

Safety data sheet according to Regulation (EC) No 1907/2006, Annex II

Revised on / Version: 13.09.2010 / 0002

Replaces revision of / Version: 19.08.2010 / 0001

Valid from: 13.09.2010

PDF print date: 02.11.2010

Fuel Cartridge - M5, M10, M28

## Safety data sheet according to Regulation (EC) No 1907/2006, Annex II

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### Identification of the substance or mixture / Product identifier

#### Fuel Cartridge - M5, M10, M28

Methanol

Registration number (ECHA): -

Index: 603-001-00-X

EINECS/ELINCS: 200-659-6

CAS: 67-56-1

#### Use of the substance/mixture

Fuel Cell

#### Relevant identified uses of the substance or mixture:

n.av.

#### Uses advised against:

n.av.

#### Company/undertaking identification / Details of the supplier of the safety data sheet

SFC Energy AG, Eugen-Sanger-Ring 7, D-85649 Brunthal

Telephone +49 (0)89 673-592-0, Fax +49 (0)89 673-592-369

info@sfc.com

E-mail address of the competent person: info@chemical-check.de, k.schnurbusch@chemical-check.de

#### Emergency telephone

#### Advisory office in case of poisoning:

Tel.:

+49 89 / 19240

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### 2.1.1 Classification according to Regulation (EC) 1272/2008 (CLP)

Hazard class	Hazard category	Hazard statement
Flam. Liq.	2	H225-Highly flammable liquid and vapour.
Acute Tox.	3	H331-Toxic if inhaled.
Acute Tox.	3	H311-Toxic in contact with skin.
STOT SE	1	H370-Causes damage to organs.
Acute Tox.	3	H301-Toxic if swallowed.

##### 2.1.2 Classification according to Directives 67/548/EEC and 1999/45/EC (including amendments).

F, R11

T, R23/24/25

T, R39/23/24/25

#### 2.2 Label elements

##### 2.2.1 Labeling according to Regulation (EC) 1272/2008 (CLP)

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Methanol  
 CAS 67-56-1, Index:603-001-00-X EC: 200-659-6

## Danger

### Hazard statement

H225-Highly flammable liquid and vapour. H331-Toxic if inhaled. H311-Toxic in contact with skin. H370-Causes damage to organs. H301-Toxic if swallowed.

P101-If medical advice is needed, have product container or label at hand. P102-Keep out of reach of children. P103-Read label before use.

### Prevention

P210-Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P241-Use explosion-proof electrical/ventilating/lighting/material-handling equipment. P243-Take precautionary measures against static discharge. P260-Do not breathe vapour.

### Response

P307+P311-IF exposed: Call a POISON CENTER or doctor/physician.

### Storage

P403+P235-Store in a well-ventilated place. Keep cool. P405-Store locked up.

### Disposal

P501-Dispose of contents and container in accordance with all local, regional, national and international regulations.

## 2.3 Other hazards

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## SECTION 3: Composition/information on ingredients

### 3.1 Substance

Methanol	
Registration number (ECHA)	-
Index	603-001-00-X
EINECS, ELINCS	200-659-6
content %	
Symbol	F/T
R-phrases	11-23/24/25-39/23/24/25
Classification categories / Indications of danger	Highly flammable, Toxic
Hazard class/Hazard category	<b>Hazard statement</b>
Flam. Liq./2	H225
Acute Tox./3	H331
Acute Tox./3	H311
Acute Tox./3	H301
STOT SE/1	H370

### 3.2 Mixture

n.a.

For complete wording of the R-phrases / H-phrases (GHS/CLP), refer to section 16.

## SECTION 4: First aid measures

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#### 4.1 Description of first aid measures

Medical supervision necessary due to possibility of delayed reaction.

Assure the safety of the rescuer.

Never pour anything into the mouth of an unconscious person!

##### Inhalation

Remove person from danger area.

Supply person with fresh air. Call doctor immediately.

If the person is unconscious, place in a stable side position and consult a doctor.

Keep Data Sheet available.

The following may occur:

Coordination disorders

Dizziness

Headaches

##### Skin contact

Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap. Call a doctor immediately, keep datasheet at hand

The following may occur:

Product removes fat.

Repeated exposure may cause skin dryness or cracking.

Skin resorption

##### Eye contact

Wash thoroughly for several minutes using copious water - call doctor immediately, have Data Sheet available.

##### Ingestion

Rinse the mouth thoroughly with water.

Give copious water to drink - consult doctor immediately.

Induce vomiting.

Allow drinking approx 100 ml ca. 40% ethanol in esculent.

Keep Data Sheet available.

The following may occur:

After resorption:

Nausea

Vomiting

Headaches

Dizziness

Danger of blindness

Acidosis

Drop in blood pressure

Cramps

Narcotic effect.

