

A Milacron Company

Dear Customer:

Enclosed in the Material Safety Data Sheet for our product:

D-M-E Cement Kit

The products we distribute are not normally hazardous in their natural state. However, steel does contain elements deemed by OSHA to be hazardous when released by manufacturing, such as brazing, burning, grinding, sawing or welding, etc. Failure to control dust and fumes can result in chronic health problems.

We believe the information, supplied by the Manufacturer, on the enclosed MSDS to be accurate; however, D-M-E makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability for the information so presented.

Should you require additional information, please call or write the Manufacturer listed on the MSDS.

Sincerely yours,

D-M-E Company
Director of Operations
Ken Jasina

March 4, 2004

Safety Data Sheet
meets 91/155/EWG

FMPO003 CEMENT KIT

G.Hütter-Kunststofftechnik

Commercial Name:
GM 1000

Publication Date: January 1997
Page 1 of 3

1. Name of Material/Compound and Company Name

Product Name: Casting Compound, mixture of Iron and mineral powders

Manufacturer/Supplier: G. Hütter-Kunststofftechnik
Nacherweg 2
D-88131 Lindau, Germany
Phone: 08382-23661
Fax: 08382-23034

2. Compound/Component Data

Component	Cas No.	Content	MAK TRK	Symbol	R Specs
Iron & Mineral Powder	none	%	mg/m ³	--	--
		Remainder	6.0*	--	--

*) MAK-Value for inert powder

3. Possible Hazards

No hazardous effects when processed according to specifications.

4. First Aid

Swallowing, inhaling or contact with skin: Consult a physician, if discomfort persists.

Contact with eyes: Rinse open eyes with water for extended time period. Consult a physician, if irritation persists.

5. Fire Control Measures

Fine dust deposits can burn off silently in case of high energy external ignition (e.g. welding).

Extinguishing agent restrictions: none
Fires near the product can be extinguished using normal procedures.

6. Control Measures in Case of Unintentional Release

Mop or vacuum spillage. Avoid dust deposits.

Safety Data Sheet

meets 91/155/EWG

G.Hüttler-Kunststofftechnik

Commercial Name:
GM 1000Publication Date: January 1997
Page 2 of 3**7. Handling and Storage**

Instructions for safe handling: Avoid dust deposits; provide adequate ventilation or vacuum when handling the product.

Instructions for fire and explosion prevention: none

Storage and container requirements: Do not store near acid, since the product reacts briskly with acids, whereby hydrogen is released. The product should be stored in a dry place for quality reasons.

8. Explosion Limitation and Personal Protective Gear

Do not inhale powder; in places with inadequate ventilation and/or vacuum exhaust wear respiratory protection with fine dust filter (P2), if the indicated limit for inert dust in the inhaled air is not met. Wear safety goggles, if necessary.

9. Physical and Chemical Characteristics

Form:	powder
Color:	light gray
Odor:	no odor
Melting point:	1535° C
Boiling point:	2750° C
Flash point:	N/A
Flammability:	none
Self-ignitability:	none
Explosion hazard:	none
Fire hazardous characteristics:	none
Vapor pressure:	not relevant
Density:	approx. 6.20 g/cm ³
Powder density:	approx. 2.00 g/cm ³
Solubility:	not soluble in water or organic solvents
Other data:	none

10. Stability and Reactivity

The product can react briskly with acids and thereby release hydrogen, which can cause explosive gas mixtures.

Possible decomposition: none

Commercial Name:
GM 1000

Publication Date: January 1997
Page 3 of 3

<p>11. Toxicology</p> <p>No data available.</p>
<p>12. Ecology</p> <p>No data available.</p>
<p>13. Disposal</p> <p>Dispose of the product according to local regulations.</p>
<p>14. Transportation</p> <p>Not classified for land, inland ship, ocean and air transportation.</p>
<p>15. Regulations</p> <p>Not classified.</p>
<p>16. Other Data</p> <p>The information is based on our current knowledge and experience. The safety data sheet describes products in terms of their safety requirements. The information does not constitute an assurance of characteristics.</p>

