Chemical Safety Data Sheet

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Coordinating Informational Center of CIS Member States on approximation of regulatory practices, Nonprofit Partnership and Association
Deputy Director /signature/ N.M. Muratova
Round seal

Name:

Product Name (according to RD):	**Fire protective weather-proof composition TRIOFLAME 8800**
Chemical Name (according to IUPAC):	none
Trade Name:	Fire protective weather-proof composition **TRIOFLAME 8800**
Synonyms:	none

OKPD 2: 20.30.22.210
TN VED: 320890000.0

Conventional name and name of regulatory, technical documentation of the product (GOST, TU, OST, STO, (M)SDS)

TU 20.30.22-120-40141638-2018 TRIOFLAME 8800

HAZARD STATEMENT

Signal word: Hazard

Brief: A two-component system. *Base*: highly hazardous product according to severity of exposure to the body. It causes skin, eyes and respiratory irritation and it is a contact sensitizer. May cause adverse effects on reproductive function. Flammable liquid. Pollution of environment, including aquatic chronic. *Curing agent:* highly hazardous product according to severity of exposure to the body. It causes burns to skin and eyes. Combustible liquid. Harmful in case of skin contact and it is a contact sensitizer. Pollution of environment, including aquatic chronic.

Detailed: in 16 attached sections of SDS:

Principal hazardous components	**TLV, mg/m^3**	**Hazard Class**	**CAS No.**	**EC No.**
Base, incl. epoxy resin	1	2	25068-38-6	500-033-5
Triethhylentetramine	0,3	2	112-24-3	203-950-6

Applicant: O3-Coatings LLC, Moscow
Type of an applicant: Manufacturer, supplier, vendor, exporter, ~~importer~~.
OKPO: 40141638, Hotline: +7 (495) 786 89 35
Director General /signature/ I.V. Garustovich
(signature) (print full name)
Round seal of O3-Coatings Limited Liability Company

This Safety Data Sheet (SDS) conforms to UN Guidelines ST/SG/AC.10/30 (GHS)

IUPAC	International Union of Pure and Applied Chemistry
GHS	UN Guidelines ST/SG/AC.10/30 “Globally Harmonized System of Classification and Labelling of Chemicals
OKPD 2	Russian Classification of Products by Economic Activities
OKPO	Russian National Classifier of Business and Organizations
TN VED	Custom Commodity Code
CAS No.	CAS number
EC No.	EC number
TLV	Threshold limit value of chemical substances in the air of the working area, mg/m^3
	Signal word – the word used to focus attention on the hazard level of the chemical products as per GOST 31340-2013

1. Identification of the substance/mixture and of the company/undertaking

1.1 Identification on the substance/mixture

1.1.1 Product name:	Fire protective weather-proof composition **TRIOFLAME 8800**
1.1.2 Brief recommendations for use (including use limitations)	The product is intended for passive fire protection of steel structures of various functional purposes of industrial facilities and infrastructure. Fire protective composition enhances own fire safety level of metal structures at standard temperature range. Polyurethane finish enamel over a fire protective coating is recommended for color preservation and chalk rejection. The operational temperature range of the resulting integrated coating is -60^0C - $+70^0$C. The composition is a two-component material composed of a base and a curing agent, which should be mixed before use. Application of a composition is carried out by mechanical means or manually.

1.2 Information on the company/undertaking

1.2.1 Company full official nam	Limited Liability Company O3-Coatings
1.2.2 Postal address and registered office:	*Postal address*: 109028, Moscow, POB 34; *Registered office:* 109028, Moscow, Hitrovsky Lane, 3/1, bld. 1, prem. IV, room 1.
1.2.3 Telephone (including Hotline):	+7 (495) 786 89 35
1.2.4 Fax:	none
1.2.5 E-mail:	info@o3-e.com

2. Hazard Identification

2.1 Hazard level of the chemical products as a whole (data of the hazard classification under the RF legislation (GOST12.1.007-76) and GHS (GOST 32419-2013, GOST 32423-2013, GOST 32424-2013, GOST 32419-2013)	*Base and curing agent* are highly hazardous products according to the severity of exposure to the body (second class as per GOST 12.1.007-76 (2). Classification of the chemical products according to GHS: *Base:* -flammable liquid, class 3; -causes dermhelminthiasis (necrosis)/skin irritation, class 2; -causes serious injuries/eyes irritation, subclass 2A;

- has sensitizing effect upon contact with skin;
- cause adverse effects on reproductive function, class 1B;
- acute and chronic aquatic toxicity, class 2;

Curing agent:
- acute toxicity upon contact with skin, class 4;
- causes dermhelminthiasis (necrosis)/skin irritation, class 2;
- acute toxicity upon contact with skin, class 4;
- causes serious injuries/eyes irritation, subclass 2A;
- has sensitizing effect upon contact with skin;
- acute and chronic aquatic toxicity, class 3 (3-6).