Coma

Liver and kidney damage

Disturbed heart rhythm

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

n.av.

#### 4.3 Indication of any immediate medical attention and special treatment needed

n.c.

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

##### Suitable extinguishing media

CO2

Alcohol resistant foam

Cool container at risk with water.

##### Unsuitable extinguishing media

High volume water jet

#### 5.2 Special hazards arising from the substance or mixture

In case of fire the following can develop:

Oxides of carbon

Toxic pyrolysis products.

Explosive vapour/air mixture

Dangerous vapours heavier than air.

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In case of spreading near the ground, flashback to distance sources of ignition is possible.

### **5.3 Advice for firefighters**

Protective respirator with independent air supply.

Full protection

Dispose of contaminated extinction water according to official regulations.

In case of fire and/or explosion do not breathe fumes.

## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Ensure sufficient ventilation.

Avoid inhalation, and contact with eyes or skin.

Remove possible causes of ignition - do not smoke.

Take measures against electrostatic charging, if appropriate.

If applicable, caution - risk of slipping

### **6.2 Environmental precautions**

If leakage occurs, dam up.

Prevent surface and ground-water infiltration, as well as ground penetration.

Prevent from entering drainage system.

If accidental entry into drainage system occurs, inform responsible authorities.

Danger of explosion

### **6.3 Methods and material for containment and cleaning up**

Collect using absorbant material (e.g. Universal binding medium, sand, kieselguhr) and dispose of according to point 13.

Use no flammable substances.

Flush residue using copious water.

Fill the absorbed material into lockable containers.

### **6.4 Reference to other sections**

Refer to section 13. and for personal protection refer to section 8.

## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

In addition to information given in this section, relevant information can also be found in section 8 and 6.1.

Ensure good ventilation.

If applicable, suction measures at the workstation or on the processing machine necessary.

Avoid inhalation of the vapours.

Avoid contact with eyes or skin.

Keep away from sources of ignition - Do not smoke.

Take precautions against electrostatic charges.

Take explosion-prevention measures if applicable.

Use explosion-proof equipment.

Earth devices.

Do not use on hot surfaces.

Also seal emptied tanks and tanks in the process after they have been used.

Eating, drinking, smoking, as well as food-storage, is prohibited in work-room.

Wash hands before breaks and at end of work.

Observe directions on label and instructions for use.

Use working methods according to operating instructions.

### **7.2 Conditions for safe storage, including any incompatibilities**

Store product closed and only in original packing.

Not to be stored in gangways or stair wells.

Solvent resistant floor

Do not store with flammable or self-igniting materials.

Do not store with oxidizing agents.

Unsuitable material:

Various plastics

Magnesium

Zinc alloys

Protect against moisture and store closed.

Store in a well ventilated place.

Protect from direct sunlight and warming.

Observe special storage conditions (in Germany, e.g., in accordance with the regulations in the "Betriebssicherheitsverordnung").

Keep locked away.

Keep out of access to unauthorised individuals.

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Store cool

**7.3 Specific end use(s)**

n.av.

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

**8.1 Control parameters**

Chemical Name	Methanol	Content %:
WEL-TWA: 200 ppm (266 mg/m3) (WEL), 200 ppm (260 mg/m3) (EC)	WEL-STEL: 250 ppm (333 mg/m3) (WEL)	---
BMGV: ---	Other information: Sk (WEL, EC)	

Chemical Name	Methanol	Content %:
WEL-TWA: 200 ppm (266 mg/m3) (WEL), 200 ppm (260 mg/m3) (EC)	WEL-STEL: 250 ppm (333 mg/m3) (WEL)	---
BMGV: ---	Other information: Sk (WEL, EC)	

WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period) EH40. AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany). | WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period). | BMGV = Biological monitoring guidance value EH40. BGW = "Biologischer Grenzwert" (biological limit value, Germany) | Other information: Sen = Capable of causing occupational asthma. Sk = Can be absorbed through skin. Carc = Capable of causing cancer and/or heritable genetic damage.  
 \*\* = The exposure limit for this substance is repealed through the TRGS 900 (Germany) of January 2006 with the goal of revision.

OELV-8h = Occupational Exposure Limit Value (8-hour reference period) | OELV-15min = Occupational Exposure Limit Value (15-minute reference period) | BLV = Biological limit value | Other information: C1, C2 = carcinogenic substance, Cat. 1 or 2. Mut 1, 2 = mutagenic substance, Cat. 1 or 2. Repro 1, 2 = Substances known to be toxic for reproduction, Cat. 1 or 2. Sk = can be absorbed through skin. Asphyx = asphyxiant. Sen = Respiratory sensitizer.  
 \*\* = The exposure limit for this substance is repealed through the TRGS 900 (Germany) of January 2006 with the goal of revision.

