optiprint

zero

3D printing resin for additive manufacturing of castings.

Safety Data Sheet

Created on: 26.11.2021

Valid from: 29.11.2021

1. Description of the substance or mixture and the company

1.1. Product identifier: Additive plastic

1.2 Application: Methacrylate-based resin 3D printing systems with 385 nm or 405 nm light sources for additive manufacturing of castings.

1.2 Manufacturer:

dentona AG
Otto-Hahn-Str. 27
44227 Dortmund
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E-mail: info@dentona.de
Internet: www.dentona.de

1.4 Emergency number:

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Romania: +40 21318 3606
Slovakia: +421 2 54 77 4 166
Slovenia: +386 41 650 500
Spain: +34 915620420, +34 917689800
Sweden: 08-331231 (Måndag-Fredag; 9.00-17.00, 112 24h)
UK: 0844 892 0111 (UK only, Monday to Friday, 08.00-18.00)

2. Potential hazards

2.1 Classification of substance or mixture according to Regulation (EC) No. 1272/2008:

Skin sens	Cat. 1	H317
Repr.	Cat. 2	H361
Aquatic chronic	Cat. 2	H411
Aquatic chronic	Cat. 4	H413

2.2. Identifying elements according to Regulation (EC) No. 1272/2008:

Symbols and signal word of product

Signal word: hazard

Hazard warnings:

H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H361	Suspected of damaging fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects
H413	May be harmful to aquatic organisms with long-term effects

Safety Tips:

P261	Avoid breathing dust/fume/gas/mist/vapors/spray
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.
P321	Specific treatment (see medical advice on this label)
P333+P313	If skin irritation or rash occurs: Get medical advice / attention.Rinse out mouth
P362+P364	Take off contaminated clothing and wash it before reuse
P391	Collect spillage.
P501	Dispose of contents / container in accordance with local regulations.

2.3 Other hazards:

Substances with classification Rep. 2 (H361), which are used in low concentrations of 1.5-2% w / w and are converted during the polymerization of the uncured products, the toxicological and reprotoxicological risk for the end product is to be assessed as low. According to the REACH regulation, last amended on 01.01.2020) with the reference to point 3.7.3. In Annex I of Regulation (EC) No. 1272/2008, these properties of reprotoxicity category 2 must be from a concentration greater or equal 3% must be stated on the label and in section 2.2 of the safety data sheet!

3. Composition / information on ingredients

3.1 Substances

This product is a mixture

3.2 Mixtures

Composition / information on ingredients

Reagent	Percentage	EC No.: CAS No. REACH Registration No.	Classification according to Regulation (EC) No. 1272/2008	Hazard class and category
Bisphenol A (EO)3 Dimethacrylate	< 45	Company Secret	H413	Aquatic Chronic 4
2,2'-ethylenedioxydiethyl dimethacrylate	< 25	Company Secret	H317	Skin Sens. 1
Aliphatic difuctional methacrylate	< 2,5	Company Secret	H317 H411	Skin Sens. 1B Aquatic Chronic 2
Phosphine Oxide *diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide*	< 1,5	Company Secret	H317 H361	Skin Sens. 1B Repr. 2
Additive	< 35	Company Secret	none	none -

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4. First aid measures

4.1 Description of first aid measures

After inhalation: Remove affected person into fresh air and position in a warm and calm position that breathing easier. Oxygen may be necessary if breathing is difficult. Seek medical help if symptoms persist.
After contact with skin: Remove the contaminated clothing and immediately wash the skin with water and soap. Consult a doctor if irritation persists after washing.
After contact with eyes: In case of contact with eyes, remove contact lenses and immediately with open Rinse the eyelid gap with running water for 10 to 15 minutes and consult an ophthalmologist.
After swallowing: Rinse mouth thoroughly with water. Give plenty of water to drink. The affected Person is to be kept under observation. Seek medical help if symptoms persist. Show this safety data sheet to medical personnel. Never give anything by mouth to an unconscious person or if they have cramps. Call a doctor immediately. Avoid vomiting.

4.2 The most significant acute and delayed occurring symptoms and impact

Skin contact: May cause an allergic skin reaction.

