

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name

**3-Fluorobenzylmagnesium chloride, 0.50M in 2-MeTHF**

Stock number:

H54485

**1.2 Relevant identified uses of the substance**

or mixture and uses advised against.

Identified use:

SU24 Scientific research and development

**1.3 Details of the supplier of the safety data sheet**

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
A Johnson Matthey Company  
Zeppelinstr. 7b  
76185 Karlsruhe / Germany  
Tel: +49 (0) 721 84007 280  
Fax: +49 (0) 721 84007 300  
Email: tech@alfa.com  
www.alfa.com

Informing department:

Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)

Poison Information Center Mainz

www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

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

Classification according to Regulation (EC) No 1272/2008



GHS02 flame

Flam. Liq. 2, H225 Highly flammable liquid and vapour.



GHS05 corrosion

Skin Corr. 1B, H314 Causes severe skin burns and eye damage.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

C; Corrosive

R34: Causes burns.



F; Highly flammable

R11: Highly flammable.

R14-19: Reacts violently with water. May form explosive peroxides.

**Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

**Other hazards that do not result in classification**

No information known.

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008**

Hazard pictograms

Signal word

The product is classified and labelled according to the CLP regulation.

GHS02, GHS05

Danger

**Hazard-determining components of labelling:**

Hazard statements

3-Fluorobenzylmagnesium chloride

H225 Highly flammable liquid and vapour.

H314 Causes severe skin burns and eye damage.

Precautionary statements

P210

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P241

Use explosion-proof electrical/ventilating/lighting/equipment.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P405

Store locked up.

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:

EUH014 Reacts violently with water.

EUH019 May form explosive peroxides.

**2.3 Other hazards**

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

**SECTION 3: Composition/information on ingredients****3.2 Mixtures****Dangerous components:**

CAS: 96-47-9 EINECS: 202-507-4	2-Methyltetrahydrofuran	 R19 	91,5%
CAS: 64168-34-9	3-Fluorobenzylmagnesium chloride	 R14 	8,5%

Additional information

None known.

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

General information

After inhalation

Instantly remove any clothing soiled by the product.

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

Seek immediate medical advice.

Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.

After swallowing

Rinse opened eye for several minutes under running water. Then consult doctor.

**4.2 Most important symptoms and effects, both acute and delayed**

Seek medical treatment.

No further relevant information available.

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**4.3 Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**  
**Suitable extinguishing agents** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.  
**For safety reasons unsuitable extinguishing agents** Water.

**5.2 Special hazards arising from the substance or mixture**  
Reacts violently with water  
If this product is involved in a fire, the following can be released:  
Carbon monoxide and carbon dioxide  
Hydrogen chloride (HCl)  
Hydrogen fluoride (HF)  
Metal oxide

**5.3 Advice for firefighters**  
**Protective equipment:** Wear self-contained breathing apparatus.  
Wear full protective suit.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures** Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Keep away from ignition sources

**6.2 Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.  
Do not allow product to reach sewage system or water bodies.  
Do not allow to enter the ground/soil.

**6.3 Methods and material for containment and cleaning up:** Keep away from ignition sources.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Use neutralizing agent.  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents

**Prevention of secondary hazards:** Keep away from ignition sources.

**6.4 Reference to other sections** See Section 7 for information on safe handling  
See section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling** Handle under dry protective gas.  
Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle container with care.

**Information about protection against explosions and fires:** Protect against electrostatic charges.  
Fumes can combine with air to form an explosive mixture.  
Do not distill to dryness.  
Explosive peroxides may form, handle container cautiously.

**7.2 Conditions for safe storage, including any incompatibilities**  
**Storage**  
**Requirements to be met by storerooms and containers:** Store in cool location.  
**Information about storage in one common storage facility:** Store away from oxidizing agents.  
Store away from strong bases.  
Store away from air.  
Store away from water.

**Further information about storage conditions:** Store under dry inert gas.  
This product is moisture sensitive.  
This product is air sensitive.  
Protect from humidity and keep away from water.  
Store in cool, dry conditions in well sealed containers.  
Avoid contact with air / oxygen (formation of peroxide).  
Store in a locked cabinet or with access restricted to technical experts or their assistants.  
Check container pressure periodically to prevent explosive peroxides.  
No further relevant information available.

**7.3 Specific end use(s)**

**SECTION 8: Exposure controls/personal protection**

**Additional information about design of technical systems:** Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**8.1 Control parameters**  
**Components with critical values that require monitoring at the workplace:** The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.  
**Additional information:** No data

**8.2 Exposure controls**  
**Personal protective equipment**  
**General protective and hygienic measures** The usual precautionary measures should be adhered to in handling the chemicals.  
Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.  
Avoid contact with the eyes and skin.  
Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use breathing protection with high concentrations.  
**Protection of hands:** Check protective gloves prior to each use for their proper condition.  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.  
Impervious gloves  
Not determined  
Tightly sealed safety glasses.  
Full face protection

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Body protection: Protective work clothing.

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

**Form:** Liquid  
**Colour:** Not determined.  
**Smell:** Not determined  
**Odour threshold:** Not determined.

**pH-value:** Not determined.**Change in condition**

**Melting point/Melting range:** Not determined  
**Boiling point/Boiling range:** Not determined  
**Sublimation temperature / start:** Not determined  
**Inflammability (solid, gaseous)** Not applicable.  
**Ignition temperature:** Not determined  
**Decomposition temperature:** Not determined  
**Self-inflammability:** Product is not selfigniting.

