

1 Chemical Product Identification and Details of the Producer and/or Supplier

1.1. Product Identifier

1.1.1 Product name:

Bisphenol A (diphenylol propane) [1].

1.1.2 Recommended use of the chemical and restrictions on use:

Bisphenol A is produced in the following grades that differ in purpose:

Grades VCh, AP are designed for the production of optical polycarbonate, as well as injection and extrusion moulding polycarbonates;

Grade A is used to produce injection and extrusion moulding polycarbonates, as well as polysulfones and epoxy resins of the highest grade;

Grade B is suitable for the production of epoxy resins and varnishes.

Grade B Bisphenol A is available in two grades:

first-best grade B is designed for the production of epoxy resins, varnishes, adhesives, and other products;

second-best grade B is designed for the production of epoxy resins, varnishes, and other products;

1.2 Details of producer and/or supplier

1.2.1 Full company name:

Kazan Public Joint-Stock Company
Organichesky sintez (Kazanorgsintez PJSC)
420051, Kazan, ul. Belomorskaya, 101

1.2.2. Address
(postal and legal)

1.2.3 Product Stewardship including
Emergency Telephone number:

+7 (843) 533-94-48; 512-33-15

8⁰⁰-17⁰⁰

1.2.4. Fax

+7 (843) 533-97-94; 533-97-21, 533-93-54

1.2.5 E-mail address

standart@kos.ru, lsafina@kos.ru

2 Hazards Identification

2.1 Hazard Classification:

(hazards classification in accordance with Russian laws (GOST 12.1.007-76) and GHS)

According to the degree of human body exposure, Bisphenol A occurs within Hazard Class 3: low-hazard substances under GOST 12.1.007-76 [2].

According to the human body exposure (under GHS)

- chemical products that have a sensitizing effect on contact with the skin;

- chemical products causing serious eye damage / irritation - hazard class 1;

- chemical products with selective toxicity to target organs and/or systems with a single exposure - hazard class 3;

- chemical products affecting the reproduction function - hazard class 2;

- chemical products with chronic toxicity to the aquatic environment - hazard class 2.

[11, 25, 26, 27].

2.2 Label Elements (under GOST 31340-2013)

2.2.1 Signal word

Hazardous [31].

2.2.2 Hazard symbols



[31]

H317: May cause an allergic reaction if it comes in contact with skin;

H318: In case of contact with eyes, it causes irreversible consequences;

H335: May cause irritation of upper respiratory tract.

H361: It is suspected that this substance may adversely affect fertility or the unborn child;

H411: Aquatic chronic [31].

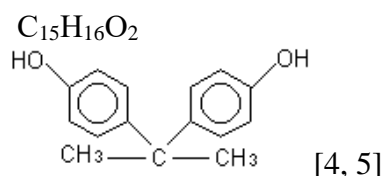
Composition/Information on Ingredients

3.1 General Product Details

3.1.1 Chemical name
(IUPAC nomenclature)

2,2-Bis(4-hydroxyphenyl) propane [4, 5]

3.1.2 Chemical formula



3.1.3 General description of the composition

Bisphenol A is produced by condensation of phenol with acetone in the presence of a catalyst [1].

(including product mix; production method)

3.2 Components

(name, CAS and EC numbers, mass fraction (totally should be 100%), TLV-PEL or TSEL-PEL, hazard classes, references to sources)

Table 1 [1, 5, 17]

Components (name)	Mass fraction, %						Hygienic standards in the air of working zone		CAS#	EC#
	VCh	AP	A	B	C		TLV- PEL, mg/m ³	Hazard class		
					Grade 1	Grade 2				
2,2-Bis(4-hydroxyphenyl) propane	min. 99.9	min. 99.8	not determined				5 (a)	3	80-05-7	201-245-8

Note: a-aerosol

4 First Aid Measures

4.1 Symptoms

4.1.1 Inhalation

Bitter taste in mouth, headache, nausea, loss of coordination [4].

4.1.2 Skin contact

Causes skin redness and peeling, skin pigmentation is possible. Burns if melted [4].

4.1.3 Eye contact

Lacrimation, corneal opacity, eyelid edema [4].