4.3 Information about emergency medical aid or special treatment

Note for the physician: Treat symptomatically

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5. Fire-fighting procedures

5.1. Solvents

Suitable solvents: Water spray, foam, dry fire extinguisher or carbon dioxide.
Unsuitable solvents: Do not use a water jet as an extinguishing agent, as this will cause the fire to spread.

5.2. Particular hazards arising from substance or mixture

Hazardous decomposition products: Thermal decomposition or combustion products may contain the following substances: Carbon oxides.

5.3. Information for fire-fighting:

Safety precautions during fire-fighting: No actions should be taken without appropriate training or which are associated with personal risk.
Particular protective equipment for fire-fighters: Wear self-contained breathing apparatuses (SCBA) and suitable protective clothing.

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6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: At work, wear suitable protective clothing, including gloves, safety goggles / face guard, respiratory protection, boots, or other clothing or an apron as appropriate.
Suitable respiratory protection in the event of inadequate ventilation.

6.2. Environmental protection measures

Environmental protection measures to prevent discharge into the environment.

6.3. Methods and material for retention and cleaning

Methods for cleaning: No smoking, sparks, flames or other ignition sources near spillages. Bind leaked material with sand or another inert absorbent. Collect it and fill a suitable disposal bin, then seal securely. Containers with collected spilled material must have the correct hazard labeling. Spillages must be collected and disposed of in accordance with the information in Section 13.

6.4. Reference to other sections

Reference to other sections: For information on personal protective equipment, see Section 8. Section 13 contains information about waste disposal.

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7. Handling and storage

7.1. Safety precautions for safe handling

Safety precautions during use: Avoid contact with the eyes and skin. Wash contaminated skin thoroughly after handling. The hands and all contaminated parts of the body must be washed with soap and water before leaving the factory premises. Keep away from heat, sparks and open flame. Mechanical suction is required if dust is discharged during handling. Open and handle containers with care. At work, wear suitable safety equipment in the event of longer exposure and / or high concentrations of vapors, spray or mist.

General work hygiene measures

When using the product, do not eat, drink or smoke.

7.2. Conditions for safe storage, taking cases of incompatibility into account

Safety precautions for storage

Store in a cool and dry place in a tightly sealed original container.
Store at temperatures between 5°C and 30°C. Keep away from frost and direct sunlight. Keep away from hot surfaces, sparks, open flames and other types of ignition sources. Do not smoke.

7.3. Specific end uses

Intended end use(s)

The intended uses of this product are described in Section 1.2.

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8. Limitation and monitoring of exposure/personal protective equipment

8.1 Parameters to be monitored:

No maximum allowable concentration(s) is/are known for the ingredient(s).

8.2 Limitation and monitoring of exposure

Protective equipment

Suitable technical controller:
Adequate room ventilation and local aspiration must be ensured. The maximum allowable concentration of the product or ingredients must be observed.

Eye/face protection:
Eye protection corresponding to a recognized standard should be worn if a risk assessment shows that eye contact is possible. The following personal protective clothing should be worn: Chemical safety goggles. Wear close-fitting chemical safety goggles or face protection.

Hand protection:
Wear protective gloves. In accordance with the data specified by the protective glove manufacturers, it is required while using them to check whether the gloves maintain their repellent properties and to change them as soon as damage is detected. In the case of exposure up to 8 hours, protective gloves made of the following material must be worn: Nitrile rubber.

Other skin and personal protection:
Avoid contact with the skin. Wear suitable clothing to prevent possible skin contact.

Hygiene measures:
Wash contaminated skin thoroughly after handling. Before removing the clothing, wash contaminated clothing and skin immediately with plenty of water. Immediately remove all contaminated garments and wash before wearing them again. Contaminated work clothing should not be allowed out of the workplace. When using the product, do not eat, drink or smoke.

Respiratory protection:
If ventilation is inadequate, suitable respiratory protection must be worn. Wear a protective mask with full face protection and the following filter cartridge: Filter against organic vapors. Highly effective particle filters.

