SAFETY DATA SHEET FOR CHEMICAL PRODUCT
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Coordination and Information Center for Alignment of Regulatory Practices of CIS Member-States
(Non-Commercial Partnership Association)

NAME

Technical name (as per norm-setting documentation): **TRIOCOR ZINC 1700 Primer**
Chemical name (as per IUPAC): None
Trade name: TRIOCOR ZINC 1700 Primer
Synonyms: None

OKPD 2 code: 20.30.12.140
Eurasian Economic Union TN VED code: 3208909109

Conventional designation and name of norm-setting, technical or information document for product (GOST, TU, OST, STO, (M) SDS):
TU 2312-005-20654749-2015 TRIOCOR ZINC 1700 Primer

DESCRIPTION OF HAZARDS

Signal word: HAZARDOUS
Brief (verbal) description: Two-component systems. **Base:** The Product is highly hazardous by the effect on the human body GOST 12.1.007. Causes pronounced irritation of skin and eyes; contact allergen. Can adversely influence the reproductive function. Highly flammable liquid. Contaminates environmental objects, including toxic to aquatic organisms with long lasting effects.
Additive: It is moderately hazardous by the effect on the human body GOST 12.1.007. Causes pronounced irritation of skin; contact allergen; causes irreversible effects in case of eye contact. Can adversely influence the reproductive function. Highly flammable liquid. Contaminates environmental objects, including toxic to aquatic organisms with long lasting effects.
Detailed description: in 16 accompanying sections of the Safety Data Sheet.

PRINCIPAL HAZARDOUS COMPONENTS	**MAC $_{wa}$, mg/m^3**	**Danger class**	**CAS No.**	**EC No.**
Base, including Epoxy Resin	1	2	25068-38-6	500-033-5
Additive, including polyaminoamide	Not established	None	68410-23-1	614-452-7
Ortho-Xylol	150/50	3	95-47-6	202-422-2

DECLARANT: O3-Coatings LLC (entity name), Moscow (city)
Category of declarant: manufacturer, supplier, seller, exporter, ~~importer~~ *(cross out irrelevant items)*
OKPO code: 40141638
Emergency phone number: +7 (495) 786 89 35

General Director: I.V. Garustovich
(signature) (print name)

Round seal of O3-Coatings LLC
Stamp

Safety Data Sheet (SDS) complies with the UN Recommendations ST/SG/AC.10/30 GHS

IUPAC: International Union of Pure and Applied Chemistry

GHS: UN Recommendations ST/SG/AC.10/30, Globally Harmonized System of Classification and Labeling of Chemicals

OKPD 2: All-Russian Classifier of Products per Types of Economic Activity

OKPO: All-Russian Classifier of Enterprises and Organizations

TN VED: Nomenclature of Goods for Foreign Economic Activities

EEU: Eurasian Economic Union

CAS No.: Number of substance in the registry of the Chemical Abstracts Service

EC No.: Number of substance in the registry of the European Chemicals Agency

MAC_{wa}: Maximum allowable concentration of chemical substance in the air of work area, mg/m^3

Signal word: Word used for bringing attention to the degree of danger of chemical product, chosen in accordance with GOST 31340-2013

1. Identification of the chemical product and information on manufacture and/or supplier	
1.1. Identification of chemical product	
1.1.1. Technical name	TRIOCOR ZINC 1700 Primer [1].
1.1.2. Short recommendations for usage (including limitations on usage)	Two component highly structured modified epoxy priming containing zinc phosphate. It is designed for protection, against corrosion of metal structures with various functional designation industrial facilities and infrastructure facilities operated in conditions of atmospheric corrosive category. The coating is resistant to sea and fresh water spills, oil and petroleum products. It is used in the composition of paint systems Restrictions on use: It is allowed for operating temperature to 150ºC. Can be used as a primer coat on galvanized surfaces [1].
1.2. Information on manufacturer and/or supplier	
1.2.1. Full official name of organization	O3-Coatings Limited Liability Company
1.2.2. Address (mailing and legal)	121205, Moscow, territory of Skolkovo Innovations Center, Nobelya Street 1, premises II, room 25
1.2.3. Phone number (including for emergency consultations), with limitations on the time of calling	+7 (495) 786 89 35
1.2.4. Fax	+7 (495) 786 89 36
1.2.5. E-mail address	info@o3.com
2. Identification of hazard (-s)	
2.1. Degree of hazard of chemical product on the whole (information on classification of hazard in accordance with legislation of the Russian Federation, GOST 12.1.007 76 and GHS (GOST 32419 2013, GOST 32424 2013, GOST 32425-2013)	Base – highly hazardous product as to the degree of impact on the organism: Danger Class 2 in the accordance with GOST 12.1.007-76. Additive – moderately hazardous product as to the degree of impact on the organism: Danger Class 3 in the accordance with GOST 12.1.007-76 [2]. Classification as per GHS: Base: - Inflammable liquid, Class 3 - Chemical product causing damage / irritation of skin: Class 2 - Chemical product causing damage / irritation of eyes: Sub-class 2 A - Chemical product having a sensitizing effect upon contact with the skin - Chemical product adversely affecting the reproductive function: Class 1 B - Chemical product having the acute toxicity to the aquatic environment: Class 2 - Chemical product having the chronic toxicity to the aquatic environment: Class 2 [3-6]. Additive: - Inflammable liquid, Class 3 - Chemical product having acute toxicity in contact with skin and by ingestion: Class 4