2.2. Data on safety marking as per GOST 31340-

2.2.1 A signal word — HAZARD (7)

2.2.2. Hazard pictogram

Base:

"Flame"

"Exclamation mark"

"Danger for a human health"

"Dry wood and dead fish"

Curing agent:

"Spilling liquids from two capsules which beating meatal and hand"

"Exclamation mark".

"Dry wood and dead fish"

Base:

H226: Flammable liquids. Vapors form explosive mixtures in the air.

H315: Causes irritation upon contact with skin.

H319: Eye contact causes significant irritation.
H317: Skin contact may cause allergic reactions.
H360: May impair fertility or on unborn child.
H411: Aquatic chronic (7).
Curing agent:
H312: Harmful when contact with skin.
H314: Causes chemical burns when contact with skin and eyes.
H317: Skin contact may cause allergic reactions.
H412: Aquatic chronic.

3. Composition (information of ingredients)

3.1 Production data

3.1.1 Chemical Name (according to IUPAC): none (1)

3.1.2 Chemical Formula: none (1)

3.1.3 Compound general characteristics (considering brand assortment, preparation method): It is two-component system. *Base:* suspension of fillers, pigments and functional additives in epoxy resin. *Curing agent:* amine (1). The composition is a multi-component system, consisting of binding agent, flame retardants, blowing agents and other additives. Binding agents are oligomers, which, under the action of curing agents, are capable to form linked polymers, carbonized under the effect of high temperature in the presence of the flame retardants. The flame retardants are ammonium polyphosphate and mineral fillers, retarding the burning process of the resin base coating, facilitating formation of a stable coked cellular material. The ratio of a base and curing agent of a ready to use composition is 6:1 by weight (1).

3.2 Ingredients

(name, CAS and EC numbers, mass content (should be 100 % in total), TLV and SRLS in the air of working area, hazard classes and citations.

Ingredients (name)	**Mass content, %**	**Health standards in the air of working area**		**CAS numbers**	**EC numbers**
		TLV, mg/m^3	**Hazard classes**		
Base:					
Epoxy resin	30-40	1 (v) epichlorohydrine control	2 (A)	25068-38-6	500-033-5

Xylene	1-5	150/50 (v)	3	1330-20-7	215-535-7
Ammonium polyphosphate	30-45	10 (a) (polyphosphates of orthophosphates)	4	68333-79-9	269-789-9
[[(2- ethylhexyl) oxy] methyl]oxirane	1-10	N/A	No	2456-15-6	219-553-6
Titanium (2) oxide	15-30	10(a)	4 (F)	13463-67-7	236-675-5
Orthoboric acid	10-15	10(a)	3	10043-35-3	233-139-2
Silicon oxide	0,5-5	3/1 (a)	3 (F)	7631-86-9	231-545-4
Zinc borate	1010	1(a)	2	10192-46-8	233-471-8
Curing agent:					
Triethhylentetramine+	100	0,3 (v+a)	2 (A)	112-24-3	203-950-6
Notes: v-vapors and/or gases, a – aerosol, F-strongly fibrogenic aerosol, A- substances capable to cause allergic diseases in production environment, "+" – require special protection of eyes and skin.					

4 First Aid Measures

4.1 Symptoms

4.1.1 Inhalation (if inhaled): *Base:* possible throat irritation, cough, respiratory irritation, exaltation, drowsiness [8, 11, 21, 22].
Curing agent: possible throat irritation, cough, eye watering, respiratory failure [8, 11, 21, 22].

4.1.2 Skin contact: *Base:* Causes irritation and allergic response: redness, itching, possible dryness, eruptions, dermatitis [8, 11, 21, 22].
Curing agent: causes pain, redness, edema, chemical burns [8, 11, 21, 22, 38].

4.1.3 Eye contact: *Base:* Causes strong eye watering, redness, edema, eye mucosal congestion, discomfort, blurred vision, pain [8, 11, 21, 22].
Curing agent: causes pain, edema, redness, mucosa chemical burns [8, 11, 21, 22, 38].

4.1.4 Poisoning by ingestion (if swallowed): *Base:* nausea, vomiting, abdominal pain, weakness, headache, dizziness. Convulsions and loss of consciousness are possible in severe cases. [8, 11, 21, 22].
Curing agent: Lips and oral cavity mucosa burns, throat burning, weakness, nausea, vomiting, diarrhea, loss of consciousness is possible in severe cases. [8, 11, 21, 22].