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9. Physical and chemical properties
9.1 Information about the fundamental physical and chemical properties

	Value	Unit
Appearance	Liquid	
Odor	Ester	
Color	red	
Melting point	Not determined	
Initial boiling point and boiling range	Not determined	
Flash point	> 160	°C
Inflammability (solid, gaseous)	Not determined	
Upper/lower inflammability or explosion limits	Not determined	
Vapor pressure	Not determined	
Relative density	1.1	g/cm³
Solubility	Insoluble in water	
Soluble in most organic solvents		
Viscosity	Approx. 700-1200	Pa s
pH	Not determined	

9.2 Other information

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10. Stability and reactivity

10.1 Reactivity

Reactivity: No information is available

10.2 Chemical stability

Stability: Stable at normal room temperatures

10.3 Possible hazardous reactions

Possible hazardous reactions May polymerize

10.4 Conditions to be avoided

Incompatible conditions: Reaction with light, risk of polymerization. Keep away from heat, flames and other ignition sources. Do not expose to high temperatures or direct sunlight. Avoid contact with strong oxidizers

10.5 Incompatible materials

Incompatible materials Keep away from radical-forming initiators, peroxides, strongly alkaline substances and reactive metals to prevent exothermic polymerization reactions.

10.6 Hazardous decomposition products

Hazardous decomposition products: Carbon oxides

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11. Toxicological information

11.1 Information about toxicological effects

Bisphenol A (EO)3 Dimethacrylate (at 100%)	
Acute toxicity – oral LD_{50}	>2000 mg/kg, oral, rat
Acute toxicity – dermal LD_{50}	>2000 mg/kg, dermal, rat
Acute toxicity – inhalative LC_{50}	No information available
Caustic/irritant effect on the skin	Does not cause irritation
Severe eye damage/irritation	Does not cause irritation
Respiratory tract sensitization	No information available
Skin sensitization	Sensitizing
Germ cell mutagenicity	Bacterial reverse mutation test: Negative.
Carcinogenicity	No information available
Reproductive toxicity	Fertility - NOAEL, 1000 mg/kg KG/day, oral, rat F1
Specific target organ toxicity (repeated exposure)	STOT - repeated exposure NOAEL 300 mg/kg KG/day, oral, rat
2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)	
Acute toxicity – oral LD_{50}	No information available
Acute toxicity – dermal LD_{50}	>2000 mg/kg, dermal, mouse
Acute toxicity – inhalative LC_{50}	No information is available.
Caustic/irritant effect on the skin	not irritating
Severe eye damage/irritation	not irritating
Respiratory tract sensitization	No information available
Skin sensitization	Sensitizing
Germ cell mutagenicity / genotoxicity - in vitro	Gene mutation: Negative.
Carcinogenicity	No information available
Reproductive toxicity - fertility	Screening - NOAEL 1000 mg/kg KG/day, oral,rat P
Reproductive toxicity - Development	Maternal toxicity: - NOAEL: 1000 mg/kg KG/day, oral, rat
Specific target organ toxicity (repeated exposure)	NOAEL 1,000 mg/kg KG/day, oral, rat NOAEL 2000 mg/kg KG/day, dermal, mouse
Aliphatic difuctional methacrylate (at 100%)	
Acute toxicity – oral LD_{50}	>5000 mg/kg, oral, rat
Acute toxicity – dermal LD_{50}	>2000 mg/kg, dermal, rat
Acute toxicity – inhalative LC_{50}	No information is available.
Caustic/irritant effect on the skin	not irritating
Severe eye damage/irritation	not irritating