Commercial Name:
BM 1000

Publication Date: January 1997
Page 1 of 4

1. Name of Material/Compound and Company Name	
Product Name: Bonding Agent, various silicates	
Manufacturer/Supplier:	G. Hütter-Kunststofftechnik Nueherweg 2 D-88131 Lindau, Germany Phone: 08382-23661 Fax: 08382-23034
2. Compound/Component Data	
Component	Cas No.
Water-soluble silicates	none
3. Possible Hazards	
Causes irritation of eyes, respiratory organs and skin.	
4. First Aid	
Inhaling:	Provide fresh air
Skin contact:	Wash with plenty of water. Remove contaminated clothing.
Eye contact:	Rinse open eyes with plenty of water. Consult a eye-doctor, if pain persists.
Swallowing:	Drink plenty of water. Induce vomiting, consult physician.
5. Fire Control Measures	
Suitable extinguishing agents:	Use an extinguishing agent, that is suitable for the respective environment.
Special hazards:	none
Other data:	not flammable Fires near the product can be extinguished using normal procedures.
6. Control Measures in Case of Unintentional Release	
Personal safety measures:	not required.
Environmental protection:	dilute with plenty of water
Cleaning/absorption:	absorb with liquid-binding material (sand, siliceous earth, all-purpose binding agents).

Commercial Name:
BM 1000

Publication Date: January 1997
Page 2 of 4

7. Handling and Storage

Instructions for safe handling: No special requirements.

Instructions for fire and explosion prevention: none

Storage and container requirements: Keep container closed, if possible. Carefully rescal opened packaging. Store at room temperature (+15° to +25° C).

8. Explosion Limitation and Personal Protective Gear

Personal protective gear:

Respiratory protection: required for vapors/aerosols
Eye protection: required
Hand protection: required
Sanitary measures: Change contaminated clothing. Preventative skin protection recommended. Wash hands after work.

9. Physical and Chemical Characteristics

Form:	liquid	
Color:	no color	
Odor:	no odor	
pH value at 50g/l H ₂ O	(20° C)	11-12
Melting point:	N/A	
Boiling point:	N/A	
Flash point:	N/A	
Flammability:	none	
Self-ignitability:	none	
Explosion hazard:	none	
Fire hazardous characteristics:	none	
Vapor pressure:	not relevant	
Density:	(20° C)	1,25 - 1,37 g/cm ³
Solubility in water:	(20° C)	soluble

10. Stability and Reactivity

Hazardous reactions: not known
Hazardous decomposition: not known
Possible decomposition: none

Commercial Name:
BM 1000

Publication Date: January 1997
Page 3 of 4

11. Toxicology	
Acute toxicity:	Quantitative data regarding the toxicology of this product are not available.
Other toxicological data:	
Inhaling of vapors:	Irritation of respiratory organs.
Skin contact:	Irritation and caustic effect.
Eye contact:	Irritation and caustic effect. Possible corneal opacity.
Swallowing:	Irritation of mucous membrane in mouth, throat, esophagus and stomach and intestinal tract. Vomiting.
Systemic effects:	Salivation, collapse.
Other data:	
When handling the product, use caution appropriate for chemicals.	
12. Ecology	
Ecologically toxic effects:	No data available.
Other ecological data:	Hazardous due to pH-shifting. Prevent product from entering bodies of water, sewer or ground.
13. Disposal	
Recommendation:	Do not dispose of with regular garbage. Prevent from entering sewer.
Recommendation for uncleaned packaging:	Dispose of according of applicable regulations.
14. Transportation	
Not classified for land, inland ship, ocean and air transportation.	

Commercial Name:
BM 1000

Publication Date: January 1997
Page 4 of 4

15. Regulations

Marking according to EC Guidelines

Symbol:	Xi	
Classification:	irritant	
R-Specifications:	36/37/38	Irritation of eyes, respiratory system and skin
S-Specifications:	26-36	If eye contact occurs, flush thoroughly with water and consult a physician. Wear appropriate protective clothing at the workplace.
German Specifications:		
Water Toxicity Classification:		1 (slightly water-hazardous material) self-classification
BG Chemistry Specifications:		M004 Irritant materials/caustic materials M050 Handling of health-hazardous materials.
Other national Specifications:		
Swiss Toxicity Classification:		4

16. Other Data

The information is based on our current knowledge and experience. The safety data sheet describes products in terms of their safety requirements. The information does not constitute an assurance of characteristics.

Material Safety Data Sheet
according to 91/155/EEC

1. Name of Material/Compound and Company
 - Product Data
 - Commercial Name: Isoleitspray
 - Supplier: HOTSSET Heizpatronen und Zubehör GmbH, Waisishohler Str. 48, 58511 Lüdenscheid, Germany

2. Compound/Component Data
 - Chemical Characteristics
 - Description: Mixture consisting of the materials listed below with nonhazardous admixtures
 - Hazardous contained materials: flammable propellants

3. Possible Hazards
 - Hazard classification: F+ Highly Flammable
 - Special hazard warnings for people and environment: R 12 Highly Flammable
 - Classification system: The classification is in accordance with the current EC listings, however, it is amended with information from technical literature and information provided by the company.