4.2 First aid measures

4.2.1 Inhalation (if inhaled): Move to fresh air, quietness, warmth, rinse a nasal cavity with a fresh water, clean clothes. If necessary, ask for medical advice. [11, 12, 21, 23].

4.2.2 Skin contact: Wash skin with water and soap. Impose aseptic bandage if burned. Ask for medical help [11, 12, 21, 23].

4.2.3 Eye contact: Rinse under running water with wide open palpebral fissure for 15 minutes. Immediately seek medical assistance from an oculist [11, 12, 21, 23].

4.2.4 Poisoning by ingestion: Increased water intake, sip vegetable oil, take activated charcoal, saline purge. Do not induce vomiting! Seek medical help [11, 12, 21, 23].

4.2.5 Counter indications: Do not induce vomiting if inhaled [11, 12, 21, 23].

5. Fire and explosion safety

5.1 Fire and explosion emergency overview (as per GOST 12.1.044-89

Base: Flammable liquid.
Curing agent: Combustible liquid [11, 13, 14].

5.2 Fire and explosion hazards (set of parameters as per GOST 12.1.044-89 and 30852.0-2002)

Base: Data on resin: Flashpoint is higher 170^0C. Base flammable properties are determined by the properties of xylene. Flashpoint is 29^0C. Temperature of self-ignition is 490^0C. Flammability limits: low=1.1% (vol.), high=6.5% (vol.).
Curing agent: Flashpoint is 135^0C [8, 14, 21].

5.3 Products of combustion and/or thermal degradation and hazard, caused by it:

In the process of combustion and thermal degradation, toxic carbon and nitrogen oxides are being formed, which are hazardous for people and environment. Formation of other toxic gasses (vapors) is also possible [19 -24].
Carbon oxide (monoxide) deteriorates transfer and deliver oxygen to tissues, body anoxia develop, to which the nervous and cardiovascular systems are particular sensitive. Symptoms of poisoning: headache, hammering in temples, dizziness, dry cough, chest pain, nausea, vomiting, possible excitation, accompanied by visual and auditory hallucinations, redness, heart beating.
Carbon dioxide (CO_2): under fire conditions, it causes shortness of breath and increased pulmonary ventilation, has a vasodilatory effect. Symptoms of poisoning: increased heart rate, increased blood pressure, migraine pain, dizziness, lethargy, loss of consciousness.
When poisoned by nitrogen dioxide there are headache, dizziness, cough, pain in the eyes, rapid shallow breathing, nasopharynx irritation, chest tightness and pain, palpitations, delayed excitation, lips asphyxia [8, 10, 11, 21, 36].

5.4 Suitable extinguishing media: Water spray (mist water), air-filled foam, carbon dioxide, sand, fire blanket [1, 14, 21].

5.5. Unsuitable extinguishing media: Solid water jets [1, 21].

5.6 Personal protective equipment for fire-fighting (firemen PPE): If ignition occurs, use fire-fighting suit with escape hood СПИ-20, for firemen – fireman ammunition [15].

5.7 Fire-fighting specifics: combustible vapor concentration forms above the surface of the spilled liquid [1, 11, 36].

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 Measures to prevent harmful effects on people, environment, buildings, structures and other in accidents and emergencies: Take the vehicle to a safe place. Isolate a danger zone within a radius of not lesser than 200 m. Adjust this distance by the results of a chemical reconnaissance. Remove unauthorized people. Enter danger zones wearing protective equipment. Stay upwind. Avoid low grounds. Observe fire safety measures. No smoking. Eliminate the sources of ignition and sparkling. Provide first aid to injured people. Send people from the centers of contamination to the medical examination [15].

6.1.2 Personal protective equipment in emergencies (PPE for emergency service team): For chemical reconnaissance and supervisor use ПДУ-3 (for 20 minutes). For emergence service teams use self –contained protective suit КИХ-5 complete with a gas mask ИП-4М or compressed air apparatus АСВ-2. If ignition occurs use fire-fighting suit with escape hood СПИ-20. In the lack of this equipment use all service complex protective suit Л-1 or Л-2, supplied with industrial РПГ mask with a cartridge А [15].

6.2 Procedure for elimination of accidents and emergencies

6.2.1 Accidental measures in case of leaks, spills, spillages (including elimination and precautionary measures to ensure environmental protection): Call local gas rescue service. Report to authorities of sanitary and epidemiological surveillance. Stop traffic and shunting operations in the danger zone. Do not touch spilled material. Fix leaks with precautions. Pump the contents into corrosion-protected container or into drain container under conditions of mixing floods. Spills should be guarded by the soil bulwark. Avoid the substance enter reservoirs, basements, drains [15].

