WACKER SILICONES

Material Safety Data Sheet

Material: 60041294 **ELASTOSIL® R plus 4000/70**

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1. Product and company identification

1.1 Identification of the substance or preparation:

Commercial product name: **ELASTOSIL® R plus 4000/70**

Use of substance / preparation: Industrial.
Raw material for: elastomer products .

1.2 Company/undertaking identification:

Manufacturer/distributor:
Wacker Chemie AG
Hanns-Seidel-Platz 4
81737 München
Germany

Customer information:
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(703) 527-3887 (CHEMTREC, international)

This MSDS was prepared by the Regulatory Affairs and Product Safety Department (RAPS) of Wacker Chemical Corporation.

2. Composition/information on ingredients

2.1 Chemical characterization (preparation)

Chemical characteristics
Polydimethylsiloxane + auxiliary

2.2 Information on ingredients:

Type	CAS No.	Substance	Content [wt. %]		Note
			Lower	Upper	
VERU	556-67-2	Octamethyl cyclotetrasiloxane	0.1	1.0	R
INHA	68037-59-2	Polydimethyl hydrogenmethyl siloxane	1.0	5.0	NH
NEBE	1333-74-0	hydrogen gas	varies	varies	

Type: HYD - by-product upon hydrolysis, INHA - ingredient, NEBE - by-product, MONO - residual monomer, VERU - impurity, VUL - by-product upon vulcanization. *** **Note:** C1 - IARC carcinogen, C2 - NTP carcinogen, C3 - OSHA carcinogen, NH - non-hazardous, R - reproductive toxin.

This material does not contain any hazardous substances at or above OSHA and WHMIS reportable levels.

Substances listed in the Subsections "HAPS" and "California Proposition 65 Carcinogens / Reproductive Toxins" that are not listed in Section 2 are only present at quantities below 0.1% for California Proposition 65 listed toxins or below 1% for non-carcinogenic HAPS or they are inextricably bound in the product.

3. Hazards identification

3.1 Hazards classifications

HMIS® rating (product as packaged):
Health: 1 Fire: 1 Reactivity: 2 PPE: B

Hazardous Materials Identification System and HMIS are registered trademarks of the National Paint and Coatings Association. (HMIS codes are based on contact with the product as packaged and any hydrolysis by-products, if present.)

Canadian WHMIS Classification: D2A

3.2 Emergency overview and potential hazards

This material is not hazardous under OSHA criteria.

Physical Hazards:
Under certain conditions this material may generate flammable hydrogen gas.

Acute health effects
Route of entry or possible contact:
eyes , skin , inhalation (volatile by-products) .
Eye contact:
May cause slight eye irritation.
Skin contact:
No acute toxic skin effects are expected.
Inhalation:
No acute toxic respiratory tract effects are expected. Inhalation is not expected due to low vapor pressure or high viscosity.
Ingestion:
Ingestion is not expected in industrial use.

Additional information on acute health effects:
The health hazard evaluation is based on test results and/or on known properties of ingredients.

3.3 Further information:

Chronic health effects:
Due to the physical nature of this material, there is no risk of inhalation exposure to ingredients presenting a respirable dust hazard. This includes any carcinogenic dusts which may be used as fillers or pigments (e.g., crystalline silica, carbon black or titanium dioxide). Impurity: Prolonged or repeated inhalation of vapors may have adverse effects on the reproductive system, based on animal testing of a component of this material.

Medical conditions which may be aggravated by exposure:
none known

Target organs affected:
Female Reproductive System.

Signs and Symptoms of Exposure:
Refer to Acute Health Effects, listed above.

Carcinogens/Reproductive toxins:
Based on animal tests. This material contains >= 0.1% of a substance which significantly increased the incidence of benign tumors in animal experiments. This material contains between 0.1% and 1% of a known reproductive toxin. Investigations of the mechanism of tumor formation are ongoing to evaluate the relevance to humans. Although animal testing has indicated that there is some limited carcinogenic potential for decamethylcyclopentasiloxane (D5) in rats, D5 has not been classified by IARC, NTP or OSHA as a known or potential human carcinogen. Further studies are ongoing to clarify the carcinogenic potential of D5 and the relevance to humans.