4.1.4 Ingestion

Nausea, vomiting, weakness [4].

4.2 First Aid Measures

4.2.1 Inhalation	Fresh air, rest, warmth, clean clothes. Hospital admission if needed [5].
4.2.2 Skin contact	Take off contaminated clothing and shoes. Rinse the skin with warm running water and soap [5].
4.2.3 Eye contact	Rinse with warm running water (at least 15 minutes) with a wide open eye fissure. Seek medical attention if symptoms of irritation occur [5].
4.2.4 Ingestion	Rinse the mouth with water; give plenty of drinking water, activated carbon, saline laxative; induce vomiting. Seek medical attention [5].
4.2.5 Contraindication	No information available [5].

5 Fire and Explosion Safety Measures and Aids

5.1 General description of fire and explosion hazard (under GOST 12.1.044-89)	Combustible matter. Dust suspended in air is explosive. The settled dust is fire hazardous [10, 28].
5.2 Fire and explosion hazard data (hazard parameters under GOST 12.1.044-89 and GOST 30852.0-2002)	Flash point, °C: 217 (in open cup); Firing point, °C: 240 Self-ignition point, °C: 510 Melting point, °C: 156 Boiling point, °C: 190 (at 133.322 Pa) Lower flammability limit, g/m ³ : 42 [10, 28].
5.3 Combustion and/or thermal degradation products and resulting cause	Thermal oxidative degradation products: carbon monoxides, phenol and other organic compounds are hazardous to personnel. <u>Carbon monoxide</u> (CO) causes suffocation by combining with hemoglobin, making the blood unable to carry enough oxygen from the lungs to the tissues [6]. <u>Carbon dioxide</u> (CO ₂) has a narcotic effect. In fire, it causes increased respiration and increased pulmonary ventilation, thereby contributing to a greater intake of toxic substances contained in combustion products into the body; has a vasodilator effect [8]. <u>Phenol</u> is toxic. If inhaled, it causes dysfunction of the nervous system. The vapors irritate the mucous membranes of the eyes and upper respiratory tract [7].
5.4 Suitable extinguishing media	Sprayed water with a wetting agent, CO ₂ , air-and-mechanical foam, felt and others [5, 28].
5.5 Unsuitable extinguishing media	No information available [28].
5.6 Personal protective equipment for firefighters (PPE for fire fighters)	Wear fire-entry suits (jacket and trousers with removable heat-insulating linings) complete with firefighter's belt, mittens or gloves, helmet, and special protective shoes [37].
5.7 Special fire-fighting procedures	The process of combustion (suppression) may cause a melt. The polymer packaging can be involved in combustion [37].

6 Accident Release Measures

6.1 Measures to prevent harmful effects on human beings, environment, buildings, structures, etc. in accidents and emergencies

6.1.1 Necessary general actions in accidents and emergencies

Report to the area office of Rospotrebnadzor.
Isolate the danger zone within a radius of at least 50 m. Avoid low places. Remove unauthorized persons. Enter the danger zone in protective equipment. Observe fire safety measures. Do not smoke. Eliminate sources of fire and sparks. Give first aid to the injured. Send people from the affected area for medical examination (emergency card) [37].

6.1.2 Emergency personal protective equipment (for emergency response teams)

For emergency response teams - an KIH-5 insulating protective suit with an IP-4M insulating gas mask or an ASV-2 breathing apparatus.
If ignition occurs - a fireproof suit with a SPI-20 escape hood (emergency card) [37].

6.2 Emergency Response Procedure

6.2.1 Actions in case of leakages and spills (including recovery, and environmental precautions)

If Bisphenol A is spilled, moisten the spilled material by spraying with water to prevent dusting, then collect in a container and send for disposal. Wash the surface with soap and water. Prevent the material from entering water bodies, basements, and sewers [37].

6.2.2 Fire response plan

Enter the accident area in protective clothing and breathing apparatus. Eliminate sources of fire and sparks. Fight the fire from the maximum distance according to clause 5.4 [37].

7 Handling and Storage

7.1 Precautions for safe handling

7.1.1 Security engineering systems

Production premises should be equipped with forced-air-exhaust and local ventilation systems. Use of non-sparking tools, personal protective equipment. Exclude open fire.

