

**Material Safety Data Sheet**

Material: 60002616

GENIOSIL® GF 91

Version: 1.5 (US)

Date of print: 04/25/2013

Date of last alteration: 03/01/2013

**1. Product and company identification****1.1 Identification of the substance or preparation:**

**Commercial product name:** GENIOSIL® GF 91  
Use of substance / preparation: Industrial.  
Intermediate chemical

**1.2 Company/undertaking identification:**

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

**Customer information:** Wacker Chemical Corporation  
3301 Sutton Road  
Adrian, Michigan 49221-9397  
USA  
InfoLine:  
Tel (517) 264-8240, Fax (517) 264-8740  
Hours of operation:  
Monday - Friday, 8 am to 5 pm (eastern standard time)  
Corporate website: www.wacker.com

**Emergency telephone no. (24h):** (517) 264-8500  
**Transportation emergency:** (800) 424-9300 (CHEMTREC, USA)  
(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 (substance)**

CAS No.	Chemical characteristics
1760-24-3	amine

**2.2 Information on ingredients:**

Type	CAS No.	Substance	Content [wt. %]		Note
			Lower	Upper	
INHA	1760-24-3	Amino alkoxy silane	90.0	100.0	
VERU	68845-16-9	N,N'-Bis- (3-(trimethoxysilyl) propyl)-1,2- ethanediamine	1.0	5.0	
VERU	618914-51-5	aminosilane	1.0	5.0	
NEBE	67-56-1	Methanol	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.

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: 2 \*

Fire: 1

Reactivity: 1

PPE: H

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.) Note: Respiratory protection is only recommended in the event that ventilation or engineering controls are unable to maintain exposures below recommended levels; or in the event of a spill or other emergency response situation.

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**Canadian WHMIS Classification:** D2B**3.2 Emergency overview and potential hazards**

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**Signal Word:**

WARNING

**Physical Hazards:**

No known physical hazards.

**Acute health effects****Route of entry or possible contact:**

eyes , skin , inhalation (aerosol) .

**Eye contact:**

Causes eye irritation. May cause permanent eye damage.

**Skin contact:**

No acute toxic skin effects are expected. May cause an allergic skin reaction.

**Inhalation:**

Harmful if inhaled. If inhaled lung damage can be expected. Aerosols prepared from aqueous emulsions or organic solutions of aminoalkyl-functional silanes may be dangerous to health referring to animal tests.

**Ingestion:**

Not expected in industrial use.

**Additional information on acute health effects:**

This material releases methanol upon hydrolysis. According to literature methanol (CAS-No. 67-56-1) irritates mucous membranes, has skin drying and narcotic effects up to coma or death. Absorption by the skin is possible. Possibility of damage to heart, kidneys, liver and optic nerves (blindness) over a period of time.

**3.3 Further information:****Chronic health effects:**

May cause an allergic skin reaction. Impurity: May cause an allergic respiratory tract reaction.

**Medical conditions which may be aggravated by exposure:**

none known .

**Target organs affected:**

Lungs

**Signs and Symptoms of Exposure:**

Refer to Acute Health Effects, listed above.

**Carcinogens/Reproductive toxins:**

This material does not contain any reportable carcinogenic ingredients. This material does not contain any reproductive toxins at or above OSHA or WHMIS reportable levels.

See Section 11 for Toxicological Information, if any.

**4. First-aid measures****4.1 General information:**

Get medical attention immediately. Remove contaminated clothing and shoes.

**4.2 After inhalation**

If inhaled remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult give oxygen.

**4.3 After contact with the skin**

For skin contact, immediately wipe away excess material. 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.

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**4.5 After swallowing**

For ingestion, if conscious, give several glasses of water but do not induce vomiting. If vomiting does occur, give additional fluids.

**4.6 Advice for the physician**

Product contains methanol, possibility of methanol poisoning. Observe known period of latency of several days!