See Section 11 for Toxicological Information, if any.

4. First-aid measures

4.1 General information:

Get medical attention if irritation or other symptoms occur. Before seeking medical attention remove contaminated clothing and shoes. Take a copy of the Safety Data Sheet when going for medical treatment.

4.2 After inhalation

No special measures required.

4.3 After contact with the skin

Wipe off excess material with cloth or paper. Use a waterless hand cleaner to remove as much of the remaining material as possible. Wash with soap and water.

4.4 After contact with the eyes

If contact with eyes, immediately hold eyelids apart and flush with plenty of water for at least 15 min.

4.5 After swallowing

No special treatment is required.

5. Fire-fighting measures

5.1 Flammable properties:

Property:	Value:	Method:
Flash point	> 200 °C (> 392 °F)	(DIN 51376)
Boiling point / boiling range	not applicable	
Lower explosion limit (LEL)	not applicable	
Upper explosion limit (UEL)	not applicable	
Ignition temperature	> 400 °C (> 752 °F)	(DIN 51794)

5.2 Fire and explosion hazards:

Caution! Under certain conditions this material may generate flammable hydrogen gas. Consider possible formation of explosive mixtures with air, for example in uncleaned containers by moisture. Never use welding or cutting torch on or near any container of this material, even if empty, because an explosion could occur. Spontaneous ignition is possible due to electrostatic discharge. The generation of hydrogen gas is increased under circumstances mentioned in Sect. 10 "Stability and reactivity". Explosion limits for hydrolysis product: 4-75.6% v/v (hydrogen) .

5.3 Recommended extinguishing media:

carbon dioxide , dry sand , alcohol-resistant foam .

5.4 Unsuitable extinguishing media:

water , dry chemical , halones .

5.5 Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

Hazardous decomposition products: carbon dioxide , carbon monoxide , formaldehyde , silicon dioxide and incompletely burnt hydrocarbons .

5.6 Fire fighting procedures:

Fire fighters should wear full protective clothing including a self-contained breathing apparatus. Cool endangered containers with water. Hydrogen gas can become trapped under foam blankets, so sources of ignition must be eliminated during the clean-up and recovery process.

6. Accidental release measures

6.1 Precautions:

Secure the area. Wear personal protection equipment (see section 8). If material is released indicate risk of slipping.

HAZWOPER PPE Level: D

6.2 Containment:

Prevent material from entering surface waters, drains or sewers and soil.

Spills of material which could reach surface waters must be reported to the United States Coast Guard National Response Center's toll free phone number (800) 424-8802.

6.3 Methods for cleaning up

Take up mechanically and dispose of according to local/state/federal regulations. Use vented recovery containers. Clean any slippery coating that remains using a detergent / soap solution or another biodegradable cleaner. Apply sand or other inert granular material to improve traction.

6.4 Further information:

Eliminate all sources of ignition. Material designated for disposal must be segregated from incompatible substances or materials specified in Sect. 10. Do not blend contaminated material with uncontaminated material. Observe notes under section 7.

7. Handling and storage

7.1 Handling

Precautions for safe handling:
Open and handle container with care. Ensure adequate ventilation. Keep container closed when not in use. Keep away from incompatible substances in accordance with section 10. Where possible, inert process equipment and blanket vessels, tanks and containers with nitrogen to reduce the available oxygen level. Contact WACKER for additional publications on the safe Handling of SiH Products.

Precautions against fire and explosion:
Product can release hydrogen. In partly emptied containers formation of explosive mixtures is possible. Keep away from sources of ignition and do not smoke. Keep away from open flames, heat and sparks. Take precautionary measures against electrostatic charging.