7.1.2 Environmental protection

Fitting workplaces with primary fire suppression aids [1].
Periodic monitoring of the content of harmful substances in the air of the working area and in open areas. Prevent product spillage from packaging [1].

7.1.3 Recommendations for safe handling and shipping

Bisphenol A can be shipped by all modes of transport in covered vehicles that protect against atmospheric precipitation and exposure to sunlight as prescribed by the goods carriage rules applicable for such mode of transport [1, 34, 35, 38].

7.2 Chemical Storage Rules

7.2.1 Storage conditions and shelf life (including warranty shelf life, expiration date; incompatible substances and materials while in storage)

Store in dry sheltered warehouses, away from sources of fire.

Warranty shelf life: 1 year from the date of manufacture.
Oxidizing agents, acids, and alkalis are incompatible materials while in storage [1].

7.2.2 Packing and wrapping materials (including materials from which they are made)

The material can be packed in soft disposable polypropylene containers with a polyethylene liner or polypropylene containers with a protective coating (laminated, etc.) with-

7.3. Household safety precautions and storage rules

out a polyethylene liner. Can be packed in plastic bags as well.

Palleted containers and bags are additionally packed in a polyethylene tube and formed into pallets [1].

Not used in household applications [1].

8 Exposure Controls/Personal Protection

8.1 Control parameters
(TLV-PEL or TSEL-PEL)

TLV-PEL=5 mg/m³ (aerosol) [1, 9].

8.2 Measures to ensure the content of harmful substances in permissible concentrations

Supply-and-exhaust ventilation system in work premises ; sealed equipment, containers and connections; control of TLV-PEL in the air of the working area and in open areas. Timely cleaning of work premises and waste disposal [1].

8.3 Personal Protective Equipment

8.3.1 General advise

It is prohibited to store food and water, eat and smoke in the work premises.

Follow the rules of personal hygiene; wash your hands with soap and water, take a shower at the end of the shift.

The personnel who handles the products shall be provided with sanitary and amenity facilities. Persons aged 18 years and younger may be allowed to work; applicants for work must undergo HSE orientation and periodic safety training; the persons who work with products must undergo a pre-employment and periodic medical examination [1].

8.3.2 Respiratory protection (types of respiratory protective gear)

No protection is required under normal operating conditions; in an emergency - filter respirators, DOT-600 filter gas masks with a box; in confined spaces - hose gas masks, PSh-1 or PSh-2 type [14].

8.3.3 Protective equipment (material, type)
(overalls, safety shoes, hand protection, and eye protection)

Protective cotton clothing: suits, overalls, gowns [12, 15].

Protective footwear: boots, low shoes, leather slippers [16].

Rubber or oil resistant gloves.

Protective goggles [13].

8.3.4 Protective gear for household applications

Not used in household applications [1].

9 Physical and Chemical Properties

9.1 Physical state
(physical form, color, odor)

Faint odor solid (crystals, granules, flakes) [1].

9.2 Chemical product characterization
(temperatures, pH, solubility, n-octanol/water partition coefficient and other parameters specific to this type of products)

Density: 1.04 g/cm³

Solubility:

- in water at 25 °C: 300 mg/l;

- in fats: slight.

pH: 7-8 (301 mg/l).

Dissolvable in alcohols, acetone, ether, carboxylic acids, dioxane, aqueous solutions of alkalis [5].

10 Stability and Reactivity

10.1 Chemical stability
(for unstable products, indicate degradation products)

The product is stable under normal conditions of storage and handling [5].

10.2 Reactivity

Alkylated, oxidized, halogenated, sulfonated; forms adducts; enters into polycondensation reactions [5].

10.3 Conditions to avoid (including hazardous effects in contact with incompatible substances and materials)

Interaction with oxidants, acids, alkalis. Avoid open flames, fire sources [5].

11 Toxicological Information

11.1 General exposure characteristics (hazard evaluation (toxicity) of exposure to the body and the most typical manifestations of hazard)

Moderately hazardous substance with a degree of exposure to the body. Has an irritating effect and causes acute and chronic poisoning.