4. First Aid
 - After breathing: Ventilate area with fresh air, consult physician if necessary
 - After contact with skin: Generally, the product does not irritate the skin
 - After contact with eyes: Rinse eyes while open for several minutes under running water
 - After swallowing: Consult physician if discomfort persists

5. Fire Control Measures
 - Suitable extinguishing media: CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol-resistant foam
 - Extinguishing media that are not suitable for safety reasons: Full water jet
 - Special protective gear: No special measures required. Do not breathe gases caused by explosion or fire
 - Other data: Cool endangered containers with water spray

6. Control Measures in Case of Unintentional Release
 - Personal safety precautions: Do not spray in eyes, ensure adequate ventilation
 - Environmental safety precautions: Prevent product from running into sewer drain or body of water
 - Procedure for cleaning/absorption: Absorb with liquid-binding material (sand, siliceous earth, acid binding agent, universal binding agent, saw dust). Ensure adequate ventilation.

7. Handling and Storage

- Handling
- Instructions for safe handling: Keep at temperatures below 50 °C
- Instructions for fire and explosion prevention: Keep away from sources of ignition, do not smoke near product
- Storage
- Storage area and container requirements: Store in a cool place
- Instruction for storage with other products: Not required
- Other storage requirements: Protect from heat and direct sunlight
- Storage classification: Storage according to TRG 300
- VbF Class: not applicable

8. Explosion Limitation and Personal Protective Gear:

- Additional instructions for the design of technical facilities: No further instructions, see item 7
 - Components and their threshold values as they relate to the work place:
- | CAS No. | Material Name | Type | Value | Unit |
|----------|---------------|--------|-------|--|
| 106-97-8 | Butane | 25-50 | MAK | 2350 mg/m ₃
1000 ml/m ₃ |
| 64-17-5 | Ethanol | 25-50 | MAK | 1900 mg/m ₃
1000 ml/m ₃ |
| 74-98-6 | Propane | 2,5-10 | MAK | 1800 mg/m ₃
1000 ml/m |
- Other instructions: The lists used when determining these values served as a basis
 - Personal protective gear
 - General protective and sanitary measures: Wash hands before breaks and after work
 - Respiratory protection: Wear respiratory protection, if ventilation is inadequate
 - Protective gloves: Not required
 - Eye protection: Tightly sealing safety goggles

9. Physical and Chemical Characteristics

- Form: Liquid
- Color: Depends on product designation
- Odor: Distinctive
- Change of state
- Melting point/melting range: Value/Range Not determined
- Boiling point/boiling range: Unit -44 °C
- Flash point: -97 °C
- Inflammation point: 365 °C
- Self-ignitability: The product is not self-ignitable
- Explosion hazard: The product is not explosion hazardous, however, explosive vapor/air mixtures can form
- Explosion limits: Lower limit: 1.5 vol. %, upper limit 15.0 vol. %
- Vapor pressure: at 20 ° C: 2700 mbar
- Density: not applicable, since product is an aerosol
- Water solubility/water miscibility: partially mixable
- Solvent content
- Organic solvents: 36.0 %

10. Stability and Reactivity
 - Thermal decomposition/conditions to be avoided: No decomposition if used according to instructions
 - Hazardous reactions: No hazardous reactions known
 - Hazardous decomposition products: No hazardous decomposition products known

11. Toxicology Information
 - Acute toxicity
 - Primary irritating effect
 - Skin: No irritating effect
 - Eyes: Irritating effect possible
 - Sensitization: No sensitizing effect known

12. Ecological Information
 - General data
 - Water hazard classification 0 (self-classification): generally not hazardous to water

13. Disposal Information
 - Product:
 - Recommendation: Do not dispose with household garbage. Prevent product from entering sewer drain.
 - Uncleaned packaging:
 - Recommendation: Dispose according to government regulations

14. Transportation Information
 - Transportation by land: ADR/RID and GGVS/GGVE (across borders/domestic):
 - ADR/RID-GGVS/E Class: 2
 - Paragraph/letter: 10 b2
 - UN No.: 1950

