

## Chemical Safety Data Sheet MSDS / SDS

**STARBURST (PAMAM) DENDRIMER, GENERATION 9,5 WT. % SOLUTION IM METHYL ALCOHOL**Revision Date:2026-05-30 Revision Number:1

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

Product name : STARBURST (PAMAM) DENDRIMER, GENERATION 9,5 WT. % SOLUTION IM METHYL ALCOHOL  
CBnumber : CB1972386  
CAS : 163442-72-6  
Synonyms : pamam dendrimer, generation 9 solution;PAMAM dendrimer, ethylenediamine core, generation 9.0 solution

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

**Company Identification**

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

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**SECTION 2: Hazards identification****GHS Label elements, including precautionary statements**

Symbol(GHS)



Signal word

Danger

**Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

**Hazard statements**

H225 Highly Flammable liquid and vapour  
H370 Causes damage to organs

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**SECTION 3: Composition/information on ingredients****Substance**

|              |   |
|--------------|---|
| Product name | : STARBURST (PAMAM) DENDRIMER, GENERATION 9,5 WT. % SOLUTION IM METHYL ALCOHOL                          |
| Synonyms     | : pamam dendrimer, generation 9 solution;PAMAM dendrimer, ethylenediamine core, generation 9.0 solution |
| CAS          | : 163442-72-6   |
| MF           | : [NH2(CH2)2NH2];(G=9);dendriPAMAM(NH2)2048   |

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## SECTION 4: First aid measures

### General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

### If swallowed

After swallowing: fresh air. Make victim drink ethanol (e.g. 1 drinking glass of a 40% alcoholic beverage). Call a doctor immediately (mention methanol ingestion). Only in exceptional cases, if no medical care is available within one hour, induce vomiting (only in fully conscious persons) and make victim drink ethanol again (approx. 0.3 ml of a 40% alcoholic beverage/kg body weight/hour).

### Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

### Protection of first-aiders

For personal protection see section 8.

### Notes to physician

No data available

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## SECTION 5: Firefighting measures

### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### Specific hazards during fire fighting

Pay attention to flashback. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at ambient temperatures.

## **Hazardous combustion products**

Carbon oxides Nitrogen oxides (NO<sub>x</sub>)

## **Specific extinguishing methods**

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## **Special protective equipment for fire-fighters**

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

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# SECTION 6: Accidental release measures

## **Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.

## **Environmental precautions**

Do not let product enter drains. Risk of explosion.

## **Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material. Dispose of properly. Clean up affected area.

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# SECTION 7: Handling and storage

## **Handling**

### **Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

### **Avoidance of contact**

Strong oxidizing agents

## **Storage**

### **Further information on storage conditions**

Keep container tightly closed in a dry and wellventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

### **Storage class**

3, Flammable liquids

### **Recommended storage temperature**

2 - 8 °C

#### **Further information on storage stability**

Hygroscopic.

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## SECTION 8: Exposure controls/personal protection

### **Ingredients with workplace control parameters**

Biological occupational exposure limits

### **Engineering measures**

No data available

### **Personal protective equipment**

#### **Respiratory protection**

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

#### **Recommended Filter type**

Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

#### **Eye/face protection**

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Safety glasses

#### **Skin and body protection**

Flame retardant antistatic protective clothing.

#### **Hand protection**

#### **Remarks**

required

#### **Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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## SECTION 9: Physical and chemical properties

### **Information on basic physicochemical properties**

liquid

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#### **Color**

No data available

#### **Odor**

No data available

**Odor Threshold**

No data available

**pH**

No data available

**Melting point/ range**

No data available

**Boiling point/boiling range**

No data available

**Flash point**

9.7 °C

**Evaporation rate**

No data available

**Flammability (solid, gas)**

No data available

**Flammability (liquids)**

No data available

**Burning rate**

No data available

**Upper explosion limit / Upper flammability limit**

No data available

**Lower explosion limit / Lower flammability limit**

No data available

**Vapor pressure**

No data available

**Relative vapor density**

No data available

**Relative density**

0.807 g/mL at 25 °C

**Density**

0.807 g/mL (25 °C)

**Water solubility**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition temperature**

No data available

**Decomposition temperature**

No data available

**Viscosity, dynamic**

No data available

**Viscosity, kinematic**

No data available

**Flow time**

No data available

**Explosive properties**

Not classified as explosive.

