

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier****Dach+Solar 460****1.2 Relevant identified uses of the substance or mixture and uses advised against****1.2.1 Relevant uses**

Silicon

1.2.2 Uses advised against

None known.

1.3 Details of the supplier of the safety data sheet

Company Ramsauer GmbH & Co KG
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 Homepage www.ramsauer.at
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Address enquiries to

Technical information office@ramsauer.at
Safety Data Sheet sdb@chemiebuero.de

1.4 Emergency telephone number

Advisory body +43 (0) 1 406 43 43 (24h)

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

Eye Irrit. 2: H319 Causes serious eye irritation.
 Skin Irrit. 2: H315 Causes skin irritation.

2.2 Label elements

The product is required to be labelled in accordance with regulation (EC) No 1272/2008 (CLP).

Hazard pictograms**Signal word**

WARNING

Hazard statements

H319 Causes serious eye irritation.
 H315 Causes skin irritation.

Precautionary statements

P280 Wear protective gloves / eye protection / face protection.
 P337+P313 If eye irritation persists: Get medical advice / attention.

Special labelling

Contains: Methyltris(methylethylketoxime)silane, 2-Butanone oxime, N-[3-(Trimethoxysilyl)propyl]ethylenediamine. EUH208 May produce an allergic reaction.

2.3 Other hazards**Human health dangers**

Contact with moisture liberates 2-Butanone oxime, Cyclohexylamine and Methanol.

Environmental hazards

Does not contain any PBT or vPvB substances.

Other hazards

none

SECTION 3: Composition / Information on ingredients**Product-type:**

The product is a mixture.

Range [%]	Substance
1 - <3	Tris(cyclohexylamino)methylsilane CAS: 15901-40-3, EINECS/ELINCS: 240-040-8 GHS/CLP: Skin Corr. 1A: H314 - Eye Dam. 1: H318 - Acute Tox. 4: H302 H312
0,1 - <1	N-[3-(Trimethoxysilyl)propyl]ethylenediamine CAS: 1760-24-3, EINECS/ELINCS: 217-164-6, Reg-No.: 01-2119970215-39-XXXX GHS/CLP: Eye Dam. 1: H318 - Skin Sens. 1: H317
1 - <5	Methyltris(methylethylketoxime)silane CAS: 22984-54-9, EINECS/ELINCS: 245-366-4, Reg-No.: 01-2119987100-43-XXXX GHS/CLP: STOT RE 2: H373 - Eye Irrit. 2: H319 - Skin Sens. 1: H317
0,1 - <1	2-Butanone oxime CAS: 96-29-7, EINECS/ELINCS: 202-496-6, EU-INDEX: 616-014-00-0, Reg-No.: 01-2119539477-28-XXXX GHS/CLP: Carc. 2: H351 - Acute Tox. 4: H312 - Eye Dam. 1: H318 - Skin Sens. 1: H317

Comment on component parts

Substances of Very High Concern - SVHC: substances are not contained or are below 0.1%.
For full text of H-statements: see SECTION 16.

SECTION 4: First aid measures**4.1 Description of first aid measures****General information**

Take off contaminated clothing and wash before reuse.

Inhalation

Ensure supply of fresh air.
In the event of symptoms seek medical treatment.

Skin contact

In case of contact with skin wash off immediately with soap and water.
Consult a doctor if skin irritation persists.

Eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Ingestion

Seek medical advice immediately.
Rinse out mouth and give plenty of water to drink.

4.2 Most important symptoms and effects, both acute and delayed

Irritant effects
Headache
Allergic reactions

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Fire-fighting measures**5.1 Extinguishing media****Suitable extinguishing media**

Foam.
Dry powder.
Water spray jet.
Carbon dioxide.

Extinguishing media that must not be used

Full water jet.

5.2 Special hazards arising from the substance or mixture

In the event of fire the following can be released:
Carbon monoxide (CO)
Nitrogen oxides (NOx).

5.3 Advice for firefighters

Use self-contained breathing apparatus.

Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation.

High risk of slipping due to leakage/spillage of product.