- Chemical product causing damage (necrosis) / irritation of skin: Class 2 - Chemical product causing pronounced damage / irritation of eyes: Class 1 - Chemical product causing sensitizing effect when in contact with the skin - Chemical product adversely affecting the reproductive function: Class 1 B - Chemical product causing acute toxicity for the aquatic environment: Class 2 - Chemical product having the chronic toxicity to the aquatic environment: Class 2 [3-6].

2.2. Information on warning marking as per GOST 31340-2013	
2.2.1. Signal word	HAZARDOUS [9]
2.2.2. Hazard symbols	Base: - Flame - Exclamatory mark - Danger for human health - Dry tree and a dead fish Additive: - Flame - Exclamatory mark - Danger for human health - Dry tree and a dead fish - Liquids pouring out of two tubes and damaging the metal and the hand.
2.2.3. Brief characteristics of hazard (H-phrases)	
Base: H226: Inflammable liquid. Vapors form explosive mixtures with air. H315: Contact with skin causes irritation. H319: Contact with eyes causes pronounced irritation. H317: Contact with skin causes allergic reactions. H360: Can adversely influence reproductive ability or unborn child. H411: Very toxic to aquatic organisms with long lasting effects [7].	**Additive:** H226: Inflammable liquid. Vapors form explosive mixtures with air. H315: Contact with skin causes irritation. H319: Contact with eyes causes pronounced irritation. H312: Hazardous in contact with skin. H332: Hazardous by inhalation. H318: Contact with eyes causes irreversible consequences. H317: Contact with skin causes allergic reactions. H360: Can adversely influence reproductive ability or unborn child. H411: Very toxic to aquatic organisms with long lasting effects [7].
3. Composition (information on components)	
3.1. Information on product on the whole	
3.1.1. Chemical name (IUPAC)	None [1]. Two component product.
3.1.2. Chemical formula	None. Two component product.

3.1.3. General characteristics of composition (taking into account assortment of makes; method of obtainment)	The product is a two component system composed of a base and additive mixed before use. The *Base* is a suspension of pigments, fillers and functional additives in the solution of modified epoxy primer in a mixture of organic solvents contains mica iron oxide. The *Additive* is a solution of polyamine resin with organic solvents [1].

3.2. Components
(name, CAS and EC numbers, weight percentage (total to be 100%), MAC_{wa} or $ASLI_{wa}$ (approximate safe level of impact), hazard classes, references to data sources)

Table 1 [1,10]

Components (name)	**Weight percentage**	**Hygienic norms for the air of work area**		**CAS No.**	**EC No.**
		MAC_{wa}, mg/m^3	**Hazard class**		
Base:					
Epoxy resin	5-15	1 (v) (control at epichlorohydrin)	2 (A)	25068-38-6	500-033-5
Zinc dust	65-95	1,5/0,5 (aerosol)	2	7440-66-6	231-175-3
Zinc oxide	1-5			1314-13-2	
Butan-1-ol	1-5	30/10 (v)	3	71-36-3	200-751-6
O-xylene	5-10	150/50 (v)	3	95-47-6	202-422-2
Ethylbenzen	1-5	150/50 (v)	4	100-41-4	202-849-4
Additive:					
Polyamide hardener, including:	40-60	Not established	None	None	None
- polyaminoamide				68410-23-1	614-452-7
O-xylene	40-60	150/50 (v)	3	95-47-6	202-422-2
Ethylbenzen	1-5	150/50 (v)	4	100-41-4	202-849-4
Notes: A – a substance that can cause allergic diseases in industrial environments.					

4. First-aid measures	
4.1. Observed symptoms	
4.1.1. In the event of poisoning by inhalation (breathing-in)	Base having an irritant effect (sweet aftertaste in the mouth, throat rash, cough may occur), oppression, mild shortness of breath, causing narcotic effect. Additive having a narcotic effect, causes agitation followed by drowsiness, headache, dizziness, intoxication, cough, sore throat, shortness of breath, chest tightness, nausea [8,11,20-23].
4.1.2. In the event of contact with skin	Base and Additive causing irritation and allergic reactions: Reddening, dryness, possible swelling. [7,11,20-23]

