.-t. – sanitary and toxicological; org. – organoleptic; refl. – reflexory; res. – resorptive; refl.-res. – reflexory and resorptive; comfish – commercial fishing (change of marketability of target aqueous species); gen. – general sanitary). ²⁾ TLV/SRLI in atmospheric air of inhabited locations; ³⁾ TLV/APL – approximately permissible level in the bodies of water used for household and welfare purposes; ⁴⁾ TLV/SRLI in the bodies of water having a commercial fishing value (including seas); ⁵⁾ TLV/APC – approximately permissible concentration in soil					

- 12.4.2. Product ecotoxicity indices: N/A
- 12.4.3. Migration and environmental conversion through biodegradation and other processes (oxidation, hydrolysis, etc.):
The product is soluble in water and can migrate with ground water. No bio-accumulation potential. Organic components can decompose through biodegradation.
- 13. Waste Disposal Considerations**
- 13.1. Waste handling precautions for waste resulting from product use, storage, transportation, etc. Do not remove waste to storm-water sewage or regular waste bin.
- 13.2. Description of places and methods used to neutralize, dispose of or remove the product (material) waste, including its package:
If the product turns into waste, the end user must correctly classify it according to the national/ federal waste catalogue.
It is recommended to burn the waste in the refuse furnace or at the dedicated site approved by the supervisory authorities, or to take it to the authorized providers for disposal. Delegate this only to the duly qualified providers. Ensure compliance with the federal and local environmental laws.
- 13.3. Guidelines for disposal of waste resulting from domestic usage of the product:
For commercial use only.
- 14. Transport information**
- 14.1. UN number (according to UN Recommendations on the Transport of Dangerous Goods: Model Regulations, latest edition): None
- 14.2. Appropriate shipping name and/or transport name:
The product is not subject to the transport regulations as dangerous goods.

14.3.	Applicable means of transportation:	Air, road, sea, rail
14.4.	Dangerous goods classification acc. to GOST 19433-88:	Category 922
14.5.	Shipping label (handling signs; main, supplementary and information lettering):	
	- acc. to GOST 19433-88:	Class 9, subclass 9.2, classification code, warning sign not used.
	- acc. to GOST 31340-2007	None
		Signal word: Warning!
		Eye contact causes strong irritation.
14.6.	Packing group (according to UN Recommendations on the Transport of Dangerous Goods):	The product is not subject to the transport regulations as dangerous goods.
14.7.	Information on hazards related to the motor transportation (code of emergency measures):	N/A
14.8.	Emergency cards (for shipments by rail, sea, etc.):	None. For rail shipment, use same procedure as in emergency card No. 905.
14.9.	Information on international freight hazards (according to the Agreement on International Goods Transport by Rail, ADR, RID, IMDG Code, ICAO/IATA, etc., including environmental hazard information, plus marine pollutants):	
SURFACE CARRIAGE		
	- Transport name:	The product is not subject to the transport regulations as dangerous goods.
AIR CARRIAGE (ICAO/IATA)		
	- Transport name:	The product is not subject to the transport regulations as dangerous goods.
SEA CARRIAGE (IMDG/IMO)		
	- Transport name:	The product is not subject to the transport regulations as dangerous goods.
15.	National and International Regulatory Information	
15.1.	National regulations	
15.1.1.	Laws of the Russian Federation and Customs Union of Russia, Belarus and Kazakhstan:	On Technical Regulation; On the Sanitary and Epidemiological Welfare of the Population; On Environmental Protection; On Atmospheric Air Protection; Technical Regulation on Fire Safety Requirements; Technical Regulation of the Customs Union on Safety of the Chemical Products.

15.1.2.	Health and environment-regulating documents (certificates, hygiene certificates, licenses, etc.):	Certificate of State Registration RU.71.TI.01.015.E.000178.09.11 issued by the Directorate of the Federal Service for Supervision of Consumer Rights Protection and Human Welfare in the Tula region on 9 Sept 2011
15.2.	International regulations	
15.2.1.	International conventions and agreements (if the product is controlled by the Montreal Protocol, Stockholm Convention, etc.):	Not controlled.
15.2.2.	GHS ^{*)} -required safety marking:	
	Hazard symbols:	Not used
	Hazard statements:	H316 – <i>Causes mild skin irritation</i> H320 – <i>Causes eye irritation</i> H402 – <i>Harmful to aquatic life</i>
	Precautionary statements:	P305+ P351 + P338 – <i>Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing</i> P337+ P 313 – <i>If eye irritation persists get medical advice/attention</i> P280 – <i>Wear protective gloves/protective clothing/eye protection/face protection</i> P273 – <i>Avoid release to the environment</i>