6.2 Environmental precautions

Do not discharge into the drains/surface waters/groundwater.

In case the product spills into drains/surface waters/groundwater, immediately inform the authorities.

6.3 Methods and material for containment and cleaning up

Take up mechanically.

Take up residues with absorbent material (e.g. sand, sawdust, general purpose binder, diatomaceous earth).

Dispose of absorbed material in accordance within the regulations.

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Use only in well-ventilated areas.

Wash hands before breaks and after work.

Use barrier skin cream.

Do not eat, drink, smoke or take drugs at work.

Take off contaminated clothing and wash before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Keep only in original container.

Prevent penetration into the ground.

Do not store together with food and animal food/diet.

Keep container tightly closed.

Protect from heat/overheating.

Keep in a cool place. Store in a dry place.

7.3 Specific end use(s)

See product use, SECTION 1.2

SECTION 8: Exposure controls / personal protection**8.1 Control parameters****Ingredients with occupational exposure limits to be monitored (GB)**

Substance
Methanol
CAS: 67-56-1, EINECS/ELINCS: 200-659-6, EU-INDEX: 603-001-00-X
Long-term exposure: 200 ppm, 266 mg/m ³ , Sk
Short-term exposure (15-minute): 250 ppm, 333 mg/m ³
cyclohexylamine
CAS: 108-91-8, EINECS/ELINCS: 203-629-0, EU-INDEX: 612-050-00-6, Reg-No.: 01-2119486803-29-XXXX
Long-term exposure: 10 ppm, 41 mg/m ³

Ingredients with occupational exposure limits to be monitored (EU)

Substance / EC LIMIT VALUES
Methanol
CAS: 67-56-1, EINECS/ELINCS: 200-659-6, EU-INDEX: 603-001-00-X
Eight hours: 200 ppm, 260 mg/m ³ , H

DNEL

Substance
Methyltris(methylethylketoxime)silane, CAS: 22984-54-9
Industrial, dermal, Long-term - systemic effects: 0,145 mg/kg bw/d.
Industrial, inhalative, Long-term - systemic effects: 1,02 mg/m ³ .
general population, inhalative, Long-term - systemic effects: 0,25 mg/m ³ .
general population, oral, Long-term - systemic effects: 0,0725 mg/kg bw/d.
general population, dermal, Long-term - systemic effects: 0,0725 mg/kg bw/d.
N-[3-(Trimethoxysilyl)propyl]ethylenediamine, CAS: 1760-24-3
Industrial, dermal, Acute - systemic effects: 5 mg/kg/d.
Industrial, dermal, Long-term - systemic effects: 5 mg/kg/d.
Industrial, inhalative, Long-term - systemic effects: 35,5 mg/m ³ .
general population, inhalative, Long-term - systemic effects: 8,7 mg/m ³ .
general population, oral, Long-term - systemic effects: 2,5 mg/kg/d.
general population, dermal, Long-term - systemic effects: 2,5 mg/kg/d.

PNEC

Substance
Methyltris(methylethylketoxime)silane, CAS: 22984-54-9
oral (food), 3,22 mg/kg.
sewage treatment plants (STP), 3,9 mg/l.
soil, 65,63 mg/kg.
sediment (seaater), 55,754 mg/kg.
sediment (freshwater), 557,543 mg/kg.
seawater, 0,001845 mg/l.
freshwater, 0,01845 mg/l.
N-[3-(Trimethoxysilyl)propyl]ethylenediamine, CAS: 1760-24-3
sewage treatment plants (STP), 25 mg/l.
soil, 0,0075 mg/kg.
sediment (seaater), 0,005 mg/kg.
sediment (freshwater), 0,05 mg/kg.

seawater, 0,0062 mg/l.

freshwater, 0,062 mg/l.

