



MATERIAL SAFETY DATA SHEET

Section 1: Identification

Product Name: Ackuretta CURO Crown

Chemical Name/Synonyms: Additive plastic

Application: Methacrylate-based resin 3D printing systems with 385 nm or 405 nm light sources for the additive manufacture of temporary crowns and bridges

Company: Ackuretta Technologies Pvt Ltd

Manufacturer: MACK4D

Am Kraftwerk Lippendorf 16

D 04575 Neukiritzsch

Tel.: +49 34342 50 98 62

Fax: 0049 231 5556 30

E-mail: info@mack4d.de

Internet: www.mack4d.de

In emergency call +49 34342 50 98 62

MSDS Date of preparation: 13th of January, 2022

Section 2: Hazard(s) Identification

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

Skin irrit. Cat. 2 H315

Skin sens Cat. 1 H317

Eye irrit. Cat. 2 H319

Aquatic chronic Cat. 2 H411

Pictograms:



Signal Word(s): hazard

Hazard Statements:

Hazard warnings:

H302 Harmful if swallowed

H315 Causes skin irritation

H317 May cause an allergic skin reaction

H318 Causes serious eye damage

H411 Toxic to aquatic life with long lasting effects

Safety Tips:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash contaminated skin thoroughly after handling.

P270 Do not eat, drink or smoke when using.
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.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P310 Call a POISON CENTER / doctor immediately
P321 Specific treatment (see medical advice on this label)
P305+P351+P338 IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P330 Rinse out mouth
P332+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash before reuse.
P391 Collect spillage.
P501 Dispose of contents/containers in accordance with local regulations.
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!

Section 3: Composition/information on Ingredients

This product is a mixture

Reagent	Percentage	EC No. /CAS No./ REACH Registration No.	Classification according Regulation (EC) No. 1272/2008	Hazard and category
Aliphatic difunctional methacrylate	<40	Company Secret	H317 H411	Skin Sens 1B Aquatic Chronic 2
Aliphatic urethane Acrylate	<10	Company Secret	-	-
2-Propenoic acid, reaction products with pentaerythritol	<5	Company Secret	H302 H315 H318 H317 H411	Acute Tox. 4 Skin Irrit. 2 Eye Dam. 1 Skin Sens 1 Aquatic Chronic 2
Cristobalitmehl	<20	Company Secret	No classification for materials processed in resins, as they are no longer powdery but liquid.	
2,2'-ethylenedioxydiethyl dimethacrylate	<10	Company Secret	H317	Skin Sens 1
Siliziumdioxid	<6	Company Secret	No Hazardous Substance or Hazardous Mixture of Regulation (EC) No. 1772/2008	
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	<2	Company Secret	H317 H361 H411	Skin Sens 18 Rep 2 Aquatic Chronic. 2

Section 4: First Aid Measures

General information: Immediately remove stained and soaked clothing. If symptoms are present or in case you are in any doubt, seek medical advice. If the person loses consciousness, put them in the recovery position and seek medical advice immediately.

After inhalation: Make sure that there is fresh air. If the product irritates the respiratory tract, consult a doctor immediately.

After contact with skin: Wash out and rinse with plenty of soap and water.

After contact with eyes: In the event of contact with the eyes, immediately remove contact lenses and rinse with running water for 10-15 minutes while keeping the eyes open. Consult an eye specialist as soon as possible.

After swallowing: Never administer something orally to an unconscious person or someone who is experiencing cramps. Consult a doctor immediately. Do not induce vomiting.

The most significant acute and delayed occurring symptoms and impact

Skin contact: May cause an allergic skin reaction.

Information about emergency medical aid or special treatment

Note for the physician: Treat symptomatically.

Section 5. Fire-fighting procedures

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.

Particular hazards arising from substance or mixture

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

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.

Section 6. Accidental Release Measures

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.

Measures for environmental protection: Environmental protection measures to prevent discharge into the environment.

Measures for cleaning/collecting: 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.

Section 7: Handling and Storage

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.

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.

Specific end uses

Intended end use(s): The intended uses of this product are described as the application in section 1.2

Section 8: Exposure Controls/Personal Protection

Parameters to be monitored: No maximum allowable concentration(s) is/are known for the ingredient(s).

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.