For vapors isolation use water spray. Flush the spill with a plenty of water, embank and avoid a substance to enter surface waters. The substance should be pumped out of the low grounds in compliance with the fire safety measures [15].

6.2.2 Fire response procedures: Do not approach the burning tanks. Cool the tanks with water from a maximum distance. Extinguish with a water mist with air-filled foam and a gas foam from a maximum distance [15].

7. Handling and storage of the chemical products

7.1 Chemical precautions

7.1.1 Engineering safety measures: Production facilities and laboratories should be equipped with local inflow-exhaust ventilation and local suction devices, ensuring a concentration of harmful substances in the air of a working area to be lower than the limiting values and should be equipped with working and emergency lighting.

To prevent the possible hazardous spark discharges from the equipment surfaces, it is necessary to provide withdrawal of charges by means of grounding and to provide a permanent grounding contact of a human body in accordance with static electricity precautions at chemical, oil-refining and petrochemical factories. The safety signs and their semantic meanings should be placed in a prominent location of the working area. Artificial lighting and electrical equipment should comply with requirements of explosion protection. Manufacturing equipment and utilities should be leak-tight, storage containers should be tightly closed.

For the safety of a product application process, it is necessary to provide a maximum mechanization of all production operations and proper sealing of equipment and communications, as well as serviceability of electric starting equipment and control instrumentation [1].

7.1.2 Environmental precautions: Maximum leak protection of the tanks, communications and other equipment; periodical occupational exposure controls in the working area; industrial effluents analysis for the content of harmful substances within allowable concentrations; industrial premises air cleaning to acceptable standards of harmful substances concentration prior to discharge into atmosphere.

Waste management in accordance with SanPiN 2.1.7.1322 [1, 19].

7.1.3 Recommendations on safe handling and transportation: Should be transported by all kinds of transport in covered vehicles in accordance with the shipping rules accepted on this kind of transport.

	Transportation is conducted as per GOST 9980.5. Packaging material break of air tightness is not permitted during transportation [1, 17]. A base and a curing agent should be transported at a temperature from 5 to 30 ºC above zero in a sealed container. The storage conditions should be observed while transporting [1, 17].
7.2 Chemical products storage regulations.	
7.2.1 Conditions and terms of the safe storage (including the warranty period of storage, shelf life; incompatible materials):	Products should be stored in sealed containers in a dry place, protected from a direct sunlight and humidity, at a temperature from 5 to 30 ºC above zero. The stored products should be away from the heaters, naked flames and protected from direct sunlight and precipitations. [1, 16]. Warranty shelf life of a base is 24 months (from the production date and with compliance with all storage regulations). Warranty shelf life of a curing agent is 12 months [1]. Do not store along with oxidizing agents, substances liable to form explosive mixtures, acids, alkalis [8, 21].
7.2.2 Transport and consumer packaging (including manufacturing materials)**:**	*A base and a curing agent* are packed in cans [1, 16].
7.2.3 Safety measures and storage regulations for domestic use:	Not applicable for domestic use [1].

8. Exposure controls and personal protection equipment

8.1 Working area parameters that require mandatory monitoring (TLV or SRLS)**:**	Base ingredients: TLV =1 mg /m^3 (epoxy resins/epichlorohydrine control); TLV = 150/50 mg /m^3 (xylene vapors); TLV =0,3 mg /m^3(triethylenetraamin vapors and aerosols) [9]. Conduct monitoring of all material ingredients, specified in 3.2, if necessary.
8.2 Exposure controls:	When the composition is applied indoors, a working area should be properly ventilated [1]. It is strictly prohibited to apply compound in locked rooms, pits, wells [1]. All activities on production, testing and appliance of products should be performed in pressure-ventilated premises according to the GOST 12.4.021, providing the air purity, not excessive TLVs [1].

8.3 Personal protective equipment

8.3.1 General instructions: Under factory conditions, the personnel should be provided with personal protective equipment and should be passed preliminary and periodic medical examinations [1].
Prevent passage of materials into respiratory system and mouth, avoid contact with eyes and skin. Keep personal care while working with materials. During manufacture and applications, observe hygienic requirements for organization of production processes, to production equipment and tools.
It is prohibited:
- to smoke, make up fire, carry out welding operations in area of 25 meters in radius from the working site.
- to keep on-site more than a daily stock of materials; materials should be kept in proper air-tight containers [1].
Cotton waste, cloth, rags and working tools, such as sponge, wipe, etc., impregnated by composition, may be subject to spontaneous combustion. Therefore, after the work is finished, they should be collected in a sealed metal container, or add water and it should be left on the refractory surface [1].