**5. Fire-fighting measures****5.1 Flammable properties:**

Property:	Value:	Method:
Flash point.....	> 100 °C (> 212 °F)	(EN 22719)
Flash point.....	139 °C (282 °F)	(JIS K2265-4)
Boiling point / boiling range .....	147 °C (296 °F) at 16 hPa	
Lower explosion limit (LEL) .....	not determined	
Upper explosion limit (UEL).....	not determined	
Ignition temperature.....	300 °C (572 °F)	(DIN 51794)
NFPA Hazard Class (comb./flam.liquid) .....	IIIB	

**5.2 Fire and explosion hazards:**

This material will burn with a lazy smoldering flame. Material decomposes under fire conditions giving off toxic materials. Reaction with water may cause a decrease of the flash point due to formation of volatile organic compound(s) (VOC). As a result of hydrolysis flammable vapors may accumulate in the container head space. Explosion limits for hydrolysis product: 5.5-44% v/v (methanol) .

**5.3 Recommended extinguishing media:**

water-mist , carbon dioxide , sand , dry chemical or alcohol-resistant foam .

**5.4 Unsuitable extinguishing media:**

sharp water jet , halones .

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

Hazardous combustion products: carbon dioxide , carbon monoxide , silicon dioxide , nitrous gases , formaldehyde , 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.

**6. Accidental release measures****6.1 Precautions:**

Wear personal protection equipment (see section 8). Avoid contact with eyes and skin. Avoid inhaling mists and vapours. If material is released indicate risk of slipping. Keep unprotected persons away.

**HAZWOPER PPE Level:** C

**6.2 Containment:**

Prevent material from entering surface waters, drains or sewers and soil. Contain any fluid that runs out using suitable material (e.g. earth). Retain contaminated water/extinguishing water. Dispose of in prescribed marked containers.

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**

Do not flush away with water. For small amounts: Absorb with a liquid binding material such as diatomaceous earth and dispose of according to local/state/federal regulations. Contain larger amounts and pump up into suitable containers. Clean any slippery coating that remains using a detergent / soap solution or another biodegradable cleaner. Exhaust vapours.

**6.4 Further information:**

Eliminate all sources of ignition.

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### 7. Handling and storage

#### 7.1 Handling

**Precautions for safe handling:**

Avoid formation of aerosols. In case of aerosol formation special protective measures are required (exhausting by suction, respiratory protection). Ensure adequate ventilation. Avoid contact with acids. Spilled substance increases risk of slipping.

**Precautions against fire and explosion:**

Product can separate methanol. Flammable vapors may accumulate and form explosive mixtures with air in containers, process vessels, including partial, empty and uncleaned containers and vessels, or other enclosed spaces. Keep away from sources of ignition and do not smoke. Take precautionary measures against electrostatic charging. Cool endangered containers with water.

#### 7.2 Storage

**Conditions for storage rooms and vessels:**

none known

**Advice for storage of incompatible materials:**

not applicable

**Further information for storage:**

Keep container tightly closed and store in a cool, well ventilated place.

### 8. Exposure controls and personal protection

#### 8.1 Engineering controls

**Ventilation:**

Use only with adequate ventilation.

**Local exhaust:**

If spraying or other aerosol generating operations are performed, local exhaust ventilation designed to capture mists and sprays, such as a paint spray booth, is recommended.

#### 8.2 Associate substances with specific control parameters such as limit values

**Maximum airborne concentrations at the workplace:**

CAS No.	Material	Type	mg/m <sup>3</sup>	ppm	Dust fract.
67-56-1	Methanol	OSHA PEL	260.0	200.0	
67-56-1	Methanol	ACGIH TWA		200.0	

Re Methanol (CAS-no. 67-56-1): STEL is 250 ppm, skin notation (ACGIH); STEL is 250 ppm, skin notation (NIOSH).

#### 8.3 Personal protection equipment (PPE)

**Respiratory protection:**

If spraying or other operations which generate an aerosol mist are conducted, respiratory protection for exposed personnel is recommended. A NIOSH approved air purifying respirator equipped with universal multi-contaminant, multi-gas/vapor cartridges and at least P-99 solid/aerosol particulate filters is recommended if overexposure to dusts, mists, or vapors could occur. If eye-irritating dusts or vapors are present, a full-face respirator should be worn.