Section 9: Physical and Chemical Properties

Appearance: Liquid
Odor: Ester
Color: Various tooth colors
Melting point: Not determined
Initial boiling point and boiling range: Not determined
Flash point: >150°C
Inflammability (solid, gaseous): Not determined
Upper/lower inflammability or explosion limits: Not determined
Vapor pressure: Not determined
Relative density: 1.1g/cm³
Solubility: Insoluble in water; Soluble in most organic solvents
Viscosity: Approx. 700-1200 Pa s
pH: Not determined

Section 10: Stability and Reactivity

Reactivity: No information is available
Chemical stability: Stable at normal room temperatures
Possible hazardous reactions: May polymerize
Conditions to avoid: 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
Incompatible materials: Incompatible materials Keep away from radical-forming initiators, peroxides, strongly alkaline substances and reactive metals to prevent exothermic polymerization reactions.
Hazardous decomposition products: Carbon oxides

Section 11: Toxicological Information

Aliphatic difunctional methacrylate (at 100%)

Acute toxicity – oral: LD50 >5000 mg/kg, oral, rat
Acute toxicity – dermal: LD50 >2000 mg/kg, dermal, rat
Acute toxicity – inhalative LC50: 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 P
Specific target organ toxicity (repeated exposure): STOT - repeated exposure NOAEL 100 mg/kg KG/day, oral, rat

Aliphatic urethane Acrylate (at 100%)

Acute toxicity – oral LD50: 540 mg/kg, oral, rat
Estimated acute oral toxicity: 1250,0 mg/kg
Acute toxicity – dermal LD50: >2000 mg/kg, dermal, rabbit
Acute toxicity – inhalative LC50: No information is available.
Caustic/irritant effect on the skin: May cause skin irritation.
Severe eye damage/irritation: May cause severe eye irritation.

Respiratory tract sensitization: No information available
Skin sensitization: Non-sensitizing
Germ cell mutagenicity / genotoxicity - in vitro Gene mutation: Negative.
Carcinogenicity: NOAEL 1.5 mg/kg, dermal, mouse
Reproductive toxicity - fertility Fertility: - NOAEL 200 mg/kg/d, oral, rat P
Reproductive toxicity - Development: Embryotoxicity: - NOAEL: 75 mg/kg KG/day, oral, rabbit
Specific target organ toxicity (repeated exposure): NOAEL 25 mg/kg KG/day, oral, rat

2-Propenoic acid, reaction products with pentaerythritol (at 100%)

Acute toxicity – oral LD50: 540 mg/kg, oral, rat
Estimated acute oral toxicity: 500,0 mg/kg
Acute toxicity – dermal LD50: >2000 mg/kg, dermal, rabbit
Acute toxicity – inhalative LC50: No information is available.
Caustic/irritant effect on the skin: May cause skin irritation
Severe eye damage/irritation: May cause eye irritation
Respiratory tract sensitization: No information available
Skin sensitization: Not sensitizing
Germ cell mutagenicity / genotoxicity - in vitro Gene mutation: Negative.
Carcinogenicity: NOAEL 1,5 mg/kg, dermal, mouse
Reproductive toxicity - fertility: NOAEL 200 mg/kg/d oral, rat
Reproductive toxicity - Development: NOAEL: 75 mg/kg KG/Tag, Oral, rabbit
Specific target organ toxicity (repeated exposure): NOAEL 25 mg/kg KG/Tag, Oral, rat

2,2'-ethylenedioxydiethyl dimethacrylate (at 100%)

Acute toxicity – oral LD50: No information available
Acute toxicity – dermal LD50: >2000 mg/kg, dermal, mouse
Acute toxicity – inhalative LC50: No information available
Caustic/irritant effect on the skin: Not irritating
Severe eye damage/irritation: Not irritating
Respiratory tract sensitization: No information is available.
Skin sensitization: sensitizing
Germ cell mutagenicity / genotoxicity - in vitro: negative
Carcinogenicity: No evidence of carcinogenicity in animal experiments
Reproductive toxicity - fertility: NOAEL 1000 mg/kg KG/Tag, oral, rat P
Reproductive toxicity - Development: NOAEL 1000 mg/kg KG/Tag, oral, rat
Specific target organ toxicity (repeated exposure): NOAEL 1000 mg/kg KG/Tag, oral, rat / NOAEL 1000 mg/kg KG/Tag, dermal, mouse