**Oxidizing properties**

none

**Particle characteristics Particle size**

No data available

**Physical state**

5 wt.% in methanol

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## SECTION 10: Stability and reactivity

**Reactivity**

Vapors may form explosive mixture with air.

**Chemical stability**

The product is chemically stable under standard ambient conditions (room temperature) .

**Possibility of hazardous reactions**

No data available

**Conditions to avoid**

Warming.

## Incompatible materials

Strong oxidizing agents

## Hazardous decomposition products

In the event of fire: see section 5

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# SECTION 11: Toxicological information

## 11.1 Information on toxicological effects

### Mixture Acute toxicity

Oral: No data available

Acute toxicity estimate Inhalation - 4 h - 3.26 mg/l - vapor (Calculation method)

Acute toxicity estimate Dermal - 315.89 mg/kg (Calculation method)

### Skin corrosion/irritation

Classified based on available data. For more details, see section 2

### Serious eye damage/eye irritation

Classified based on available data. For more details, see section 2

### Respiratory or skin sensitization

Classified based on available data. For more details, see section 2

### Germ cell mutagenicity

Classified based on available data. For more details, see section 2

### Carcinogenicity

Classified based on available data. For more details, see section 2

### Reproductive toxicity

Classified based on available data. For more details, see section 2

### Specific target organ toxicity - single exposure

Mixture causes damage to organs. - Eyes

### Specific target organ toxicity - repeated exposure

Classified based on available data. For more details, see section 2

### Aspiration hazard

Classified based on available data. For more details, see section 2

## 11.2 Additional Information

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

### Components Methanol

#### Acute toxicity

Acute toxicity estimate Oral - 100.1 mg/kg (Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: Nausea, Vomiting

Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapor (Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: Irritation symptoms in the respiratory tract.

Acute toxicity estimate Dermal - 300.1 mg/kg (Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

#### **Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation

Remarks: (ECHA)

Remarks: Drying-out effect resulting in rough and chapped skin.

#### **Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

Remarks: (ECHA)

#### **Respiratory or skin sensitization**

Sensitisation test: - Guinea pig

Result: negative (OECD Test Guideline 406)

#### **Germ cell mutagenicity**

Based on available data the classification criteria are not met.

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster lung cells

Result: negative

Method: OECD Test Guideline 474

Species: Mouse - male and female - Bone marrow

Result: negative

#### **Carcinogenicity**

Did not show carcinogenic effects in animal experiments.

#### **Reproductive toxicity**

Based on available data the classification criteria are not met.

#### **Specific target organ toxicity - single exposure**

Causes damage to organs. - Eyes, Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute oral toxicity - Nausea, Vomiting

Acute inhalation toxicity - Irritation symptoms in the respiratory tract.

#### **Specific target organ toxicity - repeated exposure**

Classified based on available data. For more details, see section 2

#### **Aspiration hazard**

Classified based on available data. For more details, see section 2

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## SECTION 12: Ecological information

### **Ecotoxicity**

## Components:

### Methanol:

#### Toxicity to fish

LC50 (Lepomis macrochirus (Bluegill)): 15,400.0 mg/l End point: mortality Exposure time: 96 h Test Type: flow-through test Analytical monitoring: yes Method: US-EPA

#### Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 18,260 mg/l End point: Immobilization Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 202

#### Toxicity to algae/aquatic plants

ErC50 (Pseudokirchneriella subcapitata (green algae)): ca. 22,000.0 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 201