Respiratory tract sensitization	No information available
Skin sensitization	Sensitizing
Germ cell mutagenicity / genotoxicity - in vitro	Bacteria reverse mutation test: negative.
Carcinogenicity	No information available
Reproductive toxicity - fertility	Fertility - NOAEL 1000 mg/kg KG/day, oral, rat P
Reproductive toxicity - Development	Keine Informationen verfügbar
Specific target organ toxicity (repeated exposure)	STOT - repeated exposure NOAEL 100 mg / kg body weight / day, oral, rat
Phosphine Oxide (at 100%)	
Acute toxicity – oral LD_{50}	> 5000 mg / kg, oral, rat
Acute toxicity – dermal LD_{50}	> 2000 mg / kg, dermal, rat
Acute toxicity – inhalative LC_{50}	No information available
Caustic/irritant effect on the skin	Not irritating
Severe eye damage/irritation	Not irritating
Respiratory tract sensitization	sensitizing
Skin sensitization	sensitizing
Germ cell mutagenicity / genotoxicity - in vitro	OECD test no. 471: reverse mutation test using bacteria - negative OECD test no. 473: In vitro test for chromosomal aberrations in mammalian cells - negative
Carcinogenicity	Based on the available data, the criteria for classification are not met.
Reproductive toxicity - fertility	• OECD test no. 414: Study to test prenatal developmental toxicity, rat, developmental toxicity NOAEL 150 mg / kg body weight / day • OECD test no. 421: Screening test for reproductive / developmental toxicity, rat, reproductive toxicity NOAEL 60 mg / kg body weight / day • OECD test no. 421: Screening test for reproductive / developmental toxicity, rat, developmental toxicity NOAEL 200 mg / kg body weight / day • OECD test no. 421: Screening test for reproductive / developmental toxicity, rat, parental NOAEL 200 mg / kg body weight / day
Specific target organ toxicity (single exposure)	Based on the available data, the criteria for classification are not met.
Specific target organ toxicity (repeated exposure)	OECD test no. 408: 90 Day Repeated Oral Toxicity Study on Rodents, rats, oral, NOAEL 100 mg / kg body weight / day

12 Environment-related information

12.1 Toxicity

Bisphenol A (EO)3 Dimethacrylate (at 100%)	
Acute toxicity - fish	LC50, 96 hours: > 100 mg/l, Brachydanio rerio (zebrafish)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: > 100 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EL_{50}, 72 hours: > 100 mg/l, Desmodesmus subspicatus
Acute toxicity - microorganisms	NOEC, 28 days: 14,3 mg/l, activated sludge
2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)	
Acute toxicity - fish	LC_{50}, 96 hours: 16,4 mg/L mg/l, Brachydanio rerio (zebrafish)
Acute toxicity - aquatic invertebrates	EC_{50}, 21 days: 51,9 mg/L mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{80}, 72 hours: 0.31 mg/l, Pseudokirchneriella subcapitata
Acute toxicity - microorganisms	No information available
Aliphatic difuctional methacrylate (at 100%)	
Acute toxicity - fish	LC_{50}, 96 hours: > 10.1mg/l, Brachydanio rerio (zebrafish)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: > 1,2 mg/l, Daphnia magna
Acute toxicity - aquatic plants	NOEC, 72 hours: 0,21 mg/l, Desmodesmus subspicatus
Acute toxicity - microorganisms	NOEC, 14 days: >= 36,1 mg/l, activated sludge

Phosphine Oxyde (at 100%)	
Acute toxicity - fish	LC_{50}, 48 hours: > 6,53 mg/l, Oryzias latipes
Acute toxicity - aquatic invertebrates	EC_{50}, 3 hours: 3,53 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: > 2.10 mg/l, Pseudokirchneriella subspicatus EC_{10}, 72 hours: > 1.56 mg/l, Pseudokirchneriella subspicatus
Acute toxicity - microorganisms	EC_{50}, 3 hours: > 1000 mg/l, Activated Sludge

12.2. Persistence and degradability

Bisphenol A (EO)3 Dimethacrylate (at 100%)	
Biodegradation	Naturally biodegradable, certain criteria should be met.
2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)	
Biodegradation	The fabric is easily biodegradable.
Aliphatic difuctional methacrylate (at 100%)	
Biodegradation	Not easily biodegradable.
Phosphine Oxyde (at100%)	
Biodegradation	Water - decomposition 0 -10%: 28 days (not easily degradable)

12.3. Bioaccumulation potential

Bisphenol A (EO)3 Dimethacrylate (at 100%)	
Distribution coefficient	log Kow: 5.30~5.62
2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)	
Distribution coefficient	log Kow: 2,3
Aliphatic difuctional methacrylate (at 100%)	
Distribution coefficient	log Kow: 3.39
Phosphine Oxyde (at 100%)	
Bioaccumulation	BCF: 18-72,
Distribution coefficient	log Kow: 3.1

12.4 Mobility on the ground

Bisphenol A (EO)3 Dimethacrylate (at 100%)	
Adsorption / desorption coefficient	log Kow: 3.69~3.88 @ 20° C
2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)	
Adsorption / desorption coefficient	Not determined
Aliphatic difuctional methacrylate (at 100%)	
Adsorption / desorption coefficient	Calculation - Koc: 4516 @ 20°C
Phosphine Oxyde (at 100%)	
Mobility	Significant mobility in the soil is not to be expected.
Adsorption / desorption coefficient	Water - Log Koc 784.8

