



SAFETY DATA SHEET

FUEL TANK RESIN PART B

SECTION 1: IDENTIFICATION

GHS PRODUCT IDENTIFIERS:

PRODUCT NAME: MAS Epoxies Fuel Tank Resin Part B
SYNONYMS, TRADE NAMES: MAS Fuel Tank Resin Part A, Fuel Tank Resin Part B
OTHER MEANS OF IDENTIFICATION: Not available

RECOMMENDED USE OF THE CHEMICAL AND RESTRICTIONS ON USE:

USES: Polymer Matrix For Fiber-Reinforced Plastic (FRP)
RESTRICTIONS ON USE: None Identified

SUPPLIER'S DETAILS:

MANUFACTURER/SUPPLIER: Endurance Technologies, Inc.
275 Bridge Point Drive
South Saint Paul, MN 55075, USA
TELEPHONE: +1 651 451 8000
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CONTACT PERSON: Eric Frank

EMERGENCY PHONE NUMBER:

CHEMTREC (24 HRS): USA 1 800 424 9300
CHEMTREC (24 HRS): INTERNATIONAL +1 703 527 3887

SECTION 2: HAZARDS IDENTIFICATION

GHS CLASSIFICATION OF SUBSTANCE OR MIXTURE:

Flammable Liquids: Category 3, H226
Acute Toxicity, Oral: Category 4, H302
Acute Toxicity, Dermal: Category 3, H311
Acute Toxicity, Inhalation: Category 4, H332
Skin Irritation: Category 2, H315
Eye Irritation: Category 2A, H319
Respiratory Sensitization: Category 1A, H334
Skin Sensitization: Category 1, H317
Germ Cell Mutagenicity: Category 2, H341
Carcinogenicity: Category 1, H350
Reproductive Toxicity: Category 1, H360
Specific Target Organ Toxicity: Single Exposure, Category 1, H370
Specific Target Organ Toxicity: Single Exposure, Category 3, H335
Specific Target Organ Toxicity: Repeated Exposure, Category 1, H372
Aspiration Hazard: Category 1, H304
Hazardous to the Aquatic Environment: Acute Category 2, H401

GHS LABEL ELEMENTS:



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HAZARD SYMBOLS:



SIGNAL WORDS:

Danger

HAZARD STATEMENTS:

- H226 Flammable liquid and vapour.
- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H311 Toxic in contact with skin.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects.
- H350 May cause cancer.
- H360 May damage fertility or the unborn child.
- H370 Causes damage to organs (central nervous system).
- H372 Causes damage to organs (blood system, liver, nervous system, respiratory tract/organ) through prolonged or repeated exposure.
- H401 Toxic to aquatic life.

PRECAUTIONARY STATEMENTS:

PREVENTION:

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 Keep container tightly closed.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting equipment.
- P242 Use non-sparking tools.
- P243 Take action to prevent static discharges.
- P260 Do not breathe dust/fume/gas/mist/vapor/spary.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- 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, clothing, and eye/face protection.
- P284 In case of inadequate ventilation wear respiratory protection.

RESPONSE:

- P301+P330+P331+P310 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call POISON CENTER or doctor/physician.
- P303+P361+P364+P353+P352 IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash before reuse. Rinse skin with water/shower. Wash with plenty of soap and water.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.



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P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P308+P311 If exposed or concerned: Call a POISON CENTER or doctor/physician.
P314 Get medical advice/attention if you feel unwell.
P370+P378 In case of fire: Use water spray, foam, dry chemical or carbon dioxide to extinguish.

STORAGE: P403+P233+P235 Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405 Store locked up.

DISPOSAL: P501 Dispose of contents and containers in accordance with local, regional and international regulations.

Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS) – Annex III

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	CONTENT
4,4'-Diaminodiphenyl Methane	101-77-9	30-50%
Benzyl Alcohol	100-51-6	10-25%
Styrene	100-42-5	5-15%
Salicylic Acid	69-72-7	1-5%

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

SECTION 4: FIRST-AID MEASURES

DESCRIPTION OF NECESSARY FIRST-AID MEASURES:

INHALATION: If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.

SKIN: Immediately remove contaminated clothing and shoes. Wash the affected area with plenty of soap and water until no evidence of the chemical remains (at least 15-20 minutes). Launder clothing before reuse. Get medical attention immediately.

EYES: Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Remove contact lenses. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. Get medical attention immediately.