**Danger of explosion:** May form explosive peroxides.  
Do not distill to dryness.

**Critical values for explosion:**

**Lower:** Not determined  
**Upper:** Not determined  
**Steam pressure:** Not determined  
**Density** Not determined  
**Relative density** Not determined.  
**Vapour density** Not determined.  
**Evaporation rate** Not determined.  
**Solubility in / Miscibility with**  
**Water:** Reacts violently  
**Partition coefficient (n-octanol/water):** Not determined.  
**Viscosity:**  
**dynamic:** Not determined.  
**kinematic:** Not determined.

**Solvent content:**  
**Organic solvents:** 0,0 %

**Solids content:** 8,5 %

**9.2 Other information** No further relevant information available.**SECTION 10: Stability and reactivity****10.1 Reactivity**

Reacts violently with water.  
May form explosive peroxides.  
Stable under recommended storage conditions.

**10.2 Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used and stored according to specifications.

**10.3 Possibility of hazardous reactions**

Reacts violently with water  
Forms peroxides  
Air

**10.5 Incompatible materials:**

Oxidizing agents  
Bases

**10.6 Hazardous decomposition products:** Water/moisture  
Carbon monoxide and carbon dioxide  
Hydrogen fluoride  
Metal oxide

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

**Acute toxicity:** Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

**LD/LC50 values that are relevant for classification:****96-47-9 2-Methyltetrahydrofuran**

Dermal	LD50	4500 mg/kg (rabbit)
Inhalative	LC50/4H	6000 ppm/4H (rat)

**Skin irritation or corrosion:**

Causes severe skin burns.

Causes serious eye damage.

**Sensitization:** No sensitizing effect known.**Germ cell mutagenicity:** No effects known.**Carcinogenicity:** No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.**Reproductive toxicity:** No effects known.**Specific target organ system toxicity - repeated exposure:** No effects known.**Specific target organ system toxicity - single exposure:** No effects known.**Aspiration hazard:** No effects known.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:  
Corrosive

**SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:** No further relevant information available.**12.2 Persistence and degradability** No further relevant information available.**12.3 Bioaccumulative potential** No further relevant information available.**12.4 Mobility in soil** No further relevant information available.**Additional ecological information:**

**General notes:** Do not allow material to be released to the environment without proper governmental permits.  
Water hazard class 1 (Self-assessment): slightly hazardous for water.  
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

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**Safety data sheet**  
according to 1907/2006/EC, Article 31

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**12.5 Results of PBT and vPvB assessment**

Avoid transfer into the environment.

**PBT:**

Not applicable.

**vPvB:**

Not applicable.

**12.6 Other adverse effects**

No further relevant information available.

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

Hand over to disposers of hazardous waste.  
Must be specially treated under adherence to official regulations.  
Consult state, local or national regulations for proper disposal.

**Uncleaned packagings:****Recommendation:**

Disposal must be made according to official regulations.

**SECTION 14: Transport information****UN-Number****ADR, IMDG, IATA**

UN2924

**14.2 UN proper shipping name****ADR**

2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (3-Fluorobenzylmagnesium chloride, METHYLTETRAHYDROFURAN)

**IMDG, IATA**

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (3-Fluorobenzylmagnesium chloride, METHYLTETRAHYDROFURAN)

**14.3 Transport hazard class(es)****ADR****Class****Label****IMDG, IATA**3 (FC) Flammable liquids.  
3+8**Class****Label**3 Flammable liquids.  
3+8**Packing group****ADR, IMDG, IATA**

II

**14.5 Environmental hazards:****Marine pollutant:**

No

**14.6 Special precautions for user****Kemler Number:**Warning: Flammable liquids.  
338**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC****Code**

Not applicable.

**Transport/Additional information:****ADR****Excepted quantities (EQ):****Limited quantities (LQ)****Transport category****Tunnel restriction code**

E2

1L

2

D/E

**UN "Model Regulation":**

UN2924, FLAMMABLE LIQUID, CORROSIVE, N.O.S. (3-Fluorobenzylmagnesium chloride, METHYLTETRAHYDROFURAN), 3 (8), II

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

96-47-9 | 2-Methyltetrahydrofuran

**Standard for the Uniform Scheduling of Drugs and Poisons**

None of the ingredients is listed.

**National regulations****Information about limitation of use:**

For use only by technically qualified individuals.  
Employment restrictions concerning young persons must be observed.  
Not applicable

**Classification according to VbF:**

Water hazard class 1 (Self-assessment): slightly hazardous for water.

**Water hazard class:****Other regulations, limitations and prohibitive regulations****ELINCS (European List of Notified Chemical Substances)**

None of the ingredients is listed.

**Substances of very high concern (SVHC) according to REACH, Article 57**

None of the ingredients are listed.

**REACH - Pre-registered substances**

96-47-9 | 2-Methyltetrahydrofuran

**15.2 Chemical safety assessment:**

A Chemical Safety Assessment has not been carried out.

**SECTION 16: Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Relevant phrases**

H224 Extremely flammable liquid and vapour.  
H225 Highly flammable liquid and vapour.  
H314 Causes severe skin burns and eye damage.

R11 Highly flammable.  
R14 Reacts violently with water.  
R19 May form explosive peroxides.  
R34 Causes burns.

**Department issuing data specification sheet:** Health, Safety and Environmental Department.(Contd. on page 5)  
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**Safety data sheet**  
according to 1907/2006/EC, Article 31

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**Trade name 3-Fluorobenzylmagnesium chloride, 0.50M in 2-MeTHF****Abbreviations and acronyms:**

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RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: International Civil Aviation Organization  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent

DE/E