Henry's constant	0 Pa m³ / mol @ 25 ° C
Surface tension	There is no information

12.5 Results of PBT and vPvB assessment

Bisphenol A (EO)3 Dimethacrylate (at 100%)	
According to the currently valid EU classification criteria, this substance is not classified as PBT or vPvB.	
2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)	
According to the currently valid EU classification criteria, this substance is not classified as PBT or vPvB.	
Aliphatic difuctional methacrylate (at 100%)	
According to the currently valid EU classification criteria, this substance is not classified as PBT or vPvB.	
Phosphine Oxyde (at 100%)	
According to the currently valid EU classification criteria, this substance is not classified as PBT or vPvB.	

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13. Disposal instructions

13.1 Procedure for waste disposal

Proper disposal/product

Disposal in accordance with regulatory requirements.

Proper disposal/packaging

May be disposed of in accordance with local regulatory requirements.

Ecology - waste materials

Avoid discharge into the environment

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14. Transport information

14.1 UN No.

none

14.2 Proper UN shipping name

none

14.3 Transport hazard classes

No dangerous goods pursuant to transportation regulations.

14.4 Packaging group

none

14.5 Environmental hazards

none

14.6 Special precautions for transport

none

14.7 Bulk transport in accordance with Annex II of the MARPOL Convention 73/79 pursuant to IBC Code

No

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15. Legal regulations

15.1. Regulations on safety, health and environmental protection/specific laws for the substance or mixture

EU regulations

Information about Regulation (EC) No. 166/2006 concerning the establishment of a European Pollutant Release and Transfer Register:
irrelevant

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer:
irrelevant

Regulation (EC) No. 648/2004 on detergents:
irrelevant

Regulation (EC) No. 850/2004 [POP regulation]:
irrelevant

Regulation (EU) No. 649/2012 concerning the import and export of hazardous chemicals:
irrelevant

Restriction on use in accordance with REACH Annex XVII No.:
irrelevant

National regulations

National regulations must also be observed.

Instructions on employment restriction:
No information is available.

Major Accidents Ordinance
Not subject to the German Major Accidents Ordinance.

Solvent Ordinance (31st Federal Immission Protection Ordinance [BImSchV]):
irrelevant

Storage class
10-13 Other flammable and non-flammable substances.

Water hazard class (WGK)
1 slightly hazardous to water (WHC 1)

Technical Instructions on Air Quality Control (TA-Air)
Not subject to the Technical Instructions on Air Quality Control.

Other regulations, restrictions and prohibition ordinances
None

15.2. Chemical safety assessment

A chemical safety assessment was carried out for this preparation.

Chemical safety assessments were not carried out for substances in this mixture.

16. Other information

Text of H and P phrases (number and full text)

H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H361	Suspected of damaging fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects
H413	May be harmful to aquatic organisms with long-term effects

P261	Avoid breathing dust/fume/gas/mist/vapors/spray
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.
P321	Specific treatment (see medical advice on this label)
P333+P313	If skin irritation or rash occurs: Get medical advice / attention.Rinse out mouth
P362+P364	Take off contaminated clothing and wash it before reuse
P391	Collect spillage.
P501	Dispose of contents / container in accordance with local regulations.

Training tips

Only trained personnel should use this product.

Recommended restriction(s) on use:

No special measures are required.

Data sources:

REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending Regulation (EC) No. 1907/2006.

Further information:

REJECTION OF LIABILITY We have obtained the information in this data sheet from sources that we consider reliable. The accuracy of expressed or implied information cannot be guaranteed. The conditions or methods for handling, storage, use or disposal of the product are beyond our control and possibly also our knowledge. For these and other reasons, we accept no responsibility and expressly reject liability for any losses, damage or costs that may arise from handling, storage, use or disposal of the product or that may be associated therewith in any way. This Safety Data Sheet was created for this product and may only be used for this product. If the product is used as a component of another product, the information indicated in the data sheet may not apply.

This information is based on our current knowledge and should only describe the product with regard to health, safety and environmental conditions. It must therefore not be construed as a guarantee for any specific property of the product.