7.2 Storage

Conditions for storage rooms and vessels:
none known

Advice for storage of incompatible materials:
Do not store with: basic substances (e.g. alkalis, ammonia, amines) , oxidizing agents , strong acids .

Further information for storage:
Store in the original container. Protect against moisture. Store in a dry and cool place. Store container in a well ventilated place.

8. Exposure controls and personal protection

8.1 Engineering controls

Ventilation:
Use only with adequate ventilation.

Local exhaust:
Local exhaust ventilation which meets the requirements of ANSI Z9.2 is recommended to control airborne contaminants at the point of use.

8.2 Associate substances with specific control parameters such as limit values

none known .

Further information:
Maximum concentration at workplace recommended by producer: octamethylcyclotetrasiloxane (D4, CAS no. 556-67-2) = 10 ppm (123 mg/m3) .

8.3 Personal protection equipment (PPE)

Respiratory protection:
Respiratory protection is not normally required.

Hand protection:
Recommendation: butyl rubber protective gloves , neoprene gloves , PVC gloves .

Eye protection:
Safety glasses with side shields or chemical safety goggles.

Other protective clothing or equipment:
Additional protective clothing or equipment is not normally required. Provide eye bath and safety shower.

8.4 General hygiene and protection measures:

When handling do not eat, drink, smoke or apply cosmetics. Wash thoroughly after handling.

9. Physical and chemical properties

9.1 Appearance

Physical state / form.....: paste
Colour .....: transparent
Odour .....: slight

9.2 Safety parameters

Property:		Value:	Method:
Melting point / melting range	:	not applicable	
Boiling point / boiling range	:	not applicable	
Flash point	:	> 200 °C (> 392 °F)	(DIN 51376)
Ignition temperature	:	> 400 °C (> 752 °F)	(DIN 51794)
Lower explosion limit (LEL)	:	not applicable	
Upper explosion limit (UEL)	:	not applicable	
Vapour pressure	:	not applicable	
Density	:	1.16 g/cm³	(ISO 1183-1 A)
Water solubility / miscibility	:	virtually insoluble	
pH-Value	:	not applicable	
Viscosity (dynamic)	:	> 9000000 mPa.s	

9.3 Further information

According to previous experience autoignition of SiH containing products on a catalytically active surface may occur at a much lower temperature than expected. This applies to porous or fibrous substances including those with alkaline surfaces, such as thermal insulation and cementaceous insulating materials. Explosion limits for released hydrogen: 4 - 75.6%(V). Re 9.2 pH Value: Product displays neutral reaction.

Thermal decomposition : > 250 °C (> 482 °F)

10. Stability and reactivity

10.1 General information:

Stable under normal conditions of use.

10.2 Conditions to avoid

moisture . Heat, open flames, and other sources of ignition. Contact with contaminated piping or vessels or with corroded and rusty containers can increase the rate of hydrogen formation. Observe information in section 7.

10.3 Materials to avoid

Reacts with: acids , basic substances (e.g. alkalis, ammonia, amines) , alcohols , water , moisture , oxidizing agents , catalyst . Reaction causes the formation of: hydrogen .

10.4 Hazardous decomposition products

hydrogen . Measurements have shown the formation of small amounts of formaldehyde at temperatures above about 150 °C (302 °F) through oxidation.

10.5 Further information:

Hazardous polymerization cannot occur.

11. Toxicological information

11.1 Information on toxicological effects

The toxicology information listed below is based on the components of the material.

11.1.1 Acute toxicity

Assessment:

Based on the available data acute toxic effects are not expected after single oral exposure. Based on the available data acute toxic effects are not expected after single dermal exposure.

Product details:

Route of exposure	Result/Effect	Species/Test system	Source
oral	LD_{50}: > 2000 mg/kg	rat	Conclusion by analogy
dermal	LD_{50}: > 2000 mg/kg	rat	Conclusion by analogy

11.1.2 Skin corrosion/irritation

Assessment:

Based on the available data a clinically relevant skin irritation hazard is not expected.