8.2 Exposure controls

Additional advice on system design	Ensure adequate ventilation on workstation. Measurement methods for taking workplace measurements must meet the performance requirements of DIN EN 482. For example, recommendations are given in the IFA's list of hazardous substances.
Eye protection	Safety glasses. (EN 166:2001)
Hand protection	0,4 mm Butyl rubber, >480 min (EN 374-1/-2/-3). The details concerned are recommendations. Please contact the glove supplier for further information.
Skin protection	light protective clothing
Other	Avoid contact with eyes and skin. Do not inhale vapours. Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier.
Respiratory protection	Respiratory protection mask in the event of high concentrations. Short term: filter apparatus, filter A. (DIN EN 14387)
Thermal hazards	no
Delimitation and monitoring of the environmental exposition	Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**

Form	pasty
Color	various
Odor	characteristic
Odour threshold	not determined
pH-value	not applicable
pH-value [1%]	not determined
Boiling point [°C]	not applicable
Flash point [°C]	not applicable
Flammability (solid, gas) [°C]	not determined
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Oxidising properties	no
Vapour pressure/gas pressure [kPa]	not determined
Density [g/ml]	1,04 - 1,33
Bulk density [kg/m³]	not applicable
Solubility in water	virtually insoluble
Partition coefficient [n-octanol/water]	not determined
Viscosity	not applicable
Relative vapour density determined in air	not determined
Evaporation speed	not determined
Melting point [°C]	not determined
Autoignition temperature [°C]	not applicable
Decomposition temperature [°C]	not determined

9.2 Other information

none

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reactions known if used as directed.

10.2 Chemical stability

Stable under normal ambient conditions (ambient temperature).

10.3 Possibility of hazardous reactions

Reactions with strong oxidizing agents.

10.4 Conditions to avoid

See SECTION 7

10.5 Incompatible materials

Water

10.6 Hazardous decomposition products

Contact with moisture liberates 2-Butanone oxime, Cyclohexylamine and Methanol.
In the case of heating (150-180°C) following modest (decomposition) products may occur:
Formaldehyde.

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

Product
inhalative, Based on the available information, the classification criteria are not fulfilled.:
ATE-mix, dermal, > 2000 mg/kg.
ATE-mix, oral, > 2000 mg/kg.
Substance
Tris(cyclohexylamino)methylsilane, CAS: 15901-40-3
LD50, dermal, Rabbit: 1594 mg/kg.
LD50, oral, Rat: 637 mg/kg.
Methyltris(methylethylketoxime)silane, CAS: 22984-54-9
LD50, dermal, Rat: > 2009 mg/kg (OECD 402).
LD50, oral, Rat: 2463 mg/kg (OECD 401).
2-Butanone oxime, CAS: 96-29-7
LD50, dermal, Rabbit: 1800 mg/kg.
LD50, oral, Rat: 2300 - 3700 mg/kg.
N-[3-(Trimethoxysilyl)propyl]ethylenediamine, CAS: 1760-24-3
LD50, dermal, Rat: >2000 mg/kg bw (Lit.).
LD50, oral, Rat: 2995 mg/kg bw (Lit.).
LC50, inhalative, Rat: 1,49 - 2,44 mg/L (4h) (Lit.).

Serious eye damage/irritation	Based on the available information, the classification criteria are fulfilled. Toxicological data of complete product are not available. Irritant Calculation method
Skin corrosion/irritation	Based on the available information, the classification criteria are fulfilled. Toxicological data of complete product are not available. Irritant Calculation method
Respiratory or skin sensitisation	Based on available data, the classification criteria are not met. Non-sensitizing. No classification due to toxicological investigations.
Specific target organ toxicity — single exposure	Does not contain a relevant substance that meets the classification criteria.
Specific target organ toxicity — repeated exposure	Based on available data, the classification criteria are not met. Toxicological data of complete product are not available. Calculation method
Mutagenicity	Does not contain a relevant substance that meets the classification criteria.
Reproduction toxicity	Does not contain a relevant substance that meets the classification criteria.
Carcinogenicity	Does not contain a relevant substance that meets the classification criteria.
Aspiration hazard	Does not contain a relevant substance that meets the classification criteria.
General remarks	

The toxicity data listed pertaining to the ingredients are intended for those working in the medicinal professions, experts for occupational health and safety and toxicologists. The toxicity data pertaining to the ingredients were supplied by the manufacturers of raw materials.