15. Regulations
 - Designation according to EFC guidelines: The product is classified and identified according to EC guidelines/GefStoffV
 - Product identification letter and hazard classification: F+ highly flammable
 - R Clauses: 12 highly flammable
 - S Clauses: 16 keep away from sources of ignition - do not smoke
 - National regulations:
 - Water hazard classification:
 - Water hazard classification 0 (self-classification): generally not hazardous to water

16. Other Information
 - The information is based on our current knowledge, however, it does not constitute an assurance of product characteristics and does not create a contractual legal relationship
 - Data sheet issued by: HOTSET Heizpatronen und Zubehör GmbH



Hotflex Heater Installation and Operation Guideline

Typical Technical Specifications:	
Min Bending Radius	R 10mm
Max Temperature	700C (1292F)
High Volt Stability	1000VAC
Insulation Resistance	$\geq 5M@500VDC$
Leakage Current	$\leq .5mA @ 253VAC$
Wattage Tolerance	$\pm 10\%$
Max Voltage	250VAC
Diameter Tolerance	Nominal $\varnothing \pm 0.10mm$
Length Tolerance	$\pm 1.5\%$

Dear Customer,

Thank you for your trust in Hotset heating elements.

Hotset heaters stand out due to their wide range of high performance features. Therefore they can be designed for individual applications and manufactured for optimum performance.

Hotset heaters are quality products – at every stage of their development and manufacturing they have to reach and pass our high quality standards.

This high standard of quality guarantees the long-lasting and reliable operation of the heaters when used in compliance within the following guidelines.

And of course if you have any further questions please feel free to contact us.

Installation:

- Installation should only be performed by people trained in electrical hookup.
- Do not hold onto the heater with a set screw or other clamping method that can deform the case.
- Only use Non-Electrically conductive sprays and pastes for installation.
- We recommend that an installation plate be used to hold the heater into the groove during operation. This is most

important when you are pressing the heater into the groove as it can lift out with thermal cycling.

- Always use a soft plastic hammer when forming into the groove to avoid deforming the casing.
- When bending first find the center point of the groove and begin the bending at the center mark on the heater towards the screw terminals.
- The heater will stretch during forming – please refer to the expansion factors below for correct beginning length.
- Be careful not to bend smaller than the minimum R10 or the heater may break open. If this happens the heater can no longer be used.
- Be careful to not bend the heater at the same point several times as it will also break open and fail.
- Do not attempt to bend the first 30mm of each end of the heaters cold sections.

Temperature controllers:

- Temperature Controllers have to be matched to the heaters amp load with an appropriate thermocouple sensor input.
- Only use controllers that include a "Soft Start" function. This will allow the heater to burn off any moisture inside before applying full voltage.

Connections:

- Installation must protect lead connection areas from liquids and gasses to avoid short circuits.
- If using a separate thermocouple be sure that the TC is not electrically grounded to the heater casing which could cause a feedback to the controller inputs.
- Watch sharp edges along the lead wire path.
- Be mindful of the maximum temperature of the lead wires during planning to avoid melting during operation.
- Voltage differences have a dramatic effect on wattage output and heater life. Be sure the voltage is correct for the heater design. You will find the designed voltage stamped onto the heater.

Operation:

- All installations must be electrically grounded.
- Do not touch the heating element while in use – they get very hot.
- Please mount the heater so that there is no chance of fire from flammable material.

Storage:

- Store at room temperature in a dry location.



Installation using the Casting Compound

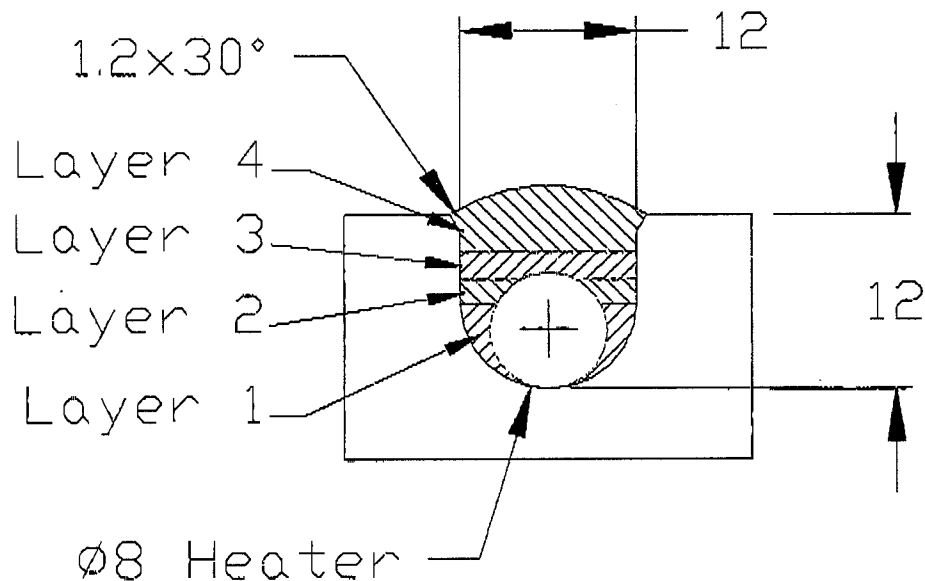
This two component compound is thermally conductive and is used during installation of a Tubular Heater into an oversized groove. This compound is best used when applied in 4 to 6 layers.