INGESTION: Keep respiratory tract clear. Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Do not give milk or alcoholic beverages. Get medical attention immediately.

MOST IMPORTANT SYMPTOMS AND EFFECTS, ACUTE AND DELAYED:



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SYMPTOMS: Pain. Discomfort. Jaundice. Headache. Nausea. Dizziness. Drowsiness. Irritation. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended. Pre-existing skin problems may be aggravated by prolonged or repeated contact. Persons with sensitive airways (e.g., asthmatics) may react to vapors. See section 11 for additional information.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED, IF NECESSARY:

TREATMENT: Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA:

SUITABLE: Dry chemical, carbon dioxide or alcohol-resistant foam.

UNSUITABLE: High volume water jet.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

UNUSUAL FIRE & EXPLOSION HAZARDS: Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition. Closed container may rupture (due to build up in pressure) when exposed to extreme heat. Do not allow run-off from firefighting to enter drains or water courses.

HAZARDOUS COMBUSTION PRODUCTS: Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See Section 10 Hazardous decomposition products for additional information.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS: Wear self-contained breathing apparatus (SCBA) equipped with a full face piece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations. See section 9 for additional information.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Evacuate personnel to safe areas. Ensure adequate ventilation. Protective Equipment must be worn. See Section 8 for recommendations on the use of personal protective equipment. Avoid contact with skin, eyes and clothing. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

ENVIRONMENTAL PRECAUTIONS: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. This product should not be released into the environment. Inform the respective authorities if spillage cannot be contained.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Stop leak if without risk. Move containers from spill area. Contain by diking with sand, earth or other non-combustible material. Wear proper personal protective clothing and equipment. Absorb spill with an inert material. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse.

SECTION 7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Use only in an area equipped with a safety shower. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation. As with



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any chemical product, use good laboratory/workplace procedures. Avoid contact with skin, eyes and clothing. Avoid repeated exposure. Do not cut, puncture, or weld on or near the container. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Avoid inhalation of aerosol, mist, spray, fume or vapor. Avoid drinking, tasting, swallowing or ingesting this product. Wash contaminated clothing before reuse. Discard shoes contaminated with this product.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Keep away from heat, sparks and open flames. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep cool and store in a well-ventilated place. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Empty container contains residual product which may exhibit hazards of product. Do not reuse empty container without commercial cleaning or reconditioning.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS:

CHEMICAL NAME	CAS NUMBER	ACGIH-TWA	ACGIH-STEL
4,4'-Diaminodiphenyl Methane	101-77-9	0.1 ppm	Not available
Benzyl Alcohol	100-51-6	10 ppm	Not available
Styrene	100-42-5	20 ppm	20 ppm, 85 mg/m ³
Salicylic Acid	69-72-7	Not available	Not available

APPOPRIATE ENGINEERING CONTROLS: Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation. Ventilation must be adequate to maintain air concentrations below occupational exposure standards. When necessary use mechanical handling to reduce human contact with materials.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT (PPE):

EYE/FACE PROTECTION:	Tightly fitting safety goggles, safety glasses with side shields and/or full face-shield is required.
SKIN PROTECTION:	Wear chemical resistant (impervious) gloves; PVC, neoprene, nitrile rubber, EVAL, butyl rubber. Wear chemical resistant protective clothing. Workers should wear antistatic footwear.
RESPIRATORY PROTECTION:	Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the applicable exposure limit(s) of any chemical substance listed in this SDS.
GENERAL PROTECTION:	Eyewash fountains and safety showers are recommended in the work area.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Liquid	UPPER/LOWER FLAMMABILTY OR EXPLOSIVE LIMITS:	Not available
COLOR:	Brown	VAPOUR PRESSURE:	<4.5 mm Hg at 20°C
ODOUR:	Sweet	VAPOUR DENSITY:	Heavier than air
ODOUR THRESHOLD:	Not available	RELATIVE DENSITY:	1.11



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PH:	Not available	SOLUBILITY(IES):	Soluble
MELTING POINT/ FREEZING POINT	Not available	PARTITION COEFFICIENT (n-octanol/water):	Not available
INITIAL BOILING POINT AND BOILING RANGE:	>145°C	AUTO-IGNITION TEMPERATURE:	Not available
FLASH POINT:	>31°C Closed Cup	DECOMPOSITION TEMPERATURE:	Not available
EVAPORATION RATE:	Not available	VISCOSITY:	500 cP at 25°C
FLAMMABILITY (SOLID, GAS):	Not available		

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY: Exothermic reactions including polymerization may occur in contact with strong acids, oxidizing agents and excessive heat.