SECTION 12: Ecological information**12.1 Toxicity**

Substance
Methyltris(methylethylketoxime)silane, CAS: 22984-54-9
LC50, (96h), Pimephales promelas: 972,34 mg/l (OECD 203).
EC50, (72h), Pseudokirchneriella subcapitata: 18,45 mg/l (OECD 201).
EC50, (48h), Daphnia magna: 231,84 mg/l (OECD 202).
2-Butanone oxime, CAS: 96-29-7
LC50, (96h), Poecilia reticulata: 760 mg/l.
LC50, (96h), Leuciscus idus: 320 - 1000 mg/l.
LC50, (96h), Pimephales promelas: 777 - 914 mg/l.
EC50, (48h), Daphnia magna: 750 mg/l.
EC50, (72h), Desmodesmus subspicatus: 83 mg/l.
N-[3-(Trimethoxysilyl)propyl]ethylenediamine, CAS: 1760-24-3
LC50, (96h), Danio rerio: 597 mg/l (Lit.).
EC50, (16h), Pseudomonas putida: 67 mg/l (Lit.).
EC50, (48h), Daphnia magna: 81 mg/l (Lit.).
IC50, (72h), Algae: 8,8 mg/l (OECD 201).
NOEC, (21d), Daphnia magna: > 1 mg/l (Lit.).
NOEC, (72h), Algae: 3,1 mg/l (OECD 201).

12.2 Persistence and degradability

Behaviour in environment compartments	not determined
Behaviour in sewage plant	not determined
Biological degradability	not determined

12.3 Bioaccumulative potential

not determined

12.4 Mobility in soil

not applicable

12.5 Results of PBT and vPvB assessment

Based on all available information not to be classified as PBT or vPvB respectively.

12.6 Other adverse effects

Ecological data of complete product are not available.

The toxicity data pertaining to the ingredients were supplied by the manufacturers of raw materials.

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SECTION 13: Disposal considerations**13.1 Waste treatment methods**

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

Product

For recycling, consult manufacturer.

Waste no. (recommended)

070216*

Contaminated packaging

Uncontaminated packaging may be taken for recycling.

Dispose full / partially emptied cartridges as hazardous waste in accordance with official regulations.

Waste no. (recommended)

150110*

SECTION 14: Transport information**14.1 UN number**

Transport by land according to ADR/RID not applicable

Inland navigation (ADN) not applicable

Marine transport in accordance with IMDG not applicable

Air transport in accordance with IATA not applicable

14.2 UN proper shipping name

Transport by land according to ADR/RID NO DANGEROUS GOODS

Inland navigation (ADN) NO DANGEROUS GOODS

Marine transport in accordance with IMDG NOT CLASSIFIED AS "DANGEROUS GOODS"

Air transport in accordance with IATA NOT CLASSIFIED AS "DANGEROUS GOODS"

14.3 Transport hazard class(es)

Transport by land according to ADR/RID not applicable

Inland navigation (ADN) not applicable

Marine transport in accordance with IMDG not applicable

Air transport in accordance with IATA not applicable

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14.4 Packing group

Transport by land according to ADR/RID	not applicable
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Inland navigation (ADN)	not applicable
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Marine transport in accordance with IMDG	not applicable
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Air transport in accordance with IATA	not applicable
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14.5 Environmental hazards

Transport by land according to ADR/RID	no
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Inland navigation (ADN)	no
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Marine transport in accordance with IMDG	no
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Air transport in accordance with IATA	no
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14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

not applicable

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

EEC-REGULATIONS	1991/689 (2001/118); 2010/75; 2004/42; 648/2004; 1907/2006 (REACH); 1272/2008; 75/324/EEC (2008/47/EC); (EU) 2015/830; (EU) 2016/131; (EU) 517/2014
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TRANSPORT-REGULATIONS	DOT-Classification, ADR (2017); IMDG-Code (2017, 38. Amdt.); IATA-DGR (2017).
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NATIONAL REGULATIONS (GB):	EH40/2005 Workplace exposure limits (Second edition, published December 2011). CHIP 3/ CHIP 4
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- Observe employment restrictions for people	Observe employment restrictions for young people.
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- VOC (2010/75/CE)	< 1 %
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15.2 Chemical safety assessment