8.3.2 Respiratory protective equipment (RPE types): LEPESTOK respirator, filtering respirators, industrial gas mask, protective masks [1, 37].

8.3.3 Personal protective equipment (type, material) (special clothing, special footwear, hand protection, eye protection): for hand protection- rubber gloves, protective paste of “biological gloves” type or other protective ointments.
For eye protection - safety glasses.
Body protection - clothing, footwear [1, 37].

8.3.4 Personal protective equipment in domestic use: Not applicable for domestic use [1].

9. Physical and chemical properties

9.1 Physical properties (physical form, color, odor): *Base:* homogeneous liquid of white-to- stone color [1].
Curing agent: homogeneous clear yellow liquid [1].
Finished product: Homogeneous pasty mass of a stone color [1].

9.2 Product specific parameters (temperature, pH, solubility, n-octanol/water ratio and other parameters): *Base:* density 1.05-1.40 g/cm^3.
Grinding degree: not more than 80 mcm.
Curing agent: density 0.94-1.35 g/cm^3 [1].

10. Stability and reactivity

10.1 Chemical stability (for easily decomposed products, decomposition products should be specified):	The product ingredients are stable under normal conditions in useful life [1].
10.2 Reactivity:	Information on products are not generally available, reactivity of the base is determined by product ingredients: epoxy resin is oxidized, polymerized with amines and mercaptans; reacts with alkalis, alcohols, water and acids. *Curing agent:* N/A [1, 8, 11, 21].
10.3 Conditions to avoid (including hazardous symptoms of incompatible materials):	Avoid direct sunlight, heaters, direct contact with fire and contact with incompatible materials [1]. Do not use open flame (including matches, lighters, etc.).

11. Toxicological information

11.1 Exposure general characteristics (evaluation of the health effect hazard (toxicity) degree and outstanding hazard manifestations):	*Base:* high –risk product by the body exposure degree. *Curing agent:* high –risk product by the body exposure degree. *Base* has an irritating and allergenic effect and has a negative effect on reproduction function. *Curing agent* has caustic and allergenic effect. Harmful in contact with skin [1, 8, 11, 12, 21-23, 38].
11.2 Exposure routes (inhalation, oral, contact with skin and eyes):	In case of inhalation of vapors, contact with skin and mucous membranes of the eyes, ingestion (if accidentally swallowed).
11.3 Human target organs, tissues and systems	As following from hazardous properties of product ingredients, it is possible to exposure on the nervous, respiratory and cardiovascular systems, gastrointestinal tract, liver, pancreas, kidneys, mineral metabolism (especially calcium phosphorus), carbohydrate and protein metabolism, morphological composition of peripheral blood, heart, pancreas prostate, skin, eyes digestion (if accidentally swallowed) [8, 11, 21].
11.4 Data on dangerous to health effects during immediate contact with products, as well as exposure consequences (respiratory irritation, eyes, skin, percutaneous and sensitizing actions):	*Base* strongly irritates skin and eyes, may irritate mucous membranes of upper respiratory passages, percutaneous and sensitizing actions [8, 11,21,22]. *Curing agent* causes chemical burns of skin and eyes. Percutaneous action is detected. It has a sensitizing action when contact with skin. *Epoxy resin* has a local irritation, its residual monomers have percutaneous and sensitizing actions.

Xylene has a strong narcotic effect. Harmful if absorbed through skin. Irritating to skin and mucous membranes. Hair contact causes keratosis and necrosis of hair roots, atrophy of sebaceous glands.
Curing agent:
It has sensitizing action. It is able to penetrate through intact skin [8, 21, 22, 38].

11.5 Data on dangerous long term effects on a body (effect on reproductive function, carcinogenicity, mutagenicity, cumulativeness and other chronic effects):

The long-term effects on products have not been studied as a whole [1]. Data are given by the main ingredients of the product.
Epoxy-diane resin has weak cumulative properties, effect on reproduction function and carcinogenic effects have not been studied. There is information of mutagenic action, but it is not confirmed by IARC.
Xylene: embryotropic, gonadotropic and teratogenic effects are determined; mutagenic and carcinogenic effects are not determined. During prolonged exposure of small substance concentrations, specifically attributed changes in blood, nervous and cardiovascular systems, disrupted protein metabolism, immunitoxic effect is manifested. It has embryotropic effect, violates reproduction function. Exposure to concentrations exceeding TLV, along with intensive production noise, causes neurotic syndrome, vegetative-vascular dystonia, disturbance of intraventricular conduction, decrease bronchial conductivity. Suppression of leukocytes capacity is specified. The combination of substances and toluene has a suppressing effect on the blood, wherein the effect is more than additive.
For orthoboric acid:
Mutagenic and carcinogenic effects have not been studied. Embryotropic, gonadotropic and teratogenic effects are determined (Substance may harm fertility; may damage an unborn child). Cumulative effect is fair.
Curing agent: no data of long-term effects [8, 21, 22, 24, 25, 38].