The product has been classified as moderately hazardous substances (hazard class 3) according to the parameters of acute toxicity with a single intragastric intake to the body; and as low-hazard substances (hazard class 4) according to the application to the skin. Causes serious irreversible effects on the eyes, irritation of the upper respiratory tract. Affects the reproductive function [2, 5].

11.2 Routes of exposure (inhaled, peroral, in contact with skin and eyes)

Inhaled, peroral, in contact with skin and eyes.

11.3 Affected organs, tissues and human systems

Respiratory and central nervous systems, liver, kidneys, erythroid lineage [3-5].

11.4 Information about hazardous exposure to health in direct contact with the product, and its consequences (irritating effect on the upper respiratory tract, eyes, skin; skin-resorptive and sensitizing effects)

Causes irreversible effects if comes in contact with eyes. Irritation of skin and upper respiratory tract.

Sensitizing and skin-resorptive effects: detected [3-5].

11.5 Information on the hazardous long-term effects of exposure of products to the body (effect on reproduction function, carcinogenicity, mutagenicity, cumulativeness and other chronic effects)

Embryotropic, gonadotropic, teratogenic effects: detected. Mutagenic effect: detected. But the IARC estimate has not been confirmed.

Carcinogenic effect:

- Humans: not studied

- Animals: low But the IARC estimate has not been confirmed.

Cumulativity: moderate [5].

11.6 Acute toxicity: (DL₅₀, route of entry (intragastrically, epidermally), animal specimen; CL₅₀, exposure time (hr), animal specimen)

DL₅₀ = 4,100-5,200 mg/kg, intragastrically, mice;

DL₅ = 3,000 mg/kg, epidermally, rabbits;

CL₅₀ > 1,700 mg/m³, mice, 2 hr [5].

12 Ecological Information

12.1 General environmental impact (ambient air, water bodies, soils, including observed signs of exposure)

Bisphenol A adversely affects the environment. May pollute the atmospheric air, changes the general sanitary regime of water bodies [6].

12.2 Routes of exposure to the environment

Failure to comply with the rules of storage and shipment, accidents, emergencies, unorganized disposal and management of wastes.

12.3 The most important characteristics of environmental impact

12.3.1 Hygienic standards

(permissible concentrations in ambient air, water, including fishery ponds, soils)

Table 2 [19-24]

Components	TLV (amb. air) or SRLI (amb. air), mg/m ³ (LHI ¹ , hazard class)	TLV water ² or <u>Tent. Perm. Level water</u> , mg/l, (LHI, hazard class)	TLV fishery ³ or SRLI fishery, mg/l (LHI, hazard class)	TLV soil or Tent. Perm. Conc. soil, mg/kg (LHI)
2,2-Bis(4-hydroxyphenyl)propane	0.04	0.01 (org. flav., 4,)	None	None

12.3.2 Ecotoxicity
(CL, EC, NOEC etc. for fish (96 hr), daphnia (48 hr), algae (72 or 96 hr) and others)

Stability under abiotic conditions $t_{1/2}$ =30-7 days – highly stable.

Acute toxicity to fish:

CL₅₀= 7.5 mg/l, *Cyprinodon variegatus*, 96 hr;

CL₅₀= 15 mg/l, *Orizias latipes*, 48 hr;

CL₅₀= 9.9 mg/l, *Brachydanio rerio*, 96 hr;

CL₅₀= 4-4.7 mg/l, *Pimephales promelas*, 96 hr.

CL₅₀= 9.4 mg/l, *Menidia menidia*, 96 hr;

Acute toxicity to *Magna daphnia*:

EC₅₀= 16 mg/l, 48 hr;

Toxicity to algae (cultured):

EC₅₀= 1 mg/l, *Skeletonema costatum*, 96 hr;

EC₅₀= 2.5-3.1 mg/l, *Selenastrum capricornutum*, 96 hr;

EC₅₀= 7.5 mg/l, *Pseudomonas putida*, 18 hr [5].

Transforms in the environment [5].

12.3.3 Migration and transformation in the environment due to biodegradation and other processes (oxidation, hydrolysis, etc.)