not applicable

SECTION 16: Other information**16.1 Hazard statements (SECTION 03)**

H312 Harmful in contact with skin.
H351 Suspected of causing cancer.
H319 Causes serious eye irritation.
H373 May cause damage to organs through prolonged or repeated exposure.
H317 May cause an allergic skin reaction.
H302+H312 Harmful if swallowed or in contact with skin.
H318 Causes serious eye damage.
H314 Causes severe skin burns and eye damage.

16.2 Abbreviations and acronyms:

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses
ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ATE = acute toxicity estimate
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging
DMEL = Derived Minimum Effect Level
DNEL = Derived No Effect Level
EC50 = Median effective concentration
ECB = European Chemicals Bureau
EEC = European Economic Community
EINECS = European Inventory of Existing Commercial Chemical Substances
ELINCS = European List of Notified Chemical Substances
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC-Code = International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50 = Inhibition concentration, 50%
IMDG = International Maritime Code for Dangerous Goods
IUCLID = International Uniform Chemical Information Database
LC50 = Lethal concentration, 50%
LD50 = Median lethal dose
LC0 = lethal concentration, 0%
LOAEL = lowest-observed-adverse-effect level
MARPOL = International Convention for the Prevention of Marine Pollution from Ships
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration
PBT = Persistent, Bioaccumulative and Toxic substance
PNEC = Predicted No-Effect Concentration
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
STP = Sewage Treatment Plant
TLV@TWA = Threshold limit value – time-weighted average
TLV@STEL = Threshold limit value – short-time exposure limit
VOC = Volatile Organic Compounds
vPvB = very Persistent and very Bioaccumulative

16.3 Other information**Classification procedure**

Eye Irrit. 2: H319 Causes serious eye irritation. (Calculation method)
Skin Irrit. 2: H315 Causes skin irritation. (Calculation method)

Modified position

SECTION 2 deleted: R 36/38: Irritating to eyes and skin.

SECTION 2 deleted: Contact with moisture liberates 2-Butanone oxime and Methanol.

SECTION 2 been added: Contact with moisture liberates 2-Butanone oxime, Cyclohexylamine and Methanol.

SECTION 2 deleted: Irritant

SECTION 4 been added: Rinse out mouth and give plenty of water to drink.

SECTION 6 been added: In case the product spills into drains/surface waters/groundwater, immediately inform the authorities.

SECTION 8 been added: Measurement methods for taking workplace measurements must meet the performance requirements of DIN EN 482. For example, recommendations are given in the IFA's list of hazardous substances.

SECTION 8 deleted: Butyl rubber, >120 min (EN 374-1/-2/-3).

SECTION 8 been added: Butyl rubber, >480 min (EN 374-1/-2/-3).

SECTION 10 been added: Contact with moisture liberates 2-Butanone oxime, Cyclohexylamine and Methanol.

SECTION 10 deleted: Contact with moisture liberates 2-Butanone oxime and Methanol.

SECTION 11 deleted: There is no evidence of any reproductive toxicity effects.

SECTION 11 deleted: This product contains one or more substance(s) of Carc. Cat. 3 (EC).

SECTION 11 deleted: Labelling on the basis of our own findings.

SECTION 11 been added: Does not contain a relevant substance that meets the classification criteria.

SECTION 11 been added: Based on the available information, the classification criteria are fulfilled.

SECTION 11 been added: Irritant

SECTION 11 been added: Calculation method

SECTION 11 been added: Non-sensitizing.

SECTION 11 been added: No classification due to toxicological investigations.

SECTION 11 deleted: There is no evidence of any mutagenic effects.

SECTION 13 deleted: Disposal in an incineration plant in accordance with the regulations of the local authorities.

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