**Hand protection:**

butyl rubber protective gloves

**Eye protection:**

Safety glasses with side shields or chemical safety goggles. Additional eye and face protection, splash-proof goggles, hood, full-faced respirator, or face shield is recommended if splashing could occur.

**Other protective clothing or equipment:**

Additional skin protection, such as SARANEX coated Tyvek apron, over-sleeves, lab coat, coveralls, or protective suit should be worn if splashing could occur. Provide eye bath and safety shower.

#### 8.4 General hygiene and protection measures:

Avoid contact with eyes, skin and clothing. Avoid breathing dust/vapor/mist/gas/aerosol. Do not eat, drink or smoke when handling. Follow standard industrial hygiene practices when using this material. Wash thoroughly after handling.

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**9. Physical and chemical properties****9.1 Appearance**

Physical state / form .....: liquid  
Colour .....: colourless  
Odour .....: slight

**9.2 Safety parameters**

Property:	Value:	Method:
Melting point / melting range .....	< -50 °C (< -58 °F)	
Boiling point / boiling range .....	147 °C (296 °F) at 16 hPa	
Flash point.....	> 100 °C (> 212 °F)	(EN 22719)
Flash point.....	139 °C (282 °F)	(JIS K2265-4)
Ignition temperature .....	300 °C (572 °F)	(DIN 51794)
Lower explosion limit (LEL) .....	not determined	
Upper explosion limit (UEL).....	not determined	
Vapour pressure.....	< 2 hPa at 20 °C (68 °F)	
Vapour pressure.....	< 5 hPa at 50 °C (122 °F)	
Density .....	1.02 g/cm <sup>3</sup> at 25 °C (77 °F), at 1013 hPa	(DIN 51757)
Water solubility / miscibility.....	completely miscible	
pH-Value .....	10.5 at 25 °C (77 °F) (10 g/l H <sub>2</sub> O)	
Viscosity (dynamic) .....	4 - 5 mPa.s at 25 °C (77 °F)	(DIN 51562)

**9.3 Further information**

Re 9.2 pH Value: Product displays basic reaction with water.

VOC Released During Cure .....: 428 g/l (Estimated Value)  
Thermal decomposition.....: > 150 °C (> 302 °F)

**10. Stability and reactivity****10.1 General information:**

If stored and handled in accordance with standard industrial practices no hazardous reactions are known.

**10.2 Conditions to avoid**

moisture .

**10.3 Materials to avoid**

Reacts with: water , basic substances and acids . Reaction causes the formation of: methanol .

**10.4 Hazardous decomposition products**

If stored and handled properly: none known . 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**

Toxicological testing has been conducted with this material.

**11.1.1 Acute toxicity****Assessment:**

Aerosols of aminofunctional silanes (from organic solutions or aqueous emulsions) may be injurious to health after inhalation in animal tests.

**Product details:**

Route of exposure	Result/Effect	Species/Test system	Source
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oral	LD <sub>50</sub> : 2413 mg/kg	rat	test report
oral	LD <sub>50</sub> : 2995 mg/kg	rat	test report
dermal	LD <sub>50</sub> : > 2000 mg/kg	rat	literature
by inhalation	LC <sub>50</sub> : 1.49 - 2.44 mg/l	rat	literature

**11.1.2 Skin corrosion/irritation****Product details:**

Result/Effect	Species/Test system	Source
not irritating	rabbit	test report OECD 404

**11.1.3 Serious eye damage / eye irritation****Product details:**

Result/Effect	Species/Test system	Source
serious damages to eyes	rabbit	Conclusion by analogy OECD 405

**11.1.4 Respiratory or skin sensitization****Product details:**

Route of exposure	Result/Effect	Species/Test system	Source
dermal	sensitizing	guinea-pig; Magnusson-Kligman	test report OECD 406
dermal	sensitizing	mouse; LLNA (local lymph node assay)	test report OECD 429

**11.1.5 Germ cell mutagenicity****Product details:**

Result/Effect	Species/Test system	Source
negative	mutation assay (in vitro) bacterial cells	test report 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:**

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

**11.1.11 Further toxicological information**

Oral toxicity: Ingestion of methanol or methanol releasing compounds may result in delayed damage to the optic nerves, causing

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permanent blindness, and if untreated may cause other potentially fatal toxic effects.