4.1.3. In the event of contact with eyes	Base and Additive causes pronounced irritation: heavy tearing, redness, swelling, hyperemia of the mucous membrane of the eye, discomfort, blurred vision, pain, Additive also causes irreversible effects and chemical burns to the eyes [7,11-14].
4.1.4. In the event of peroral poisoning (ingestion)	Base and Additive: stomach pain, nausea, vomiting, diarrhea, headache, weakness; In extreme cases - convulsions, hallucinations, loss of consciousness, possible fatal outcome [8,11,20-23].
4.2. Measures for rendering first-aid to injured persons	
4.2.1. In the event of poisoning by inhalation	Fresh air, calm, warmth, clean clothes. In irritating the upper respiratory tract - Rinse nasopharynx. In fainting - inhale ammonia from a cotton swab. If necessary, seek medical aid [1, 20-22, 24].
4.2.2. In the event of contact with skin	Wash away with running water and soap. If necessary, seek medical aid [1,20-22,24].
4.2.3. In the event of contact with eyes	Wash away running water with widely open eye slit for 15 minutes. If necessary, seek medical aid by ophthalmologist [1,20-22,24].
4.2.4. In the event of peroral poisoning	Abundant drinking of water, give activated charcoal, drinking soda. Do not induce vomiting! Arrange doctor visit [1,20-22,24].
4.2.5. Counter-indications	Do not induce vomiting if ingestion [1, 20-22, 24].
5. Procedures and measures for ensuring fire and explosion safety	
5.1. General characteristics of fire and explosion hazards (as per GOST 12/1/044-89)	Base and Additive: highly inflammable liquid [1,13]. Fire hazard due to solvent properties.
5.2. Indices of fire and explosion hazards (nomenclature of indices as per GOST 12.1.044-89 and GOST 30852.0-2002)	For base and additive: Flash point: 23-60ºC *Data for xylol:* Flash point: 29ºC Auto-ignition temperature: 490ºC Temperature limits of ignition: Lower limit: 24ºC Upper limit: 50ºC [1,14]
5.3. Products of combustion and/or thermal destruction, and hazards caused by them	In the process of thermal destruction, toxic carbon oxides form, as well as other substances harmful for humans and the environment. Also, formation of other toxic gases (vapors) is possible [8,20,21]. *Carbon oxide* (carbon monoxide gas) disrupts transportation and transfer of oxygen to tissues. Oxygen insufficiency develops in the organism, to which nervous and cardiovascular systems are especially vulnerable. Symptoms of poisoning: headache, knocking feeling in the temples, dizziness, dry cough, pain in the chest, sickness, vomiting, possible excitation accompanied with visual and auditory hallucinations, skin reddening, heart-throbbing.

	Carbon dioxide (carbon dioxide gas), in conditions of fire, cases acceleration of breathing and strengthening of lung ventilation, exerts vasodilatory action. Symptoms pf poisoning: heart acceleration, increase of arterial pressure, migraines, dizziness, apathy, loss of consciousness [22,24]
5.4. Recommended means of fire extinguishing	Sand, fire blankets, carbon-dioxide fire extinguishers, foam generators, finely dispersed water [1,14,20].
5.5. Prohibited means of fire extinguishing	Water in the form of compact streams [14].
5.6. Personal protective equipment used during fire extinguishing (fire fighter's PPE)	Fire fighter's standard clothing with isolating gas-mask [1,14,15].
5.7. Specific aspects of fire extinguishing	Primer components can inflame due to heated container walls. Vapors form explosive mixtures with air, they are heavier than air and accumulate in low areas, basements, tunnels [1,15,22].
6. Measures for prevention and liquidation of breakdown and emergency situations and their consequences	
6.1. Measures for prevention of harmful impact on humans, environment, buildings, structures, etc. during breakdown and emergency situations	
6.1.1. Required actions of general nature in the event of breakdown and emergency situations	Remove vehicle to a safe place. Isolate the zone of danger with a radius not less than 200 m. Adjust this distance on the basis of results of chemical situation analysis. Remove persons not involved in works. When entering the zone of danger, wear protective outfit. Keep upwind. Avoid low areas. Observe fire safety rules. Do not smoke. Eliminate sources of fire and sparks. Render first aid to injured persons. Send people who have been present in contaminated area to medical examination [15].
6.1.2. Personal protective equipment used in emergency situations (PPE of emergency liquidation teams)	In the event of emergency concentrations, for chemical situation analysis and for foreman: PDU-3 (for 20 minutes). For emergency liquidation teams: KIKh-5 isolating protective suit with IP-4M isolating gas-mask or ASV-2 breathing apparatus. In the event of inflammation: fire-protective suit with SPI-20 self-rescue breathing apparatus. In absence of such models, L-1 or L-2 protective suit with industrial-grade gas-mask and A, B cartridges. In the event of low concentrations in the air (MAC exceeded by a factor of up to 100): special clothing, PFM-1 small-size industrial-grade gas-mask with PZU general-purpose protective cartridge, self-contained individual protective kit with forced supply of cleaned air to breathing zone. Oil and gasoline-resistant gloves, butyl-rubber dispersion gloves, special boots [15].
6.2. Procedure for actions during liquidation of breakdown and emergency situations	
6.2.1. Actions in the event of leaks, spills, solid-state loose product dispersal (including measures	<u>In premises:</u> Activate emergency ventilation.