Siliziumdioxid (at 100%)

Acute toxicity – oral: LD50 >5000 mg/Kg
Acute toxicity – dermal LD50: 0,139 mg/l/4h (comparable product)
Acute toxicity – inhalative LC50: >5000 mg/Kg comparable product)
Caustic/irritant effect on the skin: Not irritating
Severe eye damage/irritation: Not irritating
Respiratory tract sensitization: No information available
Skin sensitization: Not known
Germ cell mutagenicity / genotoxicity - in vitro: negative
Carcinogenicity: No evidence of a carcinogenic effect
Reproductive toxicity - fertility: No evidence of reprotoxic properties.
Reproductive toxicity - Development: NOAEL 1000 mg/kg KG/Tag, oral, rat

Specific target organ toxicity (repeated exposure): Silicosis or other product-specific properties of the respiratory tract were not observed when handling the product

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (at 100 %)

Acute toxicity – oral LD50: >5000 mg/Kg rat

Acute toxicity – inhalative LC50: NA

Acute toxicity – dermal LD50: >2000 mg/Kg rat

Caustic/irritant effect on the skin: 0.5 g / 24h dermal, rabbit, not irritating

Severe eye damage/irritation: 0.056 g / 5d eye, rabbit, not irritating

Respiratory tract sensitization: OECD Test 429 local lymph node test, dermal, mouse sensitizing

Skin sensitization: OECD Test 429 local lymph node test, dermal, mouse sensitizing

Germ cell mutagenicity / genotoxicity - in vitro: OECD test 471 reverse mutation test

using bacteria, in-vitro, negative / OECD Test 473 Test for chromosome aberrations in mammalian cells - in vitro negative

Carcinogenicity: Based on the available data, the criteria for classification are not met

The information below shows ingredients that are above the limit value considered relevant and are listed as toxic to reproduction:

Reproductive toxicity:

OECD Test No. 414: Study to examine the prenatal developmental toxicity, rat

Developmental toxicity: NOAL 150 mg / kg body weight / day

OECD Test No. 421: Screening Test for

Reproductive / Developmental: Toxicity, Rat

Reproductive toxicity: NOAL 60 mg / kg body weight / day

OECD Test No. 421: Screening Test for

Reproductive / Developmental Toxicity, Rat

Developmental toxicity: NOAL 200 mg / kg body weight / day

OECD Test No. 421: Screening Test for

Reproductive / Developmental Toxicity, Rat

Parental: NOAL 200 mg / kg body weight / day

European Union:

Repr. 2

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 408: 90 day tox study with repeated oral administration to rodents - oral, rat

NOAL 100mg / kg body weight / day

Section 12: Ecological Information (non-mandatory)

Toxicity

Aliphatic difunctional methacrylate (at 100%)

Acute toxicity - fish: LC50, 96 hours: 10.1 mg/l, Brachydanio rerio (zebrafish);

Acute toxicity - invertebrate aquatic animals: EC50, 48 hours: >1.2 mg/l, Daphnia magna;

Acute toxicity - aquatic plants: NOEC, 72 hours: 0.21 mg/l, Desmodium subspicatum;

Acute toxicity - microorganisms: NOEC, 14 days: >=36.1 mg/l, activated sludge

2-Propenoic acid, reaction products with pentaerythritol (at 100%)

Acute toxicity - fish: LC50, 96 hours: 3.2mg/L mg/l, fish

Acute toxicity - invertebrate aquatic animals: EC50, 48 hours: 13mg/L mg/l, Daphnia magna

Acute toxicity - aquatic plants: NOEC, 96 Stunden: 0.31 mg/l, Pseudokirchneriella subcapitata

Acute toxicity - microorganisms: EC50, 3 Stunden: 100 mg/l, activated sludge

2.2' ethylenedioxydiethyl dimethacrylate (at 100%)

Acute toxicity - fish: LC₅₀, 96 hours: 16.4 mg/l, Brachydanio rerio (zebrafish)

Acute toxicity - invertebrate aquatic animals: EC₅₀, 21 days: 51.9 mg/l, Daphnia magna