Product details:

Result/Effect	Species/Test system	Source
not irritating	rabbit	Conclusion by analogy

11.1.3 Serious eye damage / eye irritation

Assessment:

Based on the available data a clinically relevant eye irritation hazard is not expected.

Product details:

Result/Effect	Species/Test system	Source
not irritating	rabbit	Conclusion by analogy

11.1.4 Respiratory or skin sensitization

Assessment:

Based on the available data a sensitization reaction is not expected from this product.

Product details:

Route of exposure	Result/Effect	Species/Test system	Source
dermal	not sensitizing	guinea-pig; Bühler	Conclusion by analogy

11.1.5 Germ cell mutagenicity

Assessment:

Based on known data a significant mutagenic potential may be excluded.

Product details:

Result/Effect	Species/Test system	Source
negative	mutation assay (in vitro) bacterial cells	Conclusion by analogy OECD 471

11.1.6 Carcinogenicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.7 Reproductive toxicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.8 Specific target organ toxicity (single exposure)

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.9 Specific target organ toxicity (repeated exposure)

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.10 Aspiration hazard

Assessment:

Based on the physical-chemical properties of the product no aspiration hazard must be expected.

11.1.11 Further toxicological information

Toxicity to reproduction/fertility: Impurity: In a two generation reproductive study via inhalation with OMCTS/D4 rats, decreased mean live litter size and prolonged labor (dystocia) were observed at the 500 ppm and 700 ppm exposure levels. The relevance of these effects in humans cannot be determined at this time. Because these effects are only seen at very high exposure levels, it is unlikely that industrial, commercial and/or consumer uses of products containing OMCTS/D4 would result in a significant risk to humans. Based on animal experiments there is no indication of developmental effects.

Chronic toxicity / carcinogenicity: Impurity: In a two year combined chronic toxicity and carcinogenicity inhalation study with octamethylcyclotetrasiloxane (OMCTS/D4) in rats, an increased incidence of (uterine) endometrial cell hyperplasia and endometrial adenomas were observed at the highest exposure level of 700 ppm in female rats. These same effects were not seen at the other dose levels of 10, 30, and 150 ppm. Since these effects only occurred at 700 ppm, a level that greatly exceeds typical workplace or consumer exposure, it is unlikely that industrial, commercial or consumer uses of products containing OMCTS/D4 would result in a significant risk to humans. In a two year combined chronic toxicity and carcinogenicity inhalation study with decamethylcyclopentasiloxane (D5) in rats, an increased incidence for (uterine) endometrial tumors was observed in the highest exposure level of 160 ppm in female rats. The same effects were not seen at the other dose levels of 10 and 40 ppm. Whether or not this increase in incidence is truly related to the exposure to D5 is questionable and yet to be determined. Based on our present knowledge it is unlikely that industrial, commercial or consumer uses of products containing D5 would result in a significant risk to humans.

12. Ecological information

12.1 Toxicity

Assessment:

Evaluation in analogy to similar product. No expected damaging effects to aquatic organisms. According to current knowledge adverse effects on water purification plants are not expected.

12.2 Persistence and degradability

Assessment:

Biologically not degradable. Separation by sedimentation.

12.3 Bioaccumulative potential

Assessment:

Polymer component: No adverse effects expected.

12.4 Mobility in soil

Assessment:

Insoluble in water. No adverse effects expected.

12.5 Other adverse effects

none known

12.6 Additional information

Easily separable from water by filtration.

13. Disposal considerations

13.1 Product disposal

Recommendation:
Material that cannot be used or chemically reprocessed should be disposed of at an approved facility in accordance with any applicable governmental regulations. Material designated for disposal must be segregated from incompatible substances or materials specified in Sect. 10. Wastes of this material should not be mixed with other wastes. Provide measures such as vented bungs to ensure pressure relief in the waste containers.

13.2 Packaging disposal

Recommendation:
Containers may contain hazardous quantities of hydrogen gas. Uncleaned containers should not be reused to hold another material due to the potential for reaction between residual product and incompatible materials. Uncleaned packaging should be treated with the same precautions as the material. Containers should be completely emptied before recycling as specified in government regulations.

