

SAFETY DATA SHEET

BISPHENOL-A

According to Regulation (EC) No 1907/2006, Annex II, as amended by Regulation (EU) No 453/2010, COMMISSION REGULATION (EU) 2015/830 of 28 May 2015.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	BISPHENOL-A
Chemical name	4,4'-isopropylidenediphenol
Synonyms; trade names	4,4'-(1-Methylethylidene)bisphenol, 4,4'-Dihydroxydiphenylpropane
REACH registration number	01-2119457856-23-XXXX
CAS number	80-05-7
EC number	201-245-8

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Raw material for epoxy and polycarbonate resin.
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1.3. Details of the supplier of the safety data sheet

Supplier	(OR of KUMHO P&B CHEMICALS INC.) KIST-Europe, Universitaet des Saarlandes, Campus E 72 66123, Saarbruecken, Germany +49 681 9382 334 +49 681 9382 319 reach.it@kist-europe.de
Manufacturer	KUMHO P&B CHEMICALS. INC. 218, Yeosusandan 2-ro Yeosu-city Jeollanam-do, Korea +82-61-688-3682 +82-61-688-3684

1.4. Emergency telephone number

Emergency telephone	+49 551 19240 GIZ-Nord, Goettingen, Germany (English only)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC/1272/2008)

Physical hazards	Not Classified
Health hazards	Eye Dam. 1 - H318 Skin Sens. 1 - H317 Repr. 1B - H360 STOT SE 3 - H335
Environmental hazards	Aquatic Chronic 2 - H411

2.2. Label elements

EC number	201-245-8
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BISPHENOL-A

Pictogram



Signal word

Danger

Hazard statements

H317 May cause an allergic skin reaction.
 H318 Causes serious eye damage.
 H335 May cause respiratory irritation.
 H360 May damage fertility or the unborn child.
 H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P261 Avoid breathing dust.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing should not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P302+P352 IF ON SKIN: Wash with plenty of water.
 P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308+P313 IF exposed or concerned: Get medical advice/ attention.
 P310 Immediately call a POISON CENTER/ doctor.
 P312 Call a POISON CENTER/ doctor if you feel unwell.
 P321 Specific treatment (see medical advice on this label).
 P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P362+P364 Take off contaminated clothing and wash it before reuse.
 P391 Collect spillage.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
 P501 Dispose of contents/ container in accordance with national regulations.

Supplementary precautionary statements

P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P261 Avoid breathing vapour/spray.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing should not be allowed out of the workplace.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P281 Use personal protective equipment as required.
 P302+P352 IF ON SKIN: Wash with plenty of water.
 P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308+P313 IF exposed or concerned: Get medical advice/ attention.
 P310 Immediately call a POISON CENTER/ doctor.
 P312 Call a POISON CENTER/ doctor if you feel unwell.
 P321 Specific treatment (see medical advice on this label).
 P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P363 Wash contaminated clothing before reuse.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.

2.3. Other hazards

BISPHENOL-A

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name	BISPHENOL-A
REACH registration number	01-2119457856-23-XXXX
CAS number	80-05-7
EC number	201-245-8

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Consult a physician for specific advice. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing.
Inhalation	Move affected person to fresh air at once. If breathing stops, provide artificial respiration. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen.
Ingestion	DO NOT induce vomiting. Get medical attention immediately.
Skin contact	Immediately remove contaminated clothing. Wipe off the product mechanically. Wash skin thoroughly with soap and water. Promptly flush with large amount of cool water if molten product gets on the skin and get medical attention.
Eye contact	Rinse immediately with plenty of water. Continue to rinse for at least 10 minutes. Remove contact lens after the initial 1-2 minutes and continue flushing for up to 10 minutes. Consult a physician for specific advice.

4.2. Most important symptoms and effects, both acute and delayed

General information	Not available.
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4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor	No specific recommendations.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Extinguish with foam, carbon dioxide or dry powder. Water spray.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards	Vapours may explode when mixed with air. Containers can burst violently or explode when heated, due to excessive pressure build-up.
Hazardous combustion products	Thermal decomposition may liberate carbon oxides.

5.3. Advice for firefighters

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Protective actions during firefighting Move containers from fire area if it can be done without risk. Use fire fighting measures that suit the surrounding materials. Keep up-wind to avoid fumes. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Avoid inhalation of materials or combustion by-products. Control run-off water by containing and keeping it out of sewers and watercourses. Cool containers exposed to flames with water until well after the fire is out. Do not allow water to enter the container as it will react with the product. In case of tank or container fire, fight at the maximum distance or use unmanned hose holder or monitor nozzles.