for their liquidation and precautions ensuring protection of the environment).	Contain spilled product using PPE. Prevent contamination of drainage with materials. Pour sand or other inert adsorber over spilled materials [1]. In the event of breakdown situation in open area: Notify sanitary and epidemiological surveillance authorities. Stop movement of vehicles and switching operations in danger zone. Do not touch spilled materials. Eliminate leakage observing precautions. To isolate vapors, use atomized water. Isolate spill area with sand, mechanical air foam, wash with large quantity of water, and do not allow entry of substance to surface waters. In the event of low air temperature, pump out substance from low areas observing fire-safety measures. Cut away contaminated layer of surface soil, collect and remove for disposal, observing fire-safety measures. Pour fresh soil over cut areas. Use washing agents for cleaning water-washed surfaces of moving stock, territory. Do not allow entry of materials and wash waters to water bodies, basements, sewage. If there is a threat of substance entry to ground waters, burn off territory surface (separate areas), plow over soil [15].
6.2.2. Actions in the event of fire	Do not come close to burning containers. Cool containers with water from maximum distance. Extinguish fire with water mist, mechanical air foam and chemical foam, powders from maximum distance. Precipitate gases with water mist. Organize evacuation of people from nearby buildings, taking into consideration the direction of propagation of toxic combustion products [15].
7. Rules for storage of chemical products and their handling during loading and unloading works	
7.1. Precautions during handling of chemical products	
7.1.1. Systems of engineering safety measures	Manufacturing premises and labs are to be equipped with mechanical intake-exhaust ventilation and local suction cleaners ensuring concentration of harmful substances in the air of work area below maximum allowable levels, as well as with working and emergency lighting. To prevent the possibility of occurrence of dangerous spark discharges from the surface of equipment, it is necessary to provide for diversion of charges by grounding, and to ensure constant electric contact of human body with ground, in accordance with the rules for protection from static electricity in chemical, oil-processing and petrochemical production industries. In premises during production works, safety signs with specific meaning are to be displayed at a visible place. Artificial lighting and electric equipment are to meet the requirements of explosion safety. Production equipment and service lines are to be

	hermetic, and tare for product storage is to be tightly sealed [1]. For the purpose of safety in the process of application of coating, it is necessary to ensure maximum mechanization of all technological operations and due hermetic sealing of equipment and service lines, as well as good operating condition of electric startup devices and control-measuring instruments [1].
7.1.2. Measures for protection of the environment	Maximum attention to hermetic sealing of containers, engineering service lines and other equipment. Periodic control of harmful substances content in the air of work area. Analysis of industrial liquid waste discharge as to the content of harmful substances in admissible concentrations. Cleaning of the air of production premises to admissible established levels of harmful substances content before release to the atmosphere. Handling of waste in accordance with requirements of the SanPiN 2.1.7.1322 [1, 18].
7.1.3. Recommendations for safe handling and transportation	Primer is transported by all means of transportation in covered vehicles in accordance with the rules for transportation of dangerous cargo in force for the relevant type of transport. During transportation, loading, unloading and storage of primer, protection of packing from damage, dirt and moisture is to be ensured. Safety procedures are to be observed during loading and unloading works. When transporting product, storage conditions are to be complied with [1, 36].
7.2. Rules for storage of chemical produc	
7.2.1. Conditions and time period of safe storage (including warranty-covered storage period, shelf life, substances and materials incompatible during storage)	Primer is stored under temperatures from 0°C to 30°C. Primer is to be stored in hermetically sealed manufacturer's tare far from heat sources. Tare is not to be subjected to atmospheric precipitations and to the prolonged action of direct sunlight. Incompatible substances and materials: oxidizers, acids, alkali, combustible substances. Warranty period: 24 months from manufacture date [1, 36, 37]
7.2.2. Tare and packing (including materials used for their manufacture)	Primer components (base and additive) is packed in tapered drums, type II with removable top bottom (cover “Crown”), with one handle attached to the corpus [1,37].
7.3. Safety measures and rules for storage at home	Not used in household [1].
8. Means of controlling hazardous impact, and personal protective equipment	
8.1. Parameters of work area subject to mandatory control (MACwa or ASLIwa)	It is recommended to perform control over parameters per components: MACwa = 1 mg/m3 (Epoxy resin on epichlorohydrin); MACwa = 1,5/0,5 mg/m3 (zinc aerosol);