CHEMICAL STABILITY: Stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS: Exothermic reactions including polymerization may occur in contact with strong acids, oxidizing agents and excessive heat.

CONDITIONS TO AVOID: Heat, flames and sparks.

INCOMPATIBLE MATERIALS: Oxidizing agents. Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce smoke, carbon monoxide, carbon dioxide, aldehydes, oxides of nitrogen and other products of incomplete combustion.

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON THE LIKELY ROUTES OF EXPOSURE: Eyes, skin, inhalation and ingestion.

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:

EYES:	Causes serious eye irritation.
SKIN:	Toxic in contact with skin. Danger of serious damage to health by prolonged exposure in contact with skin. May cause sensitization by skin contact.
INHALATION:	Harmful by inhalation. Danger of serious damage to health by prolonged exposure through inhalation. Irritating to mucous membranes. Irritating to respiratory system.
INGESTION:	Harmful if swallowed. Danger of serious damage to health by prolonged exposure if swallowed. May cause irritation of the digestive tract.

DELAYED AND IMMEDIATE EFFECTS AND ALSO CHONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE: Further information is not available.

ACUTE TOXICITY:

CHEMICAL NAME	LC₅₀ INHALATION (RAT)	LD₅₀ ORAL (RAT)	LD₅₀ DERMAL (RABBIT)
4,4'-Diaminodiphenyl Methane	>0.85 mg/L	335 mg/kg	200 mg/kg
Benzyl Alcohol	>4.17 mg/L	1,620 mg/kg	Not available
Styrene	11.8 mg/L	>5,000 mg/kg	>2,000 mg/kg
Salicylic Acid	Not available	891 mg/kg	>10,000 mg/kg

CORROSION / IRRITATION / SENSITIZATION INFORMATION:

SKIN CORROSION/IRRITATION:	Skin irritation – Category 2
SERIOUS EYE DAMAGE/IRRITATION:	Eye irritation – Category 2A



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RESPIRATORY OR SKIN SENSITIZATION: Respiratory sensitization – Category 1A
Skin sensitization – Category 1

CARCINOGENICITY / MUTAGENICITY / REPRODUCTIVE TOXICOLOGY INFORMATION:

GERM CELL MUTAGENICITY: Category 2. May cause heritable genetic damage.
Possible risk of irreversible effects.

CARCINOGENICITY: Category 1. May cause cancer. 4,4'-Diaminodiphenyl Methane is listed as a carcinogen by ACGIH, IARC, NTP and OSHA. California Proposition 65 – Carcinogen List.

REPRODUCTIVE TOXICITY: Category 1. May damage fertility or the unborn child.

SPECIFIC TARGET ORGAN TOXICITY (STOT):

STOT-SINGLE EXPOSURE: Category 1. Causes damage to organs (central nervous system).
Category 3. May cause respiratory irritation.

STOT-REPEATED EXPOSURE: Category 1. Causes damage to organs (blood system, liver, nervous system, respiratory tract/organ) through prolonged or repeated exposure.

ASPIRATION HAZARD: May be fatal if swallowed and enters airways.

OTHER INFORMATION: Solvents such as styrene may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY:

CHEMICAL NAME	TEST	SPECIES	RESULT
4,4'-Diaminodiphenyl Methane	EC50 (72 hrs)	Freshwater Algae	21 mg/L
	EC50 (5 min)	Photobacterium Phosphoreum	5.99 mg/L
	EC50 (15 min)	Photobacterium Phosphoreum	6.57 mg/L
	EC50 (30 min)	Photobacterium Phosphoreum	6.57 mg/L
	EC50 (1 hr)	Photobacterium Phosphoreum	6.6 mg/L
Benzyl Alcohol	LC50 (96 hrs)	Fathead Minnow	460 mg/L
	LC50 (96 hrs)	Bluegill	10 mg/L
	EC50 (48 hrs)	Daphnia Magna	230 mg/L
	EC50 (72 hrs)	Algae	770 mg/L
Styrene	LC50 (96 hrs)	Fathead Minnow	4.02 mg/L
	EC50 (48 hrs)	Daphnia Magna	4.7 mg/L
	EC50 (72 hrs)	Algae	4.9 mg/L
	EC10 (96 hrs)	Marine Algae	0.28 mg/L
Salicylic Acid	LC50	Golden Orfe	90 mg/L
	EC50 (24 hrs)	Daphnia Magna	105 mg/L