#### Toxicity to fish (Chronic toxicity)

NOEC (Oryzias latipes (Orange-red killifish)): 7,900 mg/l Exposure time: 200 h Remarks: (External MSDS)

#### Toxicity to microorganisms

IC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 209

## Persistence and degradability

## Components:

### Methanol:

#### Biodegradability

Result: Readily biodegradable. Biodegradation: 99 % Exposure time: 30 d Method: OECD Test Guideline 301D

#### Biochemical Oxygen Demand (BOD)

600 - 1,120 mg/g Incubation time: 5 d Remarks: (IUCLID)

#### Chemical Oxygen Demand (COD)

1,420 mg/g Remarks: (IUCLID)

#### ThOD

1,500 mg/g Remarks: (Lit.)

#### BOD/ThOD

76 % Remarks: Closed Bottle test (IUCLID)

#### Stability in water

Hydrolysis: 83 - 91 % at 19 °C(72 h) Remarks: Hydrolyzes on contact with water. Hydrolyzes readily. Degradation half life: 2.2 yr Remarks: reaction with hydroxyl radicals (IUCLID)

#### Photodegradation

Degradation (direct photolysis): 50 % Degradation half life: 17.2 d

## Bioaccumulative potential

## Components:

### Methanol:

#### Bioaccumulation

Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 1.0 Exposure time: 72 d Temperature: 20 °C Concentration: 5 mg/l

**Partition coefficient: noctanol/water**

log Pow: -0.77 (25 °C) Method: (experimental) Remarks: (HSDB) Bioaccumulation is not expected.

**Mobility in soil**

**Components:**

**Methanol:**

**Stability in soil**

Remarks: Will not adsorb on soil.

**Other adverse effects**

**Components:**

**Methanol:**

**Results of PBT and vPvB assessment**

Substance is not persistent, bioaccumulative, and toxic (PBT).

**Additional ecological information**

Avoid release to the environment.

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## SECTION 13: Disposal considerations

**Disposal methods**

**Waste from residues**

Offer surplus and non-recyclable solutions to a licensed disposal company.

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## SECTION 14: Transport information

**International Regulations**

**IATA-DGR**

UN/ID No. : UN 1230

Proper shipping name : Methanol solution

Class : 3

Subsidiary risk : 6.1

Packing group : II

Labels : Class 3 - Flammable liquids, Division 6.1 - Toxic substances

Packing instruction (cargo aircraft) : 364

Packing instruction (passenger aircraft) : 352

**IMDG-Code**

UN number : UN 1230  
Proper shipping name : METHANOL SOLUTION  
Class : 3  
Subsidiary risk : 6.1  
Packing group : II  
Labels : 3 (6.1)  
EmS Code : F-E, S-D  
Marine pollutant : no

### **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

National regulation GB 6944/12268

UN number : UN 1230

Proper shipping name : METHANOL

Class : 3

Subsidiary risk : 6.1

Packing group : II

Labels : 3 (6.1)

### **Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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## SECTION 15: Regulatory information

### **National regulatory information**

#### **Law on the Prevention and Control of Occupational Diseases**

#### **Regulations on Safety Management of Hazardous Chemicals**

#### **Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218)**

#### **No. / Code Chemical name / Category Threshold quantity**

#### **W5.3 Flammable liquids 1,000 t**

#### **Catalogue of Specially Controlled Hazardous**

Listed Chemicals

#### **List of Explosive Precursors**

Not listed

#### **Regulation on the Administration of Precursor Chemicals**

## **Catalogue and Classification of Precursor Chemicals**

Not listed

## **Regulations on the Administration of Controlled Chemicals**

### **List of Controlled Chemicals**

Not listed

## **Regulations of Ozone Depleting Substances Management**

### **List of Controlled Ozone Depleting Substances**

Not listed

### **List of Controlled Ozone Depleting Substances Import and Export**

Not listed

## **Environmental Protection Law**

### **List of Priority Controlled Chemicals**

Not listed

### **List of Key Controlled New Pollutants**

Not listed

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## SECTION 16: Other information

### **Full text of other abbreviations**

#### **ACGIH**

USA. ACGIH Threshold Limit Values (TLV)

#### **ACGIH BEI**

ACGIH - Biological Exposure Indices (BEI)

#### **GBZ 2.1-2007**

Occupational exposure limits for hazardous agents in the workplace - Chemical hazardous agents.