11.6 Acute toxicity index (DL_{50}, routes (oral, dermal), CL_{50}, exposure time (h), animal species):

Toxicity indices for the product as a whole are absent [1].
Toxicity indices for the *base* ingredients:
Epoxy resin: DL_{50} (oral) =1140 mg/kg, rats
Xylene:
DL_{50} (oral) =4300 mg/kg, rats
CL_{50} (oral) =22084 mg/m^3, 4 hours, rats

Toxicity indices for the curing agent ingredients:
DL_{50} (oral) =2500 mg/kg,
DL_{50} (dermal) =805 mg/kg, rabbits [8, 21, 38].

12. Ecological information

12.1 Information of exposure routes hazards on environmental objects (air, water, soil, including visible exposure symptoms): Product components pollute surrounded objects: ambient air, soil and water bodies. Aquatic chronic. Products of thermal destruction are hazardous to the atmosphere. Visible exposure symptoms: odor in the air; violation of self-cleaning process of water bodies leading to a change in the organoleptic properties of water and sanitary regimes of the water basins, appearance of the film on the water surface, an impact on flora and fauna of the basins [8,21,26, 27].

12.2 Exposure routes on environment: In case of violation of the rules of application, storage, transportation, waste disposal; pollution by wastewater as a result of accidents and emergencies.

12.3 Critical characteristics of environmental impact

12.3.1 **Health standards** (acceptable concentrations in ambient air, water, including fishery water bodies and soils).

Table 2 (28-31)

Ingredients	$TLV_{amb.\ air}$ or $SRLS_{amb.\ air}$ mg/m^3, LHII[1], hazard class	TLV_{water} or APL_{water}, mg/l (LHI, hazard class)	TLV_{fwb}[3] or $SRLS_{fwb}$, mg/l (LHI, hazard class)	TLV_{soil} or APC_{soil}, mg/kg, (LHI).
Epoxy resin	0.04/0.004 (by epichlorohydrine), res, 2 class	0.0001 (carcinogen) by epichlorohydrine), san-tox. 1 class	0.01 (by epichlorohydrine), tox, 3 class; 10.0 for seas and various parts (suspended particles), org, san-tox, 4 class	N/A
Xylene	0.2,refl., 3 class	0.05, org., odor, 3 class	0.05, org, 3 class	0.3, tr.loc.
Orthoboric acid	0.02, res, 3 class	Boron: 0.5, san-tox, 2 class, Boron inorganic compounds, including transition elements with total content of all forms	equivalent to boron: 0.5, tox, 3 class	N/A

[1]LHI – limiting harmful index (tox-toxicological; s-t (sanitary-toxicological); org –organoleptic with decoding character of changes of organoleptic properties of water (odor-alter odor of water, mud-increases water muddiness, color- tone water, foam-causes formation of foam, film- it forms a film on a water surface, flavor- flavor water, opal- causes opalescence); refl.- reflex; res-resorptive; refl. – res. – reflex-resorptive; fwb-fishery water body (change of commodity qualities of commercial aquatic organisms); gen-san –general –sanitary.

[2] Water of water bodies of drinking & household and cultural & social water utilization

3 Water of fishery water bodies (including sea-side bodies).

12.3.2 Eco toxicity parameters (CL, EC, NOEC for fish, daphnia magna, algae, etc.):	Eco toxicity parameters on a product as a whole are not available [1]. *Fish acute toxicity:* CL_{50} (epoxy resin) = 1.5 mg/l, fish, 96 hours CL_{50} (triethylenetraamin) = 3.7 mg/l, fish, 96 hours *Daphnia magna acute toxicity:* EC_{50} (epoxy resin) = 1.7 mg/l, daphnia magna, 48 hours NOEC (epoxy resin) = 0.3 mg/l, daphnia magna, 21 days [8, 21, 38].
12.3.3 Migration and transformation of the environment due to biodegradation or other processes (oxidation, hydrolysis, etc.)	In general product information is not generally available [1]. Basic ingredients are being transformed in the environment. Information of the transformation products are not available. Epoxy resin, the base ingredient is slowly decomposed [21].