PERSISTENCE AND DEGRADABILITY:



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CHEMICAL NAME	TEST	PERIOD	RESULT
4,4'-Diaminodiphenyl Methane	Not available		
Benzyl Alcohol	OECD 301A Ready Biodegradability – DOC Die Away test	21 days	95-97%
Styrene	OECD 301C Readily Biodegradable	28 days	92-96%
Salicylic Acid	Not available.		
	Not available		

BIOACCUMULATIVE POTENTIAL:

CHEMICAL NAME	Log P _{ow}	BCF	POTENTIAL
4,4'-Diaminodiphenyl Methane	1.46 at 25°C	<100	Low
Benzyl Alcohol	1.1	Not available	Low
Styrene	Not available	Not available	Not available
Salicylic Acid	Not available	Not available	Not available

MOBILITY IN SOIL:

CHEMICAL NAME	SOIL/WATER PARTITION COEFFICIENT (K _{oc})
4,4'-Diaminodiphenyl Methane	Not available
Benzyl Alcohol	Not available
Styrene	Not available
Salicylic Acid	Not available

OTHER ADVERSE EFFECTS: Additional information is not available

SECTION 13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other state and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. Dispose of unused contents (incineration) in accordance with national and local regulations. The product should not be allowed to enter drains, water courses or the soil. Dispose of container in accordance with national and local regulations. Ensure the use of properly authorized waste management companies, where appropriate. See section 8 for recommendations on the use of personal protective equipment.

SECTION 14. TRANSPORTATION INFORMATION

UN NUMBER: UN1992

UN PROPER SHIPPING NAME:

Flammable Liquid, Toxic, N.O.S. (Contains Styrene Monomer, Inhibited, and 4,4' Methylene Dianiline Mixture)

TRANSPORT HAZARD CLASS:

U.S. DOT HAZARD CLASS:	3 (6.1)
CANADA TDG HAZARD CLASS:	3 (6.1)
EUROPE ADR/RID HAZARD CLASS:	3 (6.1)
IMDG CODE (OCEAN) HAZARD CLASS:	3 (6.1)
ICAO/IATA (AIR) HAZARD CLASS:	3 (6.1)

PACKING GROUP: III



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ENVIRONMENTAL HAZARDS:

MARINE POLLUTANT: Yes
HAZARDOUS SUBSTANCE (USA): No

SPECIAL PRECAUTIONS FOR USER: Information is not available.

TRANSPORTING IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 AND THE IBC CODE:
Information is not available.

LABEL FOR CONVEYANCE:



OTHER INFORMATION: Information not available.

SECTION 15. REGULATORY INFORMATION

SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE PRODUCT IN QUESTION:

U.S. Superfund Amendments and Reauthorization Act (SARA) – SARA Section 313	4,4'-Diaminophenyl Methane (CAS 101-77-9) Styrene (CAS 100-42-5)
EU Regulation (EC) No. 1907/2006 (REACH) Annex XIV – List of substances subject to authorization, Substances of very high concern	None of the components are listed.
Annex XVII – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	None of the components are listed.

OTHER REGULATIONS: Additional information is not available.

CHEMICAL INVENTORIES:

Canadian Domestic Substances List (DSL):	Y
Canadian Non-Domestic Substances List (NDSL):	N
European Inventory of Existing Chemical Substances (EINECS):	Y
European List of Notified Chemical Substances (ENCS):	N
U.S. Toxic Substances Control Act (TSCA):	Y

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory; 2) no information is available; or 3) the component has not been reviewed.

SECTION 16. OTHER INFORMATION

REVISION DATE: May 11, 2015

LEGEND: ACGIH: American Conference of Governmental Industrial Hygienists
ADR/RID: European dangerous goods transport road and rail regulations
CAS No: Chemical Abstract Service Registry Number
DOT: Department of Transportation (U.S.)
GHS: Globally Harmonized System of Classification and Labeling of Chemicals
IATA: International Air Transport Association



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ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods code
OEL: Occupational Exposure Limits
OSHA: Occupational Safety and Health Administration (U.S.)
PEL: Permissible Exposure Limit
RQ: Reportable Quantity
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit (15 minute Time Weighted Average)
TDG: Canadian Transportation of Dangerous Goods Act and Regulations
UN: United Nations
U.S.: United States

USERS RESPONSIBILITY/DISCLAIMER OF LIABILITY:

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