^{*)} Globally Harmonized System of Classification and Labelling of Chemicals (UN ST/SG/AC.10/30)

16. Other information

16.1. Review (issue) information: First SDS issue.

16.2. List of references used to prepare the Safety Data Sheet

1. TU 5760-001-83663241-2008 Korund Series Ceramic Thermal Insulation Fluid Coatings
2. GOST 30333-2007. Chemical Production Safety Passport. Moscow, Standartinform, 2008.
3. GOST 19433-88. Dangerous Goods. Classification and Marking. Moscow, Izdatelstvo Standartov, 1988.
4. GOST 12.1.004-91. Fire Safety. General Requirements. Moscow, Izdatelstvo Standartov, 1991.
5. GOST 12.1.007-76. SSBT. Harmful substances. Classification and general safety requirements. Moscow, Izdatelstvo Standartov, 1988. / Labour Safety Standard System.
6. GOST 12.4.013-83. SSBT. Safety Glasses. OTU. Moscow, Izdatelstvo Standartov, 1983.
7. GOST 12.4.103-83. SSBT. Special Protective Clothes, Personal Means of Hands and Legs Protection. Classification. Moscow, Izdatelstvo Standartov, 1983.
8. GOST 12.4.121-83. SSBT. Industrial Filtering Gas Masks. Specifications. Moscow, Izdatelstvo Standartov, 1983. / Labour Safety Standard System.

9. Safety Rules and Emergency Management Procedure for Railroad Carriage of Dangerous Goods / Appd. under No. ЦМ-407 by the RF Ministry of Railways on 25 Nov 1996 and under No. 9-733/3-3 by the RF Ministry of Emergencies on 28 Oct 1996, Moscow, ISBN 5-85298-010-2, 1997.
10. Rules for Railroad Carriage of Dangerous Goods / Appd. by the Russian Federation Ministry of Railways on 27 Dec 1994, Moscow, Transport Publishing Office, 1995.
11. Rules for Motor Carriage of Dangerous Goods / Appd. by Order of the Russian Federation Minister of Transport No. 73 dd. 8 Aug 1995, Moscow, 1995, 103 p.
12. GN 2.2.5.1313-03 Occupational Exposure Limits (OEL). Appd. by Chief Sanitary Doctor of the Russian Federation on 27 Apr 2003.
13. GN 2.2.5.1314-03 Safe Reference Levels of Impact (SRLI) for Occupational Exposure. Appd. by Chief Sanitary Doctor of the Russian Federation on 27 Apr 2003.
14. GN 2.1.6.13 1338-03 Threshold Limit Values (TLV) in Atmospheric Air of Inhabited Locations. Appd. by Chief Sanitary Doctor of the Russian Federation.
15. GN 2.1.6.13 1339-03 Safe Reference Levels of Impact (SRLI) in Atmospheric Air of Inhabited Locations. Appd. by Chief Sanitary Doctor of the Russian Federation in May 2003.
16. GN 2.1.5.1315-03 Threshold Limit Values (TLV) in the Bodies of Water Used for Household and Welfare Purposes. Appd. by Chief Sanitary Doctor of the Russian Federation on 27 Apr 2003.
17. GN 2.1.5.1316-03 Approximately Permissible Level (APL) in the Bodies of Water Used for Household and Welfare Purposes. Appd. by Chief Sanitary Doctor of the Russian Federation on 27 Apr 2003.
18. Approximately Permissible Level (APL) in the Bodies of Water Used for Household and Welfare Purposes. Hygienic Regulations. Moscow, the Russian Register of Potentially Hazardous Chemical and Biological Substances of the Russian Ministry of Health, 1998, -45 p.
19. List of Threshold Limit Values and Safe Reference Levels of Impact for the Water of Fisheries: Commercial Fishing Standard. Moscow, Fishing Committee of the Russian Federation//Moscow, TOO Medinor, 1995, - 220p.
20. European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) and Protocol of Signature. In two volumes//UN (ECE/TRANS/110 (Vol.1)/ New York and Geneva. 1994; Add. vol.: Revision of 1 Jan 1999.
21. Agreement on International Goods Transport by Rail/ Organization for Cooperation of Railways// Ministry of Railways of the Russian Federation, Moscow, 1998.
22. Agreement on International Goods Transport by Rail/ (ANNEX 2)/ Organization for Cooperation of Railways// Ministry of Railways of the Russian Federation, Moscow, 1998.
23. Committee of Experts on the Transport of Dangerous Goods. Globally Harmonized System of Classification and Labelling of Chemicals [ST/SG/AC.10/30]
24. Committee of Experts on the Transport of Dangerous Goods. List of Revisions to the Third Revised Edition of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) [ST/SG/AC.10/30/Rev.3]