14. Transport information

14.1 US DOT & CANADA TDG SURFACE

Valuation .....: Not regulated for transport

14.2 Transport by sea IMDG-Code

Valuation .....: Not regulated for transport

14.3 Air transport ICAO-TI/IATA-DGR

Valuation .....: Not regulated for transport

15. Regulatory information

15.1 U.S. Federal regulations

TSCA inventory status and TSCA information:
This material or its components are listed on or are in compliance with the requirements of the TSCA Chemical Substance Inventory.

TSCA 12(b) Export Notification:
This material does not contain any TSCA 12(b) regulated chemicals.

CERCLA Regulated Chemicals:
This material does not contain any CERCLA regulated chemicals.

SARA 302 EHS Chemicals:
This material does not contain any SARA extremely hazardous substances.

SARA 311/312 Hazard Class:
This product does not present any SARA 311/312 hazards.

SARA 313 Chemicals:
This material does not contain any SARA 313 chemicals above de minimus levels.

HAPS (Hazardous Air Pollutants):
This material does not contain any hazardous air pollutants.

15.2 U.S. State regulations

California Proposition 65 Carcinogens:
This material does not contain any chemicals known to the state of California to cause cancer.

California Proposition 65 Reproductive Toxins:
This material does not contain any chemicals known to the State of California to cause reproductive effects.

Massachusetts Substance List:
This material contains no listed components.

New Jersey Right-to-Know Hazardous Substance List:
This material contains no listed components.

Pennsylvania Right-to-Know Hazardous Substance List:
This material contains no listed components.

15.3 Canadian regulations

This product has been classified in accordance with the Hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Hazard Classes:

D2A

DSL Status:
This material or its components are listed on the Canadian Domestic Substances List.

Non-DSL Chemicals:
This material does not contain any non-DSL chemicals.

Canadian Ingredient Disclosure List:
This material contains no listed components.

15.4 Other international regulations

EU Risk Phrases:

R-Phrase	Description
R-	-

EU Safety Phrases:

S-Phrase	Description
S-	-

Details of international registration status
Listed on or in accordance with the following inventories:
EINECS - Europe
ECL - Korea
ENCS - Japan
AICS - Australia
IECSC - China
DSL - Canada
PICCS - Philippines
TSCA - USA

16. Other information

16.1 Additional information:

This Material Safety Data Sheet (MSDS) meets the requirements of the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the date compiled. However, no representation, warranty or guarantee expressed or implied, is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information. Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending a license under valid patents. This MSDS provides selected regulatory information on this product, including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations and laws relating to the product being used.

Vertical lines in the left-hand margin indicate changes compared with the previous version.

All deliveries are subject to the WACKER SILICONES Health Care Policy, which is available at www.wacker.com.

16.2 Glossary of Terms:

ACGIH - American Conference of Governmental Industrial Hygienists
DOT - Department of Transportation
hPa - Hectopascals
mPa*s - Milli Pascal-Seconds
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit
ppm - Parts per Million
SARA - Superfund Amendments and Reauthorization Act
STEL - Short Term Exposure Limit
TSCA - Toxic Substances Control Act
TWA - Time Weighted Average
WHMIS - Canadian Workplace Hazardous Materials Identification System

Flash point determination methods	**Common name**
ASTM D56	Tagliabue (Tag) closed cup
ASTM D92, DIN 51376, ISO 2592	Cleveland open cup
ASTM D93, DIN 51758, ISO 2719	Pensky-Martens closed cup
ASTM D3278, DIN 55680, ISO 3679	Setaflash or Rapid closed cup

DIN 51755 ..... Abel-Pensky closed cup

16.3 Conversion table:

Pressure:.....: 1 hPa * 0.75 = 1 mm Hg = 1 torr; 1 bar = 1000 hPa
Viscosity:.....: 1 mPa*s = 1 centipoise (cP)