**8.2 Exposure controls**

**8.2.1 Appropriate engineering controls**

Ensure good ventilation. This can be achieved by local suction or general air extraction.  
 If this is insufficient to maintain the concentration under the WEL or AGW values, suitable breathing protection should be worn.  
 Applies only if maximum permissible exposure values are listed here.

**8.2.2 Individual protection measures, such as personal protective equipment**

General hygiene measures for the handling of chemicals are applicable.  
 Wash hands before breaks and at end of work.  
 Keep away from food, drink and animal feedingstuffs.  
 Remove contaminated clothing and protective equipment before entering eating areas.  
 Eye/face protection:  
 Tight fitting protective goggles with side protection (EN 166).  
 Skin protection - Hand protection:  
 Chemical resistant protective gloves (EN 374).  
 Recommended  
 With short-term contact:  
 Protective Viton gloves (EN 374)  
 Permeation time (penetration time) in minutes:  
 > 120  
 With long-term contact:  
 Protective gloves in butyl rubber (EN 374).  
 Permeation time (penetration time) in minutes:  
 > 480  
 References  
 Protective hand cream recommended.  
 Skin protection - Other:  
 Protective working garments (e.g. safety shoes EN ISO 20345, long-sleeved protective working garments)  
 According to operation.  
 Protective working garment, antistatic (EN1149)  
 Natural fibre or heat-resistant synthetic fibre  
 Respiratory protection:  
 If OES or MEL is exceeded.  
 With short-term contact:

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Gas mask filter AX (EN 14387), code colour brown.

With long-term contact:

Protective respirator with independent air supply.

Additional information on hand protection - No tests have been performed.

Selection made for mixtures according to the best available knowledge and information on the ingredients.

Selection of materials derived from glove manufacturer's indications.

Final selection of glove material must be made taking the breakthrough times, permeation rates and degradation into account.

Selection of a suitable glove depends not only on the material but also on other quality characteristics and varies from manufacturer to manufacturer.

In the case of mixtures the resistance of glove materials cannot be calculated in advance so it has to be tested before use.

The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.

### 8.2.3 Environmental exposure controls

n.av.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	Colourless
Odour:	Alcoholic
pH-value undiluted:	Not determined
Initial boiling point and boiling range (°C):	64,7
Melting point/freezing point (°C):	-98
Flash point (°C):	11
Ignition temperature:	455°C
Lower explosive limit:	5,5 Vol%
Upper explosive limit:	44 Vol%
Product is not explosive.	
Possible build up of explosive/highly flammable vapour/air mixture.	
Vapour pressure:	128 hPa (20°C)
Density (g/ml):	0,79 g/cm <sup>3</sup> (20°C)
Water solubility:	Soluble
Partition coefficient (n-octanol/water):	log Pow -0,77, References
Vapour density (air = 1):	1,11, References
Viscosity:	0,597 mPas (20°C), References

## SECTION 10: Stability and reactivity

Perchloric acid

Chromium (VI) trioxide

### Conditions to avoid

See section 7

Stable when handled and stored correctly.

Heating, open flame, ignition sources

Protect from humidity.

Product is hygroscopic.

Electrostatic charge

### Materials to avoid

See section 7

Alkali metals

Alkaline-earth metals

Development of:

Hydrogen gas

Exothermic reaction possible with:

Acids

Acid halide

Acid anhydrides

Reducing agent

Danger of explosion with:

Oxidizing agents

Perchlorates

Peroxides

Chlorates

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Nitric acid

Oxides of nitrogen

Halogens

Magnesium

Hydrogen peroxide

### Hazardous decomposition products

See section 5.3

No decomposition when used as directed.

## SECTION 11: Toxicological information

### Acute toxicity and immediate effects

Ingestion, LD50 rat oral (mg/kg): 5628

Inhalation, LC50 rat inhal.(mg/l/4h): 81,9

Skin contact, LD50 rat dermal (mg/kg): n.av.

Eye contact: n.av.

### Delayed and chronic effects

Sensitization:

No, Guinea pig, References

Carcinogenicity:

References, Studies on carcinogenic effects in animal experiments., No

Mutagenicity:

Negative, References

(Mikronucleus, in vivo / Ames-Test, in vitro)

Reproductive toxicity:

n.c.

Narcosis:

n.c.

### Further information

The following may occur:

Irritation of the eyes

Skin contact:

Product removes fat.

Repeated exposure may cause skin dryness or cracking.

Skin resorption

Inhalation:

Irritation of the respiratory tract

Coordination disorders

Dizziness

Headaches

Ingestion:

After resorption:

Nausea

Vomiting

Headaches

Dizziness

Danger of blindness

Acidosis

Drop in blood pressure

Cramps

Narcotic effect.

