

XIBOND® 180

Version number: 2.0
Replaces version of: 2021-05-05 (1.0)

Revision: 2021-09-22

SECTION 1: Identification

1.1 Product identifier

Trade name **XIBOND® 180**
 Identification of the substance **2,5-furandione, polymer with ethenyl benzene**
 CAS number 9011-13-6

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

Relevant identified uses Industrial use

1.3 Details of the supplier of the safety data sheet

Aurorium Netherlands B.V.
 Prins de Lignestraat 28
 6161 CZ Geleen
 Netherlands

Telephone: +31467500010
 productstewardship@aurorium.com
 Website: www.aurorium.com

e-mail (competent person) productstewardship@aurorium.com

1.4 Emergency telephone number

| Country | Name | Telephone |
|---------------|--------------|---|
| United States | ChemTel Inc. | 1-800-255-3924 (international: +01-813-248-0585) |

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

| Section | Hazard class | Category | Hazard class and category | Hazard statement |
|---------|------------------|------------|---------------------------|------------------|
| B.cD | combustible dust | Comb. Dust | cD | OSHA003 |

For full text of abbreviations: see SECTION 16.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- signal word Warning
- pictograms Not required.
- hazard statements
OSHA003 May form combustible dust concentrations in air.

2.3 Other hazards

Dust explosion hazards.

Hazards not otherwise classified

Contains maleic acid. May produce an allergic reaction.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

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Endocrine disrupting properties
The substance has an endocrine disrupting potential.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance 2,5-furandione, polymer with ethenyl benzene
Identifiers
CAS No 9011-13-6

| Impurities and additives, classification acc. to GHS | | | | |
|--|-----------------|--------|---|--|
| Name of substance | Identifier | Wt% | Classification acc. to GHS | Pictograms |
| Styrene | CAS No 100-42-5 | ≤ 0.1 | Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 STOT SE 3 / H335 STOT RE 1 / H372 Asp. Tox. 1 / H304 Flam. Liq. 3 / H226 |  |
| maleic acid | CAS No 110-16-7 | < 0.02 | Acute Tox. 4 / H302 Acute Tox. 4 / H312 Skin Corr. 1 / H314 Eye Dam. 1 / H318 Skin Sens. 1 / H317 STOT SE 3 / H335 |  |

Remarks

For full text of H-phrases: see SECTION 16.

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician.

Following skin contact

Brush off loose particles from skin. Rinse skin with water/shower. Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

Following eye contact

Do not rub the eyes. Mechanical stress can cause damage to the cornea. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Following ingestion

Rinse mouth with water (only if the person is conscious). Call a POISON CENTER or doctor/physician if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

For specialist advice physicians should contact the poison centre.

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SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water; Foam; Dry extinguishing powder; ABC-powder;
Coordinate firefighting measures to the fire surroundings.

Unsuitable extinguishing media

Water jet.

5.2 Special hazards arising from the substance or mixture

Danger of dust explosion. Deposited combustible dust has considerable explosion potential. Vapours and fumes, released at elevated processing temperatures, may be irritating for the eyes, nose, throat and respiratory system. In case of overexposure they can cause nausea and headache.

Hazardous combustion products

During fire hazardous fumes/smoke could be produced.

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Ventilate affected area. Control of dust.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases. Wear personal protective equipment/face protection.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains. Take up mechanically.

Advice on how to clean up a spill

Take up mechanically.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas. Only vacuum cleaners containing no ignition sources may be used for combustible dusts. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools.

- specific notes/details

Layers, deposits and heaps of combustible dust must be considered, like any other source which can form a hazardous explosive atmosphere. Dust deposits may accumulate on all deposition surfaces in a technical room. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion. Danger of dust explosion.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- explosive atmospheres

Removal of dust deposits. Only vacuum cleaners containing no ignition sources may be used for combustible dusts.

- flammability hazards

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge.

- incompatible substances or mixtures

Keep away from alkalis, oxidising substances, acids.

Control of the effects

Protect against external exposure, such as

High temperatures. UV-radiation/sunlight.

Consideration of other advice

Store in a well-ventilated place. Keep container tightly closed. Recommended storage temperature: <50 °C.

- ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

7.3 Specific end use(s)

There is no additional information.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

| Occupational exposure limit values (Workplace Exposure Limits) | | | | | | | | | |
|--|--|--------|------------|-----------|--------------------------|------------|---------------------------|-----------------|------------------|
| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m ³] | STEL [ppm] | STEL [mg/m ³] | Notation | Source |
| US | particulates not otherwise classified (PNOC) | | PEL | 1,766 | 15 | | | i, dust | 29 CFR 1910.1000 |
| US | particulates not otherwise classified (PNOC) | | PEL | 529.5 | 5 | | | partml, r, dust | 29 CFR 1910.1000 |

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| Occupational exposure limit values (Workplace Exposure Limits) | | | | | | | | | |
|--|---------------|----------|------------|-----------|--------------------------|-------------|---------------------------|-----------|------------------|
| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m ³] | STEL [ppm] | STEL [mg/m ³] | Notation | Source |
| US | styrene | 100-42-5 | TLV® | 10 | | 20 | | | ACGIH® 2021 |
| US | styrene | 100-42-5 | PEL | 100 | | 600 (5 min) | | dur-5m-3h | 29 CFR 1910.1000 |

Notation

| | |
|-----------|--|
| dur-5m-3h | 5 min. in any 3 hours |
| dust | as dust |
| i | inhalable fraction |
| part/ml | particles/ml |
| r | respirable fraction |
| STEL | short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified) |
| TWA | time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified) |

Biological limit values

| Biological limit values | | | | | | |
|-------------------------|---------------------|-----------------------------------|----------|------------|----------|-------------|
| Country | Name of agent | Parameter | Notation | Identifier | Value | Source |
| US | ethylbenzene | mandelic acid, benzoylformic acid | crea | BEI® | 0.15 g/g | ACGIH® 2021 |
| US | styrene | styrene | | BEI® | 40 µg/l | ACGIH® 2021 |
| US | styrene | mandelic acid, benzoylformic acid | crea | BEI® | 400 mg/g | ACGIH® 2021 |
| US | aniline | aniline | hydr | BEI® | 0.5 mg/l | ACGIH® 2021 |
| US | methyl ethyl ketone | methyl ethyl ketone | | BEI® | 2 mg/l | ACGIH® 2021 |

Notation

| | |
|------|------------|
| crea | creatinine |
| hydr | hydrolysis |

Relevant DNELs/DMELs/PNECs and other threshold levels

No data available.

8.2 Exposure controls

Appropriate engineering controls

Provide mechanical ventilation; in general such ventilation should be provided at compounding/converting areas and at fabricating/ filling work stations where the material is heated. Local exhaust ventilation should be used over and in the vicinity of machinery involved in handling the molten material. Emissions from ventilation or work process equipment should be checked to ensure they comply with the legal requirements.

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection.
Use heat resistant face shield when handling molten product

Skin protection



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Chemical protective clothing.

- hand protection



Use heat resistant gloves when handling molten product.

- type of material

Nitrile rubber

- material thickness

Use gloves with a minimum material thickness: $\geq 0,38$ mm.

- other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling. Provide eyewash stations and safety showers at the workplace.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Observe the OSHA respirator regulations cited in 29 CFR 1910.134 and use NIOSH/MSHA approved respirators.

Environmental exposure controls

Keep away from drains, surface and ground water. Emissions from ventilation or work process equipment should be checked to ensure they comply with the legal requirements.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

| | |
|----------------|---------------------|
| Physical state | solid (granulate) |
| Color | various |
| Particle | no data available |
| Odor | characteristic weak |

Other safety parameters

| | |
|---|-----------------------------------|
| pH (value) | not applicable |
| Melting point/freezing point | this information is not available |
| Initial boiling point and boiling range | not applicable |
| Flash point | >375 °C |
| Evaporation rate | not applicable |
| Flammability (solid, gas) | not applicable |
| Explosion limits of dust clouds | not determined |
| Vapor pressure | not applicable |
| Density | 1.1 – 1.2 g/cm ³ |
| Vapor density | this information is not available |

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| | |
|-----------------------------|-----------------------------------|
| Solubility(ies) | not determined |
| - n-octanol/water (log KOW) | this information is not available |
| Auto-ignition temperature | >480 °C |
| Decomposition temperature | >275 °C |
| Viscosity | not relevant (solid matter) |
| Explosive properties | dust explosion hazards |
| Oxidizing properties | this information is not available |

9.2 Other information

| | |
|---|----------------------------|
| Minimum ignition temperature (dust cloud) | >480 °C |
| Minimum ignition energy | 4-5 mJ (dust/air mixtures) |

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

10.4 Conditions to avoid

Avoid prolonged exposure to heat or UV light since this may influence material properties. Material will burn when exposed to continuing source of ignition. When heated above decomposition temperature toxic fumes may be released. Recommended storage temperature: <50 °C.