Acute toxicity - aquatic plants: EC₅₀, 72 hours: > 100 mg/l, Pseudokirchneriella subcapitata

Siliziumdioxid (at 100%)

Acute toxicity - fish: LC₅₀, 96 hours: 10000 mg/l, Brachydanio rerio (Zebrafish)

Acute toxicity - invertebrate aquatic animals: EC₅₀, 24 hours: 1000 mg/l, Daphnia magna

Acute toxicity - aquatic plants: No information available

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (at 100%)

Acute toxicity - fish LC₅₀, 48 hours: 6.53 mg/l, Oryzias latipes

Acute toxicity - invertebrate aquatic animals: EC₅₀, 48 hours: 3,53 mg/l, Daphnia magna

Acute toxicity - aquatic plants: EC₅₀, 72 hours: > 2,01 mg/l, Pseudokirchneriella subcapitata EC₁₀, 72 hours: > 1,56 mg/l,

Pseudokirchneriella subcapitata

Persistence and degradability

The product is not easily biodegradable.

Bioaccumulation potential**Aliphatic difunctional methacrylate (at 100%)**

Distribution coefficient log Kow: 3.39

2-Propenoic acid, reaction products with pentaerythritol (at 100%)

Bioaccumulation potential No bioaccumulation data are available.

Distribution coefficient log Kow: 1.69

2.2' ethylenedioxydiethyl dimethacrylate (at 100%)

Distribution coefficient log Kow: 2.3

Siliziumdioxid (at 100%)

Bioaccumulation Not to be expected

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (at 100%)

Distribution coefficient Log Pow: 3,1

Bioconcentration Factor (BFC) 18-72

Mobility on the ground**Aliphatic difunctional methacrylate (at 100%)**

Adsorption / desorption coefficient: Calculation - Koc: 4516 @ 20°C

2-Propenoic acid, reaction products with pentaerythritol (at 100%)

Adsorption / desorption coefficient: Not determined

2.2' ethylenedioxydiethyl dimethacrylate (at 100%)

Adsorption / desorption coefficient No information available

Siliziumdioxid (at 100%)

mobility Significant mobility in the soil is not to be expected.

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (at 100%)

Henry constant 0 Pa m³/mol @ 25°C

Absorption coefficient Log Koc = 784.8

Results of PBT and vPvB assessment**Aliphatic difunctional methacrylate (at 100%)**

According to the criteria of the REACH regulation, no PBT or vPvB substance.

2-Propenoic acid, reaction products with pentaerythritol (at 100%)

According to the criteria of the REACH regulation, no PBT or vPvB substance.

2.2' ethylenedioxydiethyl dimethacrylate (at 100%)

According to the criteria of the REACH regulation, no PBT or vPvB substance.

Siliziumdioxid (at 100%)

According to the criteria of the REACH regulation, no PBT or vPvB substance.

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (at 100%)

According to the criteria of the REACH regulation, no PBT or vPvB substance.

Section 13: Disposal Instructions

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

Section 14: Transport Information (non-mandatory)

UN number: none

Proper UN shipping name: none

Transport hazard classes: No dangerous goods pursuant to transportation regulations.

Packaging group: none

Environmental hazards: none

Special precautions for transport: none

Bulk transport in accordance with Annex II of the MARPOL Convention 73/79 pursuant to IBC Code: No

Section 15: Regulatory Information (non-mandatory)

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 [BlmSchV]): irrelevant

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

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

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

Other regulations, restrictions and prohibition ordinances: None

Chemical safety assessment: A chemical safety assessment was carried out for this preparation. Chemical safety assessment were not carried out for substance in this mixture

Section 16: Other Information

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

H phrases Text

H302 Harmful if swallowed
H315 Causes skin irritation
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

P phrases Text

P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P264 Wash contaminated skin thoroughly after handling.
P270 Do not eat, drink or smoke when using
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
P301+P312 IF SWALLOWED: Call a POISON CENTER / doctor if you feel unwell
P302+P352 IF ON SKIN: Wash with plenty of water.
P310 Call a POISON CENTER / doctor immediately
P321 Specific treatment (see medical advice on this label)
P305+P351+P338 IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P501 Dispose of contents/containers in accordance with local regulations.

Training tips: None

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.