We do not recommend that this compound be used with the Hotflex heater. The compound cannot completely fill the gaps between the ribs and can cause hot spots due to poor heat transfer. This will result in premature heater failure.

Instructions:

1. Groove and heater must be clean of grease. Best if the surfaces are cleaned with a solvent first. Be careful to not get the solvent around the ends of the heater (terminal ends)
2. Mix VM1000 casting powder and BM1000 binding agent according to the labels directions. Form a paste that is not too thin but does not trap air bubbles. Mix in proportions of 100% powder and 55-65% binding agent (% by weight).
3. Apply up to three layers and allow each layer to dry for approximately 20 minutes at room temperature.
4. Where needed apply a further 1 to 2 layers and allow to dry at room temperature.
5. Dry in an oven at 95F for 6 to 16 hours, then heat to 356F for 2 hours.
6. Rough spots on the casting compound can be removed afterwards by and with a grinding stone. Wait until the compound is fully cured before grinding.
7. If a repair is needed the compound will bond to the old layers well without treatment.
8. Mixing tools can be cleaned in tap water.
9. The compound will swell during curing. Do not fill to the top of the groove. You want to put just enough compound in to cover the heater approximately 2mm.

Note: The casting compound is electrically conductive. Do not allow it to come into contact with the terminal ends.

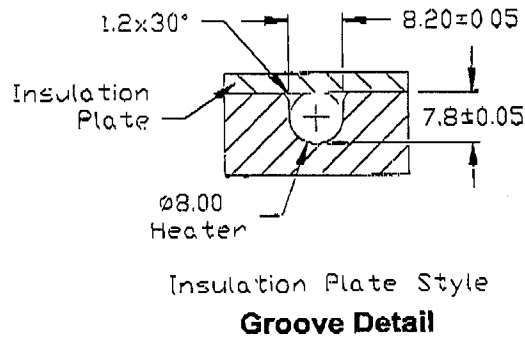
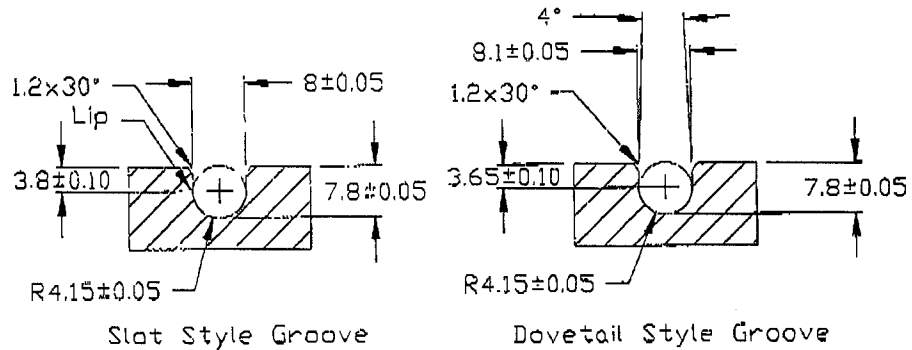


Layered Compound Application

Installation by Pressing into a Groove

Please see below for suggested groove design for installing a Hotflex by pressing only. These are for the \varnothing 8.0 heater – increase dimensions by 0.5mm if using the \varnothing 8.5 heater. Dimensions are in mm.

Please note the points on the main page about forming concerns before attempting installation.



Expansion factors

(Pressed and Potted Installation)

When calculating the starting length of the Hotflex needed please multiply the length needed by the factors in the table below. The heater will grow during installation so this will shorten the starting length to compensate.

Diameter	R 10	R 12.5	R 15	> R 15
8.0 mm	.944	.968	.972	.985
8.2 mm	.944	.968	.976	.985
8.5 mm	.963	.970	.976	.985