	MACwa = 30/10 mg/m3 (vapors ethylcellosolv); MACwa = 150/50 mg/m3 (vapors xylene) [10]. When necessary, perform control over all components of the materials listed in clause 3.2.
8.2. Measures for ensuring harmful substances content below admissible concentration limits	When applying primer in open air or in premises, it is necessary to make sure that the work area is well ventilated [1]. It is strictly prohibited to apply materials in closed rooms, pits, wells [1]. All works related to production, testing and usage of primer are to be performed in premises equipped with forced ventilation, in accordance with requirements of GOST 12.4.021, ensuring cleanliness of the air of work area with harmful substances content not exceeding admissible concentrations [1].
8.3. Personal protective equipment for personnel	
8.3.1. General recommendations	In the course of production works, personnel is to be equipped with PPE, and is to undergo preliminary and periodic medical checkups [1]. When applying product, it is not allowed to let it come in contact with breathing organs, mouth, eyes or skin. When working with primer, observe personal hygiene rules. During production and usage of materials, hygienic requirements are to be observed with respect to organization of technological processes, production equipment and work-tools, in accordance with GOST 12.2.005. The following is prohibited: - Smoking, making fires and performing welding works within 25 m from the place of performance of works; - Storage of more than one day's supply of materials at workplace, with enamel to be stored at workplace only in well-functioning hermetic tare [1]. Cleaning rags and cloth, clothing and work-tools (such as sponges, wipers, etc.) permeated with product can auto-ignite. Due to this, upon completion of works, personnel is to place them in a hermetic metal container or pour water onto them, and leave them on a water-resistant surface [1].
8.3.2. Protection of breathing organs (types of relevant PPE)	Respirator “Lepestok”, filtering respirators, industrial-grade gas-masks, protective masks [1,24].
8.3.3. Means of protection (material, type) (special clothing, special shoes, hand protection, eye protection)	For hand protection: rubber gloves, protective paste of 'bio-gloves' type, or other protective ointment [1]. For eye protection: protective goggles [1]. For body protection: special clothing, special shoes [1].

8.3.4. Personal protective equipment during usage at home	Not used in household [1].
9. Physical and chemical properties	
9.1. Physical state (physical form, color, smell)	Base - uniform viscous liquid of gray color without any extraneous inclusions and impurities. Additive – uniform viscous liquid without any extraneous inclusions.
9.2. Parameters characterizing principal properties of product (temperature values, pH, solubility, n-octanol/water ratio, and other parameters characteristic for this type of product)	*Base:* Density: 2,80-3,30 g/cm3 Assumed viscosity by the Brookfield method: 1600-2700 mPa.s. It is soluble in organic solvents, insoluble in water. *Additive:* Density: 0,85-1,05 g/cm3 It is soluble in organic solvents, insoluble in water [1].
10. Stability and reactive capacity	
10.1. Chemical stability (for unstable product, indicate decomposition products)	Product is stable in the event of compliance with the conditions of handling [1].
10.2. Reactive capacity	Product data on the whole is not available, reactive capacity is determined by product components [1].
10.3. Conditions to avoid (including hazardous situations in the event of contact with incompatible substances and materials)	Avoid direct sunlight, heating appliances, direct contact with fire and contact with incompatible substances and materials. It is prohibited to use open fire (including matches, lighters, etc.) [1,12].
11. Information on toxicity	
11.1. General characteristics of impact (estimation of the degree of danger (toxicity) in terms of impact on the organism, and the most characteristic manifestations of danger)	Base – highly hazardous product as per the level of impact on the organism. Contact with skin and eyes causes pronounced irritation. Can impact the reproductive ability. Additive - moderately hazardous product as per the level of impact on the organism. Contact with skin and eyes causes pronounced irritation; contact allergen. Can impact the reproductive ability [1,2,8,11,20-23].
11.2. Ways of impact (by inhalation, perorally, in the event of contact with skin and eyes)	In the event of contact with skin and eyes, by inhalation, perorally (in the event of accidental ingestion).
11.3. Organs, tissues and systems of humans that are damaged	Reasoning from hazardous properties of product components, in the event of prolonged contact, impact on the following is possible: nervous system, respiratory system, cardiovascular system, gastrointestinal tract, liver, pancreatic gland, kidneys, morphological composition of peripheral blood, heart [20,22,24].
11.4. Information on harmful health impact in the event of direct contact with product, and consequences of such impact (irritating action on upper respiratory tract, eyes, skin; skin-resorptive and sensibilizing effect)	Enamel components irritate mucous membranes of upper respiratory tract; this is caused by vapors of the solvents forming part of product; pronounced irritation of skin and eyes, provide sensibilizing effect [8,11,20].