13. Disposal considerations (residues)

13.1 Safety measures for a waste handling from appliance, storage, transportation	Safety measures for a waste handling are similar to recommended for products handling (see sections 7 and 8 SDS)
13.2 Information on places and methods of deactivation, disposal and elimination of waste products, including packaging.	Question of disposal, accumulation and elimination of waste products (containers and packaging) should be coordinated with the regional committees of environment and natural resources, sanitary and epidemiological surveillance authorities, as well as to be guided by SanPiN 2.1.7.1322 [19]. Disposal of liquid waste is conducted by burning in special sites. Liquid wastes are the residues of paints and contaminated solvents, produced after washing equipment, communications, paint spraying chambers, tools and appliances, that should be collected in a metal tightly closed special container or tanks and sent for disposal [1]. Disposal of solid waste is carried out in accordance with the sanitary regulations of the order for accumulation, transportation, deactivation and disposing of toxic industrial waste.

Recommendations on waste disposal in domestic use:	Not applicable for domestic use [1].

14. Transport information

14.1 UN number (in accordance with UN recommendation on the transport of dangerous goods)	*Base:* 1263 [32]. *Curing agent:* 2735 [32].
1**4.2 Proper shipping and transport name**	*Base proper shipping name:* Paint [32]. *Curing agent shipping name:* AMINES, LIQUID, CORROSIVE, NAA [32]. *Transport name:* Fire protective weather-proof composition TRIOFLAME 8800. Base and curing agent [1].
14.3 Utilized transport modes	All transport modes [1].
14.4 Dangerous goods classification (as per GOST 19433-88):	
-class	Base-3; Curing agent-8 [33]
-subclass	Base-3.3; Curing agent-8.2 [33]
-classification code (as per GOST 19433-88 and by railway)	Base-3313; 3013 (by railway) Curing agent-8212 as per GOST 19433-88. [33]. Curing agent-8012 (by railway) [15, 33].
-drawing(s) number(s) of signs of danger	Base-3; Curing agent-8 [33]
14.5 Hazard classification of goods (in accordance with UN recommendation on the transport of dangerous goods):	
-class or subclass	Base-3; Curing agent-8 [32]
-additional perils	None [32]
-UN packaging group	Base-III, Curing agent-II [32].
14.6 Shipping data (manipulation signs as per GOST 14192-96)	“Keep away from direct sunlight”, “Protect from moisture”, “This side up” [1, 34].
14.7 Transport emergency cards (by railway, by sea, other transport)	*Base:* Transport emergency card No. 305 (by railway) [35] Transport emergency card No. F-E, S-E (by sea) [35] *Curing agent:* Transport emergency card No. 821 (by railway) [15] Transport emergency card without No. (by road) Transport emergency card No. F-A, S-B (by sea) [35]

15. Information on national and international legislation

15.1 National legislation

15.1.1 RF legislation	Federal Law “On Environmental Protection”, No.7-FZ, dated January 10, 2002 Federal Law “On Sanitary and Epidemiological Welfare of the Population”, No.52-FZ, dated March 30, 1999 Federal Law “On Technical Regulation”, No.184-FZ, dated December 27, 2002 Federal Law “On Production and Consumption Waste”, No.89-FZ, dated June 24, 1999 Federal Law “On Industrial Safety of Hazardous Production Facilities”, No.116-FZ, dated December 31, 2014.
15.1.2 Document information on regulating of requirements to protect humans and environment	Not available
15.2 International conventions and agreements (is the product a subject to Montreal Protocol, Stockholm Convention, etc.)	It is not a subject to the Montreal Protocol and the Stockholm Convention.

16.Other information

16.1 Revision (re-edition) history: SDS is first developed as per GOST 30333- 2007.

16.2 List of data sources serving the purpose of drafting this MSDS:

1. TU 20.30.22-120-40141638-2018 TRIOFLAME 8800
2. GOST 12.l.007-76 Occupational safety standards system. Harmful substances. Classification and general requirements.
3. GOST 32419-2013 Hazard classification of chemical products. General requirements.
4. GOST 32423-2013 Classification of mixtures of chemical products on the effects on the body.
5. GOST 32424-2013 Classification of chemical products on the impact on the environment.
6. GOST 32425-2013 Classification of mixtures of chemical products on the impact on the environment.
7. GOST 1340-2013 Warning labeling of chemical products. General requirements.
8. Information database of ECA notified substances (ECHA). Access: http://echa.europa.eu/information-on-chemicals.
9. TLV/SRLS of harmful substances in the air of the working area. GN 2.2.5.3532-18 / GN 2.2.5.2308-07. Hygienic standards. - M.: Ministry of Health of the Russian Federation. - Moscow: Russian Register of potentially hazardous chemical and biological substances of the Russian Federation Ministry of Health.
10. On-line database of the automated distributed information retrieval system (ARIPS) "Hazardous substances". Access: http://www.rpohv.ru/online/.
11. Small enterprise “regional toxicological and hygienic Information Center "Toxi”. [Electronic resource] "Access - Http://toxi.dyndns.org/.
12. The new reference book for a chemist and technologist. Access: http://chemanalytica.com/book/novyy_spravochnik_ khimika_i_ tekhnologa / 11_ radioaktivnye_ veshchestva_ vrednye_ veshchestva__gigienicheskie_ normativy /