#### **ACGIH / TWA**

8-hour, time-weighted average

#### **ACGIH / STEL**

Short-term exposure limit

#### **GBZ 2.1-2007 / PC-TWA**

Permissible concentration - time weighted average

**GBZ 2.1-2007 / PC-STEL AIC - Australian Invent Transport by Land of Bra bw - Body weight; CMR Standard of the German List (Canada); ECx - Conc associated with x% respo Chemical Substances (Jap response; ERG - Emerge GLP - Good Laboratory P cer; IATA - International Construction and Equipm Half maximal inhibitory c tion; IECSC - Inventory o tional Maritime Dangerou Industrial Safety and H Standardization; KECl - K tration to 50 % of a test (Median Lethal Dose); MA lution from Ships; n.o.s. No**

**Observed (Adverse) Effect Level; NOELR - No Norm; NTP - National Toxicals; OECD - Organization of Chemical Safety and Toxic substance; PIC stances; (Q)SAR - (Quant (EC) No 1907/2006 of the Registration, Evaluation, Accelerating Decomposition Chemical Substance in Thailand Existing Chemical States); UN - United Nations Transport of Dangerous WHMIS - Workplace Hazardous Materials Information System**  
 Permissible concentration - short term exposure limit of Industrial Chemicals  
 ANTT - National Agency for Environment  
 ASTM - American Society for the Testing of Materials  
 - Carcinogen, Mutagen or Reproductive Toxicant  
 DIN - Institute for Standardisation  
 DSL - Domestic Substances Notification associated with x% response  
 ELx - Loading rate  
 EmS - Emergency Schedule  
 ENCS - Existing and New Chemicals  
 ErCx - Concentration associated with x% growth rate of Response Guide  
 GHS - Globally Harmonized System  
 IARC - International Agency for Research on Cancer  
 IBC - International Code for the Construction of Ships carrying Dangerous Chemicals in Bulk  
 IC50 - Concentration  
 ICAO - International Civil Aviation Organization - Existing Chemical Substances in China  
 IMDG - International Maritime Dangerous Goods  
 IMO - International Maritime Organization  
 ISHL - International Safety Law (Japan)  
 ISO - International Organisation for Standardization  
 LC50 - Lethal Concentration  
 LD50 - Lethal Dose to 50% of a test population  
 POL - International Convention for the Prevention of Pollution from Ships - Not Otherwise Specified  
 NCh - Chilean Norm  
 NO(A)EC - No Observed (Adverse) Effect Concentration  
 NO(A)EL - No Observed (Adverse) Effect Loading Rate  
 NOM - Official Mexican Standard  
 NZIoC - New Zealand Inventory of Chemicals for Economic Co-operation and Development  
 OPPTS - Office of Pollution Prevention and Control  
 PBT - Persistent, Bioaccumulative and Toxic - Philippines Inventory of Chemicals and Chemical Substances Structure Activity Relationship  
 REACH - Regulation of the European Parliament and of the Council concerning the Restriction and Regulation of Chemicals  
 SADT - Self-Heating Temperature  
 SDS - Safety Data Sheet  
 TCSI - Taiwan Chemical Safety Information  
 TDG - Transportation of Dangerous Goods  
 TECS - Toxic Chemicals Inventory  
 TSCA - Toxic Substances Control Act (United States)  
 UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods  
 vPvB - Very Persistent and Very Bioaccumulative  
 WHMIS - Workplace Hazardous Materials Information System

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.