Coma

Liver and kidney damage

Disturbed heart rhythm

Delayed effects from exposure can be expected.

## SECTION 12: Ecological information

Persistence and degradability:

Readily biodegradable (DOC > 70%)

BOD5 0,60 - 1,12 g/g (IUCLID), COD 1,42 g/g (IUCLID), ThOD 1,5 g/g

References

Behaviour in sewage plants:

Problems not expected when used correctly.

Aquatic toxicity:

Toxicity to fish:

LC50 *Lepomis macrochirus* 15400 mg/l/96h

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Toxicity to daphnia:

EC50 Daphnia magna > 10000 mg/l/48h

References

Toxicity to algae:

IC5 Scenedesmus quadricauda 8000 mg/l/8d

References

Ecological toxicity:

EC5 Entosiphon sulcatum > 10000 mg/l/72h

References

Toxicity to bacteria:

EC5 Pseudomonas putida 6600 mg/l/16h

References

Mobility:

n.av.

Accumulation:

Not to be expected

Results of PBT assessment

n.av.

Other adverse effects:

n.av.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### For the material / mixture / residue

EC disposal code no.:

The waste codes are recommendations based on the scheduled use of this product.

Owing to the user's specific conditions for use and disposal, other waste codes may be allocated under certain circumstances. (2001/118/EC, 2001/119/EC, 2001/573/EC)

07 01 04 other organic solvents, washing liquids and mother liquors

14 06 03 other solvents and solvent mixes

16 05 06 laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals

Recommendation:

Pay attention to local and national official regulations

E.g. suitable incineration plant.

E.g. dispose at suitable refuse site.

Do not dispose of with household waste.

#### For contaminated packing material

Pay attention to local and national official regulations

Empty container completely.

Uncontaminated packaging can be recycled.

Dispose of packaging that cannot be cleaned in the same manner as the substance.

Do not perforate, cut up or weld uncleaned container.

Residues may present a risk of explosion.

## SECTION 14: Transport information

### General statements

UN-Number: 3473

#### Road/Rail-transport (ADR/RID)

Class/packing group: 3/- 

UN 3473 FUEL CELL CARTRIDGES

Classification code: F1

LQ (ADR 2009): 13

Tunnel restriction code: E

#### Transport by sea

IMDG-code: 3/- (class/packing group)


EmS: F-E, S-D 

Marine Pollutant: n.a.

FUEL CELL CARTRIDGES

#### Transport by air

IATA: 3/-/ (class/secondary danger/packing group)

Fuel cell cartridges 

#### Additional information:

Danger code and packing code on request.

## SECTION 15: Regulatory information

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Classification and labeling see point 2.

Observe restrictions: Yes

Observe youth employment law (German regulation).

Observe law on protection of expectant mothers (German regulation).

Regulation (EC) No 1907/2006, Annex XVII.

VOC 1999/13/EC 100%

TA air:

I 100%

## SECTION 16: Other information

These details refer to the product as it is delivered.

Revised sections: 14

The following phrases represent the prescribed R-phrases / H-phrases (GHS/CLP) for the ingredients (designated in point 3).

11 Highly flammable.

23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

Flam. Liq.-Flammable liquid

Acute Tox.-Acute toxicity - inhalation

Acute Tox.-Acute toxicity - dermal

STOT SE-Specific target organ toxicity - single exposure

Acute Tox.-Acute toxicity - oral

H225-Highly flammable liquid and vapour.

H331-Toxic if inhaled.

H311-Toxic in contact with skin.

H370-Causes damage to organs.

H301-Toxic if swallowed.

## Legend:

n.a. = not applicable / n.v., k.D.v. = n.av. = not available / n.g. = n.c. = not checked

WEL = Workplace Exposure Limit EH40, TWA = Long-term exposure limit (8-hour TWA (= time weighted average) reference period), STEL = Short-term exposure limit (15-minute reference period) / BMGV = Biological monitoring guidance value EH40

AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany) / BGW = "Biologischer Grenzwert" (biological limit value, Germany)

VbF = Regulations for flammable liquids (Austria)

VOC = Volatile organic compounds

AOX = Adsorbable organic halogen compounds

ATE = Acute Toxicity Estimates according to Regulation (EC) 1272/2008 (CLP)

The statements made here should describe the product with regard to the necessary safety precautions - they are not meant to guarantee definite characteristics - but they are based on our present up-to-date knowledge.

No responsibility.

These statements were made by:

**Chemical Check GmbH, Wöbbeler Straße 2-4, D-32839 Steinheim, Tel.: +49 5233 94 17 0, +49 1805-CHEMICAL / +49 180 52 43 642, Fax: +49 5233 94 17 90, +49 180 50 50 455**

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