13 Waste (Residual) Disposal Considerations

13.1 Safety precautions for management of wastes produced in the use, storage, transportation

Safety precautions for waste management are similar to precautions for the treatment of the product. The personnel must know the physical and chemical properties of the product and be trained in safety rules when handling the product. Waste loading and unloading operations must be mechanized.

13.2 Information about locations and methods of neutralizing, disposing or eliminating wastes of a substance (material), including containers (packaging)

Collect wastes, spoiled product from the accident site in containers and send for processing or disposal to locations agreed with the authorities of Rospotrebnadzor [1, 32, 33].

13.3 Recommendations on disposal of household waste

Not used in household applications.

14 Transport Information

14.1 UN Number
(in line with the UN Recommendations on the

3077 [36].

¹ LHI – limiting harmful index (tox. – toxicological; s.-t. – sanitary-toxicological; org. – organoleptic with a breakdown of modifications to the organoleptic properties of water (odor – changes the water odor, turbid. – increases the turbidity of water, col. – gives water color, foam – causes the formation of foam, film. – forms a film on the water surface, flav. – gives flavour in water, op. – causes opalescence); refl. – reflective; res. – resorptive; refl.-res. – reflective-resorptive, fish. – fishery (change in commercial qualities of commercial aquatic organisms) ; gen.-san. – general sanitary).).

² Water of water bodies for potable and cultural and domestic water use

³ Water of water bodies of commercial fishing importance (including marine)

Transport of Dangerous Goods)

14.2 Proper shipping name and transport name

Proper name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S.

Shipping name: Bisphenol A (Diphenylolpropane) grades VCh, AP, A, B, C (first and second grades) [1, 36].

Bisphenol A is carried by rail and road transport in covered vehicles [1].

Not classified [30].

14.3 Applicable modes of transport:

14.4 Goods hazard classification under GOST 19433-88:

- hazard class
- hazard subclass
- classification code
(under GOCT 19433-88 and for rail transportation)

- number(s) of drawing(s) showing hazard symbol(s)

14.5 Goods hazard classification under UN Recommendations on the Transport of Dangerous Goods:

- hazard class and subclass
- additional hazard
- UN packaging group

9
None
III [36].

14.6 Shipping label
(handling symbols according to GOST 14192-96)

“Keep away from the sun” symbol number 2,
“Keep away from moisture” symbol number 3 [29].

14.7 Emergency cards
(by railway, sea and other transportation)

Emergency card No. 906 [37].

15. National and International Regulation

15.1 National Regulation

15.1.1 Laws of the Russian Federation

On Sanitary and Epidemiological Well-Being of Population
On Technical Regulation
On Production and Consumption Waste
On Industrial Safety of Hazardous Production Facilities
On Environmental Protection
On Protection of Atmospheric Air
On Fire Safety
On Standardization
On Protection of Consumers' Rights

15.1.2 Information on the documentation governing the requirements for the protection of human being and environment

The product is not included in the unified list of goods subject to sanitary and epidemiological supervision.

15.2 International conventions and agreements (whether the products are subject to the Montreal Protocol, the Stockholm Convention, etc.)

No information available.

16 Other Information

Information on MSDS revision (reissue)
(reference to: “The MSDS has been issued for the first time” or “The MSDS has been re-registered upon expiration. Previous MSDS Reg. No. ...” or “Changes have been made to paragraphs ..., date of introduction ...”)