	Information of base and additive components: Xylol has pronounced narcosis effect. Harmful if penetrates skin. Causes irritation of skin and mucous membranes. In the event of contact with hair causes cornification and necrosis of hair stems, atrophy of oil glands. Resin has an irritating action, sensibilizing and skin-resorptive effect [8,20-22].
11.5. Information on hazardous remote consequences of product impact on the organism (impact on reproductive function, carcinogenicity, mutagenicity, cumulative effect and other types of chronic impact)	Information on hazardous remote consequences of product impact have not been researched [1,2]. For Base and Additive: *Epoxy resin*: no impact the reproductive function, carcinogenic effects is absent, gonadotropic, teratogenic, embryotropic, mutagenic effects have not been researched. *Xylol*: embryotropic, gonadotropic and teratogenic effects have been established; mutagenic and carcinogenic effects have not been established. Moderate cumulative effect has been established. In the event of prolonged impact of small substance concentrations, the following is characteristic: changes in blood, nervous system, cardiovascular system, disruption of protein metabolism, manifestation of immunotoxic effect. Has embryotropic effect, disrupts reproductive processes. Impact of concentrations exceeding MAC, in combination with intensive noise during production works, causes neurasthenic syndrome, vegetovascular dystonia, disruption of intraventricular conduction, decrease of airway conductance. Inhibition of the functional activity of leucocytes has been noted. *Zinc:* can pose mutagenic and oncogenic dangers. The mutagenic effect of zinc may be related to the special role of this metal, whose ions are incorporated into the active centers of enzyme proteins - DNA and RNC-polymeraz, which ensure the normal process of DNA replication and transcription. The correlation between the frequency of oncological diseases and the content of gross forms of zinc in the soil was revealed. The gonadotoxic effect is manifested by a decrease in sperm motility and their ability to penetrate into the egg. It has a moderate cumulative effect [13]. Long-term effects on polyamide hardener have not been studied [14].
11.6. Indices of acute toxicity (DL50, entry route (intragastric, cutaneous), type of animal; CL50, exposure time (h), type of animal	Product toxicity data on the whole is absent [1]. Product toxicity data for base and additive: Epoxy resin: DL_{50} > 2,000 mg/kg, intragastric, rats DL_{50} > 5,000 mg/kg, cutaneous, rabbits CL_{50} - None

	Xylol: DL50 = 4,300 mg/kg, intragastric, rats CL50 = 22,084 mg/m3, 4h, rats Ammonium additive: DL50 > 2,000 mg/kg, intragastric 200 < DL50<2,000 mg/kg, cutaneous CL50> 1,000 mg/m3 Zinc: DL50 > 10,000 mg/kg, intragastric, rats CL50 None [8,11,20]
12. Information on environmental impact	
12.1. General characteristics of the impact on environmental objects (atmospheric air, water bodies, soil, including observable indications of impact)	The components of the primer (base and additive) contaminate water bodies, changing the sanitary and toxicological regime. Deterioration of the sanitary condition of water bodies, leading to a slowing down of self-purification processes and affecting the condition of water basins, their flora and fauna, as well as coastal areas of land. A large amount of paint in the water causes a short-term local increase in the alkalinity of the water [26-28].
12.2. Ways of impact on the environment	In the event of violation of the rules of usage, storage, transportation, waste removal; contamination of discharge waters as a result of breakdown and emergency situations.
12.3. Most important characteristics of impact on the environment	
12.3.1. Hygienic norms (admissible concentrations in atmospheric air, in water, including fishery basins, in soil)	

Table 2 [36-39]

Components	**MACatm.air or ASLIatm.air, mg/m3 (LHI1, danger class)**	**MACwater2 or AALwater (approximate admissible level), mg/l (LHI, danger class)**	**MACfishery3 or ASLIfishery mg/l (LHI, danger class)**	**MAC or AAC (approx. admissible concentration) for soil, mg/kg (LHI)**
Xylol	0.2, refl., Class 3	0.05, org. smell, Class 3	0.05, org., Class 3	0.3, translocational
Epoxy resin	0,04/0,004 (per epichlorohydrin), res., Class 3	0,0001 (carcinogen, control per epichlorohydrin), San.-tox., Class 1	0,01 (per epichlorohydrin), tox., Class 3; 10,00 for the seas and their individual parts (suspended products), org., San-tox., Class 4	Not established
Zinc	-/0,05 (zinc oxide / in terms of zinc), res., Class 3	1,0, gen., Class 3	Zinc: 0,01, tox., Class 3; 0,05 for the seas and their individual parts, tox., Class 3	23,0**, translocational
Ethyl cellosolv	0,7 (TSEL)	1,0, gen., Class 3	0,1 san., Class 4	Not established

1LHI: limiting harm index, namely toxicological, sanitary-toxicological, change of organoleptic properties of water with indication of the nature of change (change of smell, increase of opacity, coloring, formation of foam, formation of surface film, appearance of specific taste, opalescence), reflex, resorptive, reflex-resorptive, fishery-related (change of product characteristics for commercially harvested water organisms), general sanitary.
2Water from water usage objects in the household-and-drinking and cultural-and-social spheres.
3Water from water objects with significance for the sphere of fishery (including sea).
** - the mobile form of the element is extracted from the soil with acetate-ammonium buffer solution with pH 4,8

12.3.2. Indices of ecotoxicity: CL, EC, NOEC for fishes, Daphnia magna, algae, etc.)	Ecotoxicity data on the product on the whole are absent. Data are given by the components [8,11,20].