Special protective equipment for firefighters Use air-supplied respirator, gloves and protective goggles.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions No smoking, sparks, flames or other sources of ignition near spillage. Use suitable respiratory protection if ventilation is inadequate. Keep unnecessary and unprotected people away from area of spill. Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate. For personal protection, see Section 8.

6.2. Environmental precautions

Environmental precautions Avoid discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Inform authorities if large amounts are involved. Take up spilled product with dust-binding material or suitable vacuum cleaner. Avoid generation and spreading of dust. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Collect and place in suitable waste disposal containers and seal securely.

6.4. Reference to other sections

Reference to other sections For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Container must be kept tightly closed when not in use. Take precautionary measures against static discharges. Do not use in confined spaces without adequate ventilation and/or respirator. Good personal hygiene procedures should be implemented. Avoid inhalation of dust and contact with skin and eyes. Avoid handling which leads to dust formation.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Protect from sunlight. Avoid heat, flames and other sources of ignition. Keep container tightly sealed when not in use.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

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DNEL	Industry - Inhalation; Long term systemic effects: 10 mg/m ³
	Industry - Inhalation; Short term systemic effects: 10 mg/m ³
	Industry - Inhalation; Long term local effects: 10 mg/m ³
	Industry - Inhalation; Short term local effects: 10 mg/m ³
	Industry - Dermal; Long term systemic effects: 1.4 mg/kg/day
	Industry - Dermal; Short term systemic effects: 1.4 mg/kg/day
	Consumer - Inhalation; Long term systemic effects: 0.25 mg/m ³
	Consumer - Inhalation; Short term systemic effects: 5 mg/m ³
	Consumer - Inhalation; Long term local effects: 5 mg/m ³

PNEC	- Fresh water; 0.018 mg/l
	- Marine water; 0.016 mg/l
	- Intermittent release; 0.01 mg/l
	- STP; 320 mg/l
	- Sediment (Freshwater); 2.2 mg/kg
	- Sediment (Marinewater); 0.44 mg/kg
	- Soil; 3.7 mg/kg

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Eye/face protection

Wear safety glasses with side-shields conforming to EN166.

Hand protection

Wear protective gloves against chemicals according to EN 374-3.

Other skin and body protection

Provide eyewash station and safety shower. Wear apron or protective clothing in case of contact.

Hygiene measures

Promptly remove any clothing that becomes contaminated. Contaminated clothing should be placed in a closed container for disposal or decontamination. Wash hands at the end of each work shift and before eating, smoking and using the toilet.

Respiratory protection

Under frequent use or heavy exposure, respiratory protection may be needed. Use filtering facepieces against particles according to EN 149.

Environmental exposure controls

Store in a demarcated bunded area to prevent release to drains and/or watercourses.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Flakes. Crystals.
Colour	White.
Odour	Odourless.
pH	Not available. Not available.
Melting point	155°C

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Initial boiling point and range	360°C @ 1013 hPa Bisphenol A shows decomposition at the boiling point.
Flash point	227 °C at 1013 hPa°C CC (Closed cup).
Evaporation rate	Not available.
Vapour pressure	0.000000412 Pa @ °C
Relative density	1.2 g/cm ³ @ at 25°C
Solubility(ies)	0.0300 @ °C
Partition coefficient	log Pow: 3.4 at 21.5 °C
Auto-ignition temperature	510 °C at 1013 hPa°C
Decomposition Temperature	Not available.
Viscosity	Scientifically unjustified.
Explosive properties	Data lacking.
Oxidising properties	Not available.

9.2. Other information

Particle size	Not available.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No hazardous reaction when used as directed.
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10.2. Chemical stability

Stability	Will decompose at temperatures exceeding 200°C. Stable up to 200 °C.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Not available. Not available.
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10.4. Conditions to avoid

Conditions to avoid	Oxidising materials.
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10.5. Incompatible materials

10.6. Hazardous decomposition products

Hazardous decomposition products	No hazardous decomposition products when stored and handled correctly. In the event of fire or during thermal decomposition, phenol and phenolic derivatives are formed.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Species	Rat
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Notes (oral LD₅₀)	The acute oral LD50 is > 2000 and <= 5000 mg/kg.
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Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg)	3,000.0
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Species	Rabbit
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Acute toxicity - inhalation