Other information: Product(s) of hydrolysis: Attention! Product may hydrolyse in gastro-intestinal tract and produce methanol. According to literature methanol (67-56-1) irritates mucuous membranes, has skin drying and narcotic effects up to coma or death. Absorption by the skin is possible. Possibility of damage to heart, kidneys, liver and optic nerves (blindness) over a period of time. For susceptible individuals: May cause sensitisation by inhalation.

**12. Ecological information****12.1 Toxicity****Product details:**

Result/Effect	Species/Test system	Source
LC <sub>50</sub> : 168 mg/l	minnow ( <i>Pimephales promelas</i> ) (96 h)	literature
EC <sub>50</sub> : 87.4 mg/l	<i>Daphnia magna</i> (48 h)	literature
EC <sub>50</sub> : 1 - 10 mg/l	algae	literature
EC <sub>50</sub> : 435 mg/l	sludge	literature
NOEC (reproduction): > 1 mg/l	static <i>Daphnia magna</i> (21 d)	test report

**12.2 Persistence and degradability****Assessment:**

Product(s) of hydrolysis: Methanol and silanol- and/or siloxanol-compounds . Silicone content: Elimination by adsorption to activated sludge. The product of hydrolysis (methanol) is readily biodegradable.

**12.3 Bioaccumulative potential****Assessment:**

Bioaccumulation is not expected to occur.

**12.4 Mobility in soil****Assessment:**

No data known.

**12.5 Other adverse effects**

none known

**13. Disposal considerations****13.1 Product disposal****Recommendation:**

Dispose of according to regulations by incineration in a special waste incinerator. Observe local/state/federal regulations.

**13.2 Packaging disposal****Recommendation:**

Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations.

**14. Transport information****14.1 US DOT & CANADA TDG SURFACE**

Valuation .....: Not regulated for transport

NAERG Guide .....: 171

Other Information .....: Not regulated in containers up to 119 Gal./450 L each!

DOT regulated as a Class 9 Environmentally Hazardous Substance when packaged in bulk containers.

The Fish & Tree marine pollutant mark is required on bulk containers in ground transportation, and on both bulk and non-bulk containers when shipping by water.

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**14.2 Transport by sea IMDG-Code**

Valuation .....: Hazardous product  
Class .....: 9  
Packaging Group .....: III  
UN no. ....: 3082  
Proper Shipping Name .....: Environmentally hazardous substance, liquid, n.o.s.  
Technical name .....: (contains N-(3-(trimethoxysilyl)propyl)ethylenediamine)  
Marine Pollutant .....: yes

**14.3 Air transport ICAO-TI/IATA-DGR**

Valuation .....: Hazardous product  
Class .....: 9  
UN no. ....: 3082  
Proper Shipping Name .....: Environmentally hazardous substance, liquid, n.o.s.  
Technical name .....: (contains N-(3-(trimethoxysilyl)propyl)ethylenediamine)  
Packaging Group .....: III

**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:**

Immediate (acute) health hazard.

**SARA 313 Chemicals:**

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

**HAPS (Hazardous Air Pollutants):**

67-56-1           Methanol

**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:**

67-56-1           Methanol

**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:**

D2B



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**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 Hazard Symbols:**

	Xn	Harmful
	N	Dangerous for the environment

**EU Risk Phrases:**

R-Phrase	Description
R20	Harmful by inhalation.
R41	Risk of serious damage to eyes.
R43	May cause sensitization by skin contact.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**EU Safety Phrases:**

S-Phrase	Description
S7	Keep container tightly closed.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S46	If swallowed, seek medical advice immediately and show this container or label.
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions / safety data sheets.

**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.

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All deliveries are subject to the WACKER SILICONES Health Care Policy, which is available at [www.wacker.com](http://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**

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

**Common name****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)