	Data, mg/l	Component	Exposure time, h
		Xylol	
CL_{50}	13	Crucian carp	24
CL_{50}	86-308	Orpheus gold	48
CL_{50}	24	Orpheus gold	24
EC_{50}	165	Magna daphnia	24
NOEC	> 1,3	Rainbow trout	56 days
		Epoxy resin	
$CL5_0$	1,5	fishes	96
$EL5_0$	1,7	Magna daphnia	48
NOEC	0,3	Magna daphnia	21 days
$EC5_0$	> 1000	Orpheus gold	72

12.3.3. Migration and transformation in the environment due to biodegradation and other processes (oxidation, hydrolysis, etc.)	Data on the product on the whole are absent [1]. Principal components transform in environment objects. Data on transformation products are absent [20]. Epoxy resin is the base component slowly (hard) biodegradable [20].
13. Recommendations for removal of waste (residues)	
13.1. Safety measures for handling waste forming in the course of usage, storage, transportation	Safety measures for working with waste are analogous to those recommended for working with product (refer to sections 7 and 8 of SDS).
13.2. Information on places and methods of deactivation, disposal or liquidation of product waste, including tare (packing)	Matters of disposal, accumulation and liquidation of product waste (tare and packing) should be reconciled with regional committees for protection of the environment and natural resources, sanitary and epidemiological surveillance authorities; also, SanPiN 2.1.7.1322 is to be used as a guidance [18]. Disposal of liquid waste is performed by burning at special designated sites. Liquid waste representing residues of paint-and-varnish materials and contaminated solvents forming after washing of equipment, service lines, paint booths, tools and accessories is to be collected in tightly sealing metal tare, special automobile tanks or containers, and sent for disposal. Disposal of solid waste is performed in accordance with sanitary rules for the procedure of accumulation, transportation, deactivation and burial of toxic industrial waste [1].
13.3. Recommendations for removal of waste forming in the course of usage of product at home	Not used in household [1].
14. Information for transportation	
14.1. UN number (in accordance with the UN Recommendations on the Transport of Dangerous Goods)	For base and additive: 1263 [29].

14.2. Proper designations for dispatch and transportation	Proper designation for base and additive: PAINT MATERIALS [29] Designation for transportation: TRIOCOR ZINC 1700 Primer [1]
14.3. Types of transport used	All types of transport [1].
14.4. Classification of cargo danger as per GOST 19433-88:	For base and additive:
- Class:	3 [30]
- Sub-class:	3.3 [30]
- Classification index (as per GOST 19433-88 and for railway transportation)	3333 as per GOST 19433-88 [30] 3013 for railway transportation [15]
- Number (-s) of drawing (-s) of hazard sign (-s)	3 [30]
14.5. Classification of cargo danger as per the UN Recommendations on the Transport of Dangerous Goods:	Classification for base and additive:
- Class or sub-class:	3 [29]
- Additional danger:	None [29]
- UN packing group:	III [29]
14.6. Transportation marking (handling signs as per GOST 14192-96)	'Protect from sunlight', 'Hermetic sealing' [1,31]
14.7. Emergency Cards (for railway, maritime and other transportation)	Emergency Card No. 328: for railway transportation [15]. Emergency Card of enterprise, without number, for automobile transportation. F-E, S-E Emergency Cards: for maritime transportation [32].
15. Information on national and international legislation	
15.1. National legislation	
15.1.1. Laws of the Russian Federation	Federal Law No. 7-FZ dated January 10, 2002, 'On Environment Protection' Federal Law No. 52-FZ dated March 30, 1999, 'On Sanitary and Epidemiological Welfare of Population' Federal Law No. 184-FZ dated December 27, 2002, 'On Technical Regulation' Federal Law No. 89-FZ dated June 24, 1998, 'On Manufacturers' and Consumers' Waste' Federal Law No. 116-FZ dated July 21, 1997 (in the wording as of December 31, 2014), 'On Industrial Safety of Hazardous Manufacturing Facilities'
15.1.2. Information on documentation governing requirements for protection of humans and the environment	None
15.2. International conventions and treaties (whether or not product is governed by the Montreal Protocol, Stockholm Convention and other treaties)	Not governed by the Montreal Protocol and the Stockholm Convention
16. Additional information	
16.1. Information on reviews (reissues) of SDS	SDS is developed and registered for the first time, in accordance with requirements of GOST 30333-2007.