Hints to prevent fire or explosion

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

10.5 Incompatible materials

Acids, Oxidizers, Alkalis

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic.

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitization

Contains maleic acid. May produce an allergic reaction. As the residual maleic anhydride in our products will hydrolyze to its corresponding acid form, the maleic anhydride is not applicable to our products.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Other information

Fine dust may be irritating for the skin, eyes and respiratory tract. Skin contact with molten material can cause burns.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

12.2 Persistence and degradability

Based on previous experience, this product is non-degradable.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Endocrine disrupting properties

The product contains low amount of a substance(s) with an endocrine disrupting potential.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packages

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

- | | |
|--|---|
| 14.1 UN number | not subject to transport regulations |
| 14.2 UN proper shipping name | not relevant |
| 14.3 Transport hazard class(es) | not assigned |
| 14.4 Packing group | not assigned |
| 14.5 Environmental hazards | non-environmentally hazardous acc. to the dangerous goods regulations |
| 14.6 Special precautions for user | There is no additional information. |
| 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code | No data available. |

Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - additional information

Not subject to transport regulations.

International Maritime Dangerous Goods Code (IMDG) - additional information

Not subject to IMDG.

International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Not subject to ICAO-IATA.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) substance is listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

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| Category | Rating | Description |
|---------------------|--------|--|
| Chronic | * | chronic (long-term) health effects may result from repeated overexposure |
| Health | 0 | no significant risk to health |
| Flammability | 2 | material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur |
| Physical hazard | 0 | material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive |
| Personal protection | - | |

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

| Category | Degree of hazard | Description |
|----------------|------------------|--|
| Flammability | 2 | material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur |
| Health | 0 | material that, under emergency conditions, would offer no hazard beyond that of ordinary combustible material |
| Instability | 0 | material that is normally stable, even under fire conditions |
| Special hazard | | |

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance by the supplier.

SECTION 16: Other information, including date of preparation or last revision

Indication of changes (revised safety data sheet)

Complete revision of the safety data sheet.

Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|------------------|--|
| 29 CFR 1910.1000 | 29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits) |
| 49 CFR US DOT | 49 CFR U.S. Department of Transportation |
| ACGIH® 2021 | From ACGIH®, 2021 TLVs® and BEIs® Book. Copyright 2021. Reprinted with permission. Information on the proper use of the TLVs® and BEIs®: http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/tlv-bei-position-statement |
| Acute Tox. | Acute toxicity |
| Asp. Tox. | Aspiration hazard |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DMEL | Derived Minimal Effect Level |
| DNEL | Derived No-Effect Level |
| Eye Dam. | Seriously damaging to the eye |
| Eye Irrit. | Irritant to the eye |
| Flam. Liq. | Flammable liquid |

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| Abbr. | Descriptions of used abbreviations |
|----------------|---|
| GHS | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations |
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| ICAO | International Civil Aviation Organization |
| IMDG | International Maritime Dangerous Goods Code |
| MARPOL | International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant") |
| NPCA-HMIS® III | National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition |
| OSHA | Occupational Safety and Health Administration (United States) |
| PBT | Persistent, Bioaccumulative and Toxic |
| PEL | Permissible exposure limit |
| PNEC | Predicted No-Effect Concentration |
| ppm | Parts per million |
| Skin Corr. | Corrosive to skin |
| Skin Irrit. | Irritant to skin |
| Skin Sens. | Skin sensitization |
| STEL | Short-term exposure limit |
| STOT RE | Specific target organ toxicity - repeated exposure |
| STOT SE | Specific target organ toxicity - single exposure |
| TLV® | Threshold Limit Values |
| TWA | Time-weighted average |
| vPvB | Very Persistent and very Bioaccumulative |

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

| Code | Text |
|------|---|
| H226 | Flammable liquid and vapor. |
| H302 | Harmful if swallowed. |
| H304 | May be fatal if swallowed and enters airways. |
| H312 | Harmful in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |



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acc. to 29 CFR 1910.1200 App D

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| Code | Text |
|---------|---|
| H332 | Harmful if inhaled. |
| H335 | May cause respiratory irritation. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| OSHA003 | May form combustible dust concentrations in air. |

Disclaimer

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. The information, data and recommendations are made to the best ability and obtained from reliable sources. Completeness is not guaranteed. This SDS is intended only as a guideline for the treatment of our products and provides no guarantee of product properties or contractual agreements. It remains the responsibility of the user to meet local and national legislation.