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Notes (inhalation LC₅₀)	Acute inflammation of the external nares and ulceration of the incisive ducts were observed one day after exposure, but these changes were reversible within the 14-day recovery period.
<u>Skin corrosion/irritation</u>	
Animal data	Erythema/eschar score: No erythema (0). Oedema score: No oedema (0). The skin irritation scores for test animals were zero for erythema and edema at 500 mg of BPA exposure.
<u>Serious eye damage/irritation</u>	
Serious eye damage/irritation	Test species : Himalayan rabbit. Cornea opacity score : 1, Iris score : 1, Conjunctival redness score : 1, Conjunctival chemosis score : 1 - 2 (according to test animal).
<u>Skin sensitisation</u>	
Skin sensitisation	Local Lymph Node Assay (LLNA) - Mouse: Not sensitising.
<u>Germ cell mutagenicity</u>	
Genotoxicity - in vitro	Bacterial reverse mutation test: Negative.
Genotoxicity - in vivo	Chromosome aberration: Negative.
<u>Carcinogenicity</u>	
Carcinogenicity	, Oral, Rat , Oral, Mouse No evidence of carcinogenicity in animal studies.
IARC carcinogenicity	Not listed.
<u>Reproductive toxicity</u>	
Reproductive toxicity - fertility	Two-generation study - 3500 ppm, Oral, Mouse F1 No adverse effects on reproduction or development were detected. The endpoint considered above is NOEL.
Reproductive toxicity - development	Teratogenicity: - NOAEL: 640 mg/kg/day, Oral, Rat Did not increase fetotoxicity and did not affect the incidence of malformation in rat.
<u>Specific target organ toxicity - repeated exposure</u>	
STOT - repeated exposure	NOAEL 50 mg/kg, Oral, Mouse
Target organs	Liver Kidneys

SECTION 12: Ecological Information

12.1. Toxicity

Acute toxicity - fish	LC ₅₀ , 96 hours: 9.4 mg/l, Marinewater fish
Acute toxicity - aquatic invertebrates	EC ₅₀ , 48 hours: 10.2 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC ₅₀ , 96 hours: 1.1 mg/l, Marinewater algae Endpoint : growth inhibition.
Acute toxicity - microorganisms	Not available.
Acute toxicity - terrestrial	NOEC, 28 days: 100 mg/kg, Test species : Enchytraeus sp.
Chronic toxicity - fish early life stage	NOEC, : 0.640 mg/l, Pimephales promelas (Fat-head Minnow) REACH dossier information. Test duration : 36 day. basis for effect : hatchability, survival, growth.
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: 3.16 mg/l, Daphnia magna

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Toxicity to terrestrial plants NOEC : 20 mg/kg-soil, Test duration : 21 day, Test species : Lycopersicon esculentum, Basis for effect : dry shoot weight.

12.2. Persistence and degradability

Phototransformation - DT₅₀ : 0.13 days
REACH dossier information.

Biodegradation Degradation (%)
Water - 89 %:
Based on O2 Consumption. Test duration : 28 day. Meeting the 10 day window guideline.

12.3. Bioaccumulative potential

Bioaccumulative potential BPA shows the low potential for bioaccumulation in fish. BCF: 20 - 67, Cyprinus carpio (Common carp) Exposure dose : 15 ug/l, exposure duration : 42 day.

Partition coefficient log Pow: 3.4 at 21.5 °C

12.4. Mobility in soil

Adsorption/desorption coefficient Water - log Koc: 2.95 @ °C Test was performed according to OECD Guideline 106.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information If the waste contains designated waste and difficult to separate, incinerate it or reduce the volume following the similar way as incineration. If applicable, pretreat waste with oil/water separation. Waste is suitable for incineration. Disposal to licensed waste disposal site in accordance with local waste disposal authority.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 3077

UN No. (IMDG) 3077

UN No. (ICAO) 3077

14.2. UN proper shipping name

Proper shipping name (ADR/RID) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

Proper shipping name (IMDG) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

Proper shipping name (ICAO) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

Proper shipping name (ADN) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

14.3. Transport hazard class(es)

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ADR/RID class	9
IMDG class	9
ICAO class/division	9

Transport labels**14.4. Packing group**

ADR/RID packing group	III
IMDG packing group	III
ICAO packing group	III

14.5. Environmental hazards**Environmentally hazardous substance/marine pollutant****14.6. Special precautions for user**

EmS	F-A, S-F
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14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

EU legislation	Listed on the candidate list of SVHC for authorisation.
Authorisations (Title VII Regulation 1907/2006)	No specific authorisations are known for this product.
Restrictions (Title VIII Regulation 1907/2006)	Entry number: '66

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet	SVHC: Substances of Very High Concern.
Issued by	KIST Europe
Revision date	12/04/2018
Revision	2

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Hazard statements in full

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

H360 May damage fertility or the unborn child.

H411 Toxic to aquatic life with long lasting effects.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.