16.2. List of data sources used during preparation of Safety Data Sheet

1. TU 2312-005-20654749-2015 TRIOCOR ZINC 1700 Primer
2. GOST 12.1.007-76. Occupational Safety Standards System (OSSS). Noxious substances. Classification and General Safety Requirements
3. GOST 32419-2013. Classification of Hazards of Chemicals. General Requirements.
4. GOST 32423-2013. Classification of Hazards of Chemical Mixtures per Impact on the Organism.
5. GOST 32424-2013. Classification of Hazards of Chemical per Impact on the Environment.
6. GOST 32425-2013. Classification of Hazards of Chemical Mixtures per Impact on the Environment.
7. GOST 31340-2013. Warning labeling of chemical products. General requirements.
8. Registered Substances Information Database of the European Chemicals Agency (ECHA). Access mode: http://echa.europa.eu/information-on-chemicals.
9. Sanitary Rules and Regulations SanPiN 1.2.2353-08. Carcinogenic Factors and Principal Requirements to Prophylaxis of the Carcinogenic Hazard.
10. Maximum Allowable Concentrations and Approximate Safe Levels of Impact for Harmful Substances in the Air of Working Area. GN 2.2.5.3532-18/GN 2.2.5.2308-07. Hygienic norms. Moscow, Ministry of Healthcare of the Russian Federation (RFHM). Moscow, Russian Registry of Potentially Hazardous Chemical and Biological Substances, RFHM.
11. Substance Database GESTIS. Institute for Occupational Safety and Health of the German Social Accident Insurance. Access mode: http://www.dguv.de/ifa/index-2.jsp.
12. New Reference Book for Chemists and Process Specialists. Access mode: http://chemanalytica.com/book/novyy_spravochnik_khimika_i_tekhnologa/11_radioaktivnye_veshchestva_vrednye_veshchestva_gigienicheskie_normativy/.
13. GOST 12.1.044-89. OSSS. Fire and Explosion Hazard of Substances and Materials. Nomenclature of Indices and Methods of Their Determination.
14. Fire and Explosive Danger of Substances and Materials, and Fire-Extinguishing Means. Reference Book. Volumes 1 and 2. A. Ya. Korolchenko. Moscow, Fire-Safety Scientific Association, 2000, 2004.
15. Safety Rules and Procedure for Liquidation of Accidents with Dangerous Cargo during Their Transportation by Railway. Novosibirsk, Novosibirsk Institute of Railway Transport Engineering, 1997. Emergency Cards for Dangerous Cargo Transported by Railways of CIS, Republic of Latvia, Republic of Lithuania, Republic of Estonia. Moscow, Transport Publishing House, edition with amendments and addenda as of May 19, 2016.
16. GOST 9980.4-2002. Paint and varnish materials. Marking
17. GOST 9980.5-2009. Paint and varnish materials. Transport and storage
18. SanPiN 2.1.7.1322-03. Hygienic Requirements to Placement and Decontamination of Manufacturers' and Consumers' Waste.
19. Harmful Organic Compounds in Industrial Discharge Waters. Ya. M. Grushko. Edition 2. Leningrad, Chemistry Publishing House, 1982.
20. Information Card for Potentially Hazardous Chemical and Biological Substance.
    - Polymer 4.4' – (1-methyl ethylen) bisphenol with chloromethyloxirane. Series BT No. 000887. - Moscow, Russian Registry of Potentially Hazardous Chemical and Biological Substances.
    - Zinc. Series AT No.000562 of August 02, 1995.
    -Xylol. Series VT No. 000525. – Moscow, Russian Registry of Potentially Hazardous Chemical and Biological Substances.
21. TOXI, Regional Information Center for Toxicology and Hygiene (Small Enterprise). Electronic resource. Access mode: http://toxi.dyndns.org/.
22. PubChem. Open Chemistry Database. Access mode: https://pubchem.ncbi.nlm.nih.gov/compound/14917#section=Top.

23. Harmful substances in industry. Handbook for chemists, engineers and physicians. Iz. 7/ t.1, p/r N.V. Lazarev, E.N. Levina. – L: Chemistry, 1976
24. Ecology and Nature Protection. Dictionary and Reference Book. V. Snakin. Editor: A. L. Yanshin. Moscow, Academia Publishing House, 1997
25. Physical and Chemical Processes in the Technological Sphere. Manual. Moscow, Forum Infra-M Publishing House, 2007.
26. Maximum Allowable Concentrations and Approximate Admissible Levels for Chemical Substances in Water of Water Usage Objects in Household-and-Drinking and Culture-and-Social Spheres. GN 2.1.5.1315-03/2.1.5.2307-07. Hygienic norms. Moscow, RFHM, 2003, 2008.
27. Norms of Water Quality for Fishery Water Objects, Including Norms of Maximum Allowable Concentrations of Harmful Substances in Water of Fishery Water Objects (approved by the Order No. 552 of the Ministry of Agriculture of the Russian Federation dated December 13, 2016).
28. Maximum Allowable Concentrations and Approximate Safe Levels of Impact for Contaminants in the Atmospheric Air of Settlements. GN 2.1.6.3492-17/2.1.6.2309-07. Hygienic Norms. Moscow, RFHM, 2003, 2008.
29. Maximum Allowable Concentrations and Approximate Admissible Concentrations of Chemical Substances in Soil. GN 2.1.7.2041-06/GN 2.1.7.2511-09. Hygienic Norms. Moscow, RFHM, 2006, 2009.
30. UN Recommendations on the Transport of Dangerous Goods. Model Rules. Edition 19. UN, New York and Geneva, 2015.
31. GOST 19433-88. Dangerous Cargo. Classification and Labeling. Moscow, Standards Publishing House, 1988.
32. GOST 14192-96. Labeling of Cargo. Moscow, Standards Publishing House.
33. International Maritime Dangerous Goods Code (IMDG Code). Volume 2. Saint-Petersburg, Central Scientific and Research Institute of the Maritime Fleet CJSC, 2007.
34. SanPiN 2.2.0.555-96 Occupational health. Hygienic requirements for working conditions for women. Sanitary rules and norms.
35. SDS for ATTCURE 2042 Attika Chemicals company (Germany).
36. ICSC (International chemical safety cards). Access mode: http://www.safework.ru/ilo/icsc.