This MSDS is to replace the Safety Data Sheet reg. No. 00203335.24.42742

16.2 References

1. TU 2423-172-00203335-2007 Bisphenol A (Diphenylolpropane) with rev. 1-6.
2. GOST 12.1.007-76 Hazardous Substances. Classification and general safety requirements.
3. IUCLID Dataset Consolidated Chemical Information Database. [Electronic resource]: Available at <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances/>
4. FBUZ Russian Registry of Potentially Hazardous Chemical and Biological Substances <http://www.rpohv.ru/online/detail.html?id=221>
5. Information card of a potentially hazardous chemical and biological substance. 2,2-(4,4'-Dihydroxyphenyl) propane. Certificate of state registration. Series VT No. 000221.-M.: Russian Register of Hazardous Chemical and Biological Substances, 1995.
6. Information card of a potentially hazardous chemical and biological substance. Carbon monoxide. Certificate of state registration. Series AT No, 000672.-M.: Russian Register of Hazardous Chemical and Biological Substances, 1995.
7. Information card of a potentially hazardous chemical and biological substance. Phenol. Certificate of state registration. Series AT No, 000400.-M.: Russian Registry of Hazardous Chemical and Biological Substances, 1995.
8. Information card of a potentially hazardous chemical and biological substance. Carbon dioxide. Certificate of state registration. Series AT No, 000071.-M.: Russian Registry of Hazardous Chemical and Biological Substances, 1995.
9. GOST 12.1.005-88 Workplace Air. General sanitary and hygienic requirements.
10. GOST 12.1.044-89 Occupational safety standards system. Fire and explosion hazard of substances and materials. Nomenclature of values and methods for their determination.
11. GOST 32423-2013 Hazard classification of chemical products by their effects on the body.
12. GOST 12.4.016-83 Occupational safety standards system. Protective clothing. Nomenclature of quality indicators.
13. GOST 12.4.253-2013 Occupational safety standards system. Personal eye protection equipment. General technical requirements.
14. GOST 12.4.235-2012 Occupational safety standards system. Personal respiratory protection equipment. Gas and combined filters. General technical requirements. Test methods. Marking.
15. GOST 12.4.280-2014 Occupational safety standards system. Special clothing for protection from general industrial pollution and mechanical effect. General technical requirements.
16. GOST 12.4.137-2001 Protective footwear with leather upper for protection against oil, oil products, acids, alkalis, non-toxic and explosive dust. Technical Specifications
17. GN 2.2.5.3532-18 Threshold Limit Values (TLV) in the workplace air.
18. GN 2.2.5.2308-07 Safe Reference Levels of Impact (SRLI) in the workplace air.
19. GN 2.1.5.2307-07 Tentative Permissible Levels (TPL) for chemicals in the water of water bodies for potable and cultural and domestic water use.
20. GN 2.1.6.1338-03 Threshold Limit Values (TLV) for pollutants in the air of populated areas.
21. GN 2.1.5.1315-03 Threshold Limit Values (TLV) for chemicals in the water of water bodies for potable and cultural and domestic water use.
22. GN 2.1.7.2041-06 Threshold Limit Values (TLV) for chemicals in the soil.
23. GN 2.1.7.2511-09 Tentative Permissible Concentrations (TPC) for chemicals in the soil.
24. Water quality standards for fishery water bodies, including standards for threshold limit values of hazardous substances in the waters of fishery water bodies. Approved by Order No. 20 of January 18, 2010 of the Federal Agency for Fisheries.
25. GOST 32419-2013 Hazard classification of chemical products. General requirements.
26. GOST 32424-2013 Hazard classification of chemical products by their effects on the environment.
27. GOST 32425-2013 Hazard classification of chemical products by their effects on the body.
28. Handbook. Fire and explosion hazard of substances and materials and means for extinguishing them. under the editorship of A. Ya. Korolchenko, D. A. Korolchenko. Part 1. – Moscow. As-

sociation

Pozhnauka, 2004.

29. GOST 14192-96 Marking of cargoes.
30. GOST 19433-88 Hazardous goods. Classification and marking.
31. GOST 31340-2007. Safety marking of chemicals. General requirements.
32. SanPiN 2.1.7.1322-03 Hygienic requirements for the placement and disposal of production and consumption waste.
33. Sanitary rules. SP No. 3183-84. The procedure for the accumulation, transportation, deactivation and disposal of toxic industrial waste.
34. Rules for the carriage of goods by road. As amended by Decree the No. 1208 issued by the Government of the Russian Federation on December 30, 2011. Approved by Decree No. 272 of the Government of the Russian Federation dd. April 15, 2011.
35. Regulations on the Transport of Dangerous Goods. Appendix No. 2 to the Agreement on International Goods Transport by Rail.
36. Recommendations on the Transport of Dangerous Goods. Model Regulations. 18th revised edition. United Nations.- New York-Geneva, 2013.
37. Emergency cards for hazardous goods transported by railways of the CIS, Republic of Latvia, Republic of Lithuania, Republic of Estonia (as amended as of November 20, 2013). Emergency card No. 906