13. GOST 12.1.044-89 (ISO 4589-84) Occupational safety standards system. Fire and explosion hazard of substances and materials. Nomenclature of indices and methods of their determination.
14. A. Ya. Korolchenko Fire and explosion hazard of substances and materials and their extinguishing agents. Ref. ed. in 2 parts. - M: Ass. "Pozhnauka", 2000, 2004.
15. Safety rules and procedure of liquidation of emergency situations during transportation of dangerous goods by railway (Novosibirsk: NIIZhT, 1997). Emergency cards for dangerous goods carried by railways of the CIS, the Republic of Latvia, the Republic of Lithuania, the Republic of Estonia (Moscow. Transport, in the version as amended on May, 19, 2016).
16. GOST 9980.4-2002. Materials for paint and varnish. Marking.
17. GOST 9980.5-2009. Materials for paint and varnish. Transportation and storage.
18. GOST 12.3.005-75 SSBT. Painting work. General safety requirements.
19. Sanitary rules and norms. SanPiN 2.l.7.1322-03 “Hygienic requirements to placement and disposal of waste production and consumption".
20.Ya. M. Grushko. Harmful organic compounds in industrial wastewater. Edit. 2. –Leningrad, Khimiya, 1982.
21. Information cards of potentially hazardous chemical and biological substances:
Polymer 4.4’ (1-methylethylidene) bisphenol with chlormetiloksiran. Series number BT-000887-M: RPOHBV;
- Titanium dioxide. BT Series No. 000008- M: RPOHBV,
- Xylene (mixture of isomers). Series number BT-000525 from June, 26,1995
22. PubChem. OREN CHEMlSTRY DATABASE Access: https://punchem.ncb.nlm.nih.gov/compound/14917#Section=Top
23. Harmful substances in the industry. Handbook for chemists, engineers and doctors. Edit. 7 / vol. 1, eds by N.V. Lazarev and E.N. Levina. - L: Chemistry, 1976.
24. Sanitary rules and norms. SanPiN 1.2.2353-08. "Carcinogenic factors and basic requirements for the prevention of carcinogenic risks."
25. SanPiN 2.2.0.555-96 Occupational Health. Hygienic requirements for working conditions for women. Sanitary rules and norms.
26. V. Snakin “Ecology and Preservation of Natural Amenities: Glossary and Reference Book/ Eds. A.L. Yanshin - M: Publication “Academia”, 1997.
27. Physical and chemical processes in the Technosphere: Textbook. - M.: Publication of "FORUM: INFRA-M”, 2007.
28. TLV / TLP of chemical substances in water of water bodies of drinking & cultural and household water use. Hygienic Norms (GN) 21.5.1315-03 / 2.1.5.2307-07. Hygienic standards. - M.: Ministry of Health of the Russian Federation, 2003, 2008.
29. Water quality standards of fishery water bodies, including the standards of maximum permissible concentrations of harmful substances in water of fishery water bodies. Approved by the Order No.552, December, 13, 2016 of the Ministry of Agriculture of the Russian Federation.
30. TLV /SRLS of pollutants in the ambient air of populated areas. GN 2.1.6.349217/2.1.6.2309-07. Hygienic standards. - M.: Ministry of Health of the Russian Federation, 2003, 2008.
31. TLV / TLP of chemicals in the soil. 2.1.7.2041-06 GN / GN 2.1.7.2511-09. Hygienic standards. - M.: Ministry of Health of the Russian Federation, 2006.2009.
32. Recommendations on the Transport of Dangerous Goods. Model Regulations. 19th. ed. - New York and Geneva, United Nations, 2015.
33. GOST 19433-88. Dangerous goods. Classification and labeling.
34. GOST 14192-96. Marking of goods.
35. The International Maritime Dangerous Goods Code (IMDG Code), Volume 2 - Edit. St. Petersburg.: CJSC ZNIIMO, 2007.

36. V.S. Ilichkin. The toxicity of the combustion products of polymeric materials, Principles and methods for the determination. St. Petersburg: Chemicals, 1993;
37. V.N. Krutikov Collective and personal protective equipment. Control of protective properties: Encyclopedia in a series of reference books on environmental and medical measurements. – M.: FID "Business Express", 2002.
38. GESTIS Substances Database, Institute for Occupational Safety and Health of the German Social Accident Insurance. Access: http://www.dguv.de/ifa/index-2.jsp.