

### Danger



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

### 1.1. Product identifier

Trade name	: FID - Brenngas
SDS no	: RS-H2-He-01
Other means of identification	: <a href="#">FID - fuel gas</a>
CAS no.	: None.
EC no.	: None.
Index no.	: None.
REACH no.	: None.

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	: Industrial and professional use for chemical analysis, calibration, (routine) quality control, laboratory use, under controlled conditions. Perform risk assessment prior to use.
Uses advised against	: Consumer use. <a href="#">Contact your supplier for more information on other uses.</a> <a href="#">Perform risk assessment prior to use.</a> Uses other than those listed above are not supported, contact your supplier for more information on other uses. Attention: These products must not be applied to humans or animals unless they are expressly designated as medical or medicinal gases.

### 1.3. Details of the supplier of the safety data sheet

Messer Tehnogas AD Beograd  
Banjicki put , 62  
RS- 11090 Belgrade, Serbia  
T +381 11 35 37 200 - F +381 11 35 37 291  
[postoffice@messer.rs](mailto:postoffice@messer.rs) - [www.messer.rs](http://www.messer.rs)

### 1.4. Emergency telephone number

Emergency telephone number	: Poison Control Center, VMA Crnotravska 17, Belgrade Serbia Tel. : +381(0) 11 360 8440 (24h)
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## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1B	H221
	Gases under pressure : Compressed gas	H280

### 2.2. Label elements

#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)	:		
		GHS02	GHS04
Signal word (CLP)	:	Danger	

Hazard statements (CLP)	: H221 - Flammable gas. H280 - Contains gas under pressure; may explode if heated.
Precautionary statements (CLP)	
- Prevention	: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response	: P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 - In case of leakage, eliminate all ignition sources.
- Storage	: P403 - Store in a well-ventilated place.

### 2.3. Other hazards

Asphyxiant in high concentrations. These high concentrations are within the flammability range. Not classified as PBT or vPvB.  
The substance / mixture has no endocrine disrupting properties.

## SECTION 3: Composition/information on ingredients

**3.1. Substances** Not applicable

### 3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP] ATE, EUH-statements, M-Factors
Helium	CAS no.: 7440-59-7 EC no.: 231-168-5 Index no.: --- REACH no.: *1	Rest	Press. Gas (Comp.), H280
Hydrogen	CAS no.: 1333-74-0 EC no.: 215-605-7 Index no.: 001-001-00-9 REACH no.: *1	40	Flam. Gas 1A, H220 Press. Gas (Comp.), H280

Full text of H- and EUH-statements: see section 16

*Contains no other components or impurities which will influence the classification of the product.*

\*1: Listed in Annex IV / V REACH, exempted from registration.

\*3: Registration not required: Substance manufactured or imported < 1t/y.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

- Inhalation	: Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Maintain an open airway. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact	: Adverse effects not expected from this product.
- Eye contact	: Adverse effects not expected from this product. If irritation occurs: Flush eyes with plenty of water. Remove any contact lenses. Get medical advice / attention.
- Ingestion	: Ingestion is not considered a potential route of exposure.

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

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. See section 11.

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

Take first aid measures. Loosen tight clothing, such as a collar, tie or belt.  
Place the unconscious person in a lateral position. Seek medical attention.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Shutting off the source of the gas is the preferred method of control.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

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

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : None.

#### 5.3. Advice for firefighters

- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.  
If possible, stop flow of product.  
Use water spray or fog to knock down fire fumes if possible.  
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous / explosive re-ignition may occur. Extinguish any other fire.  
Move containers away from the fire area if this can be done without risk.
- Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.  
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.  
Standard EN 469 - Protective clothing for firefighters.  
Standard EN 659 - Protective gloves for firefighters.  
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

### SECTION 6: Accidental release measures

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

- For non-emergency personnel : Act in accordance with local emergency plan.  
Try to stop release.  
Evacuate area.  
Eliminate ignition sources.  
Ensure adequate air ventilation.  
Stay upwind.  
See section 8 of the SDS for more information on personal protective equipment.
- For emergency responders : Monitor concentration of released product.  
Consider the risk of potentially explosive atmospheres.  
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.  
See section 5.3 of the SDS for more information.

#### 6.2. Environmental precautions

- Try to stop release.

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

- Ventilate area.

#### 6.4. Reference to other sections

- See also sections 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Safe use of the product

: Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment. Ensure equipment is adequately earthed. Keep away from ignition sources (including static discharges). Consider the use of only non-sparking tools. Take precautionary measures against static discharge.

The product must be handled in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke while working with the product. Wash hands after use. Only experienced and properly instructed persons should handle gases under pressure. Wear personal protective equipment (See section 8). Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. [Purge air from system before introducing gas.](#)

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.

Avoid suck back of water, acid and alkalis.

Do not breathe gas.

Avoid release of product into work area.

Safe handling of the gas receptacle

: Refer to supplier's container handling instructions.

Protect containers from physical damage; do not drag, roll, slide or drop.

When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.

Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If the protection cap is too tight, remove it with adjustable wrench. Never insert sharp objects into the cavities of the cap, this can lead to damage to the valve and leakage.

Open valve slowly to avoid pressure shock. If user experiences any difficulty operating valve discontinue use and contact supplier.

Never attempt to repair or modify container valves or safety relief devices.

Damaged valves should be reported immediately to the supplier.

Keep container valve outlets clean and free from contaminants particularly oil and water.

Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.

Close container valve after each use and when empty, even if still connected to equipment.

Never attempt to transfer gases from one cylinder / container to another.

Never use direct flame or electrical heating devices to raise the pressure of a container.

Do not allow backfeed into the container. Suck back of water into the container must be prevented.

Do not remove or deface labels provided by the supplier for the identification of the content of the container.

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

Segregate from oxidant gases and other oxidants in store.

All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

Observe all regulations and local requirements regarding storage of containers.

Containers should not be stored in conditions likely to encourage corrosion.

Container valve guards or caps should be in place.

Containers should be stored in the vertical position and properly secured to prevent them from falling over.

Stored containers should be periodically checked for general condition and leakage.

Keep container below 50°C in a well ventilated place.

Store containers in location free from fire risk and away from sources of heat and ignition.

Keep away from combustible materials.

#### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

OEL (Occupational Exposure Limits)	: None available.
DNEL (Derived-No Effect Level)	: None available.
PNEC (Predicted No-Effect Concentration)	: None available.

### 8.2. Exposure controls

#### 8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.  
Product to be handled in a closed system.  
Systems under pressure should be regularly checked for leakages.  
Gas detectors should be used when flammable gases/vapours may be released.  
Consider the use of a work permit system e.g. for maintenance activities.

#### 8.2.2. Individual protection measures, e.g. personal protective equipment

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.

The following recommendations should be considered:

PPE compliant to the recommended EN/ISO standards should be selected.

- Eye/face protection : Wear safety glasses with side shields.  
Standard EN 166 - Personal eye-protection - specifications.
- Skin protection :
  - Hand protection : Wear working gloves when handling gas containers.  
Standard EN 388 - Protective gloves against mechanical risks, [performance level 1 or higher](#). Recommended types include [wrist gloves from leather or synthetic material with equivalent performance](#), [fabric gloves](#), [fabric gloves with leather palms](#).
  - Other : Consider the use of flame resistant anti-static safety clothing.  
Standard EN ISO 14116 - Limited flame spread materials.  
Standard EN 1149-5 - Protective clothing: Electrostatic properties.  
Wear safety shoes while handling containers.  
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
- Respiratory protection : [Self contained breathing apparatus \(SCBA\) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres](#).  
Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .  
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.  
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.  
When indicated by a risk assessment, Respiratory Protective Equipment must be used. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.
- Thermal hazards : None in addition to the above sections.

#### 8.2.3. Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance	
- Physical state at 20°C / 101.3kPa	: Gas.
- Colour	: Colourless.
Odour	: Odourless.
Melting point / Freezing point	: Not applicable for gas mixtures.

Boiling point	: Not applicable for gas mixtures. It is technically not possible to determine the boiling point or range of this mixture. Component with lowest boiling point: Helium -269 °C
Flammability	: Flammable gas.
Lower explosion limit	: Calculated value: 9.94%
Upper explosion limit	: No test data or calculation method available.
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: Not known. Auto ignition temperature for mixtures is not available. Component with lowest auto-ignition temperature: Hydrogen 560 °C
Decomposition temperature	: Not applicable.
pH	: Not applicable for gases and gas mixtures.
Viscosity, kinematic	: No reliable data available.
Water solubility [20°C]	: Not known, but considered to have low solubility.
Partition coefficient n-octanol/water (Log K <sub>ow</sub> )	: Not applicable for gas mixtures.
Vapour pressure [20°C]	: Not applicable.
Vapour pressure [50°C]	: Not applicable.
Density and/or relative density	: Not applicable.
Relative vapour density (air=1)	: Lighter or similar to air.
Particle characteristics	: Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

### **9.2. Other information**

#### **9.2.1. Information with regard to physical hazard classes**

Explosion limits	: Flammability range not available.
Oxidising properties	: No oxidising properties.

#### **9.2.2. Other safety characteristics**

Molar mass	: Not applicable for gas mixtures.
Evaporation rate	: Not applicable for gases and gas mixtures.
Other data	: None.

## **SECTION 10: Stability and reactivity**

### **10.1. Reactivity**

Data for mixtures are not available.

### **10.2. Chemical stability**

Stable under normal conditions.

### **10.3. Possibility of hazardous reactions**

Can form explosive mixture with air.  
May react violently with oxidants.

### **10.4. Conditions to avoid**

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.  
Avoid moisture in installation systems.

### **10.5. Incompatible materials**

Air, Oxidisers.  
For additional information on compatibility refer to ISO 11114.

### **10.6. Hazardous decomposition products**

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

Acute toxicity	: No toxicological effects from this product.
Skin corrosion/irritation	: No known effects from this product.
Serious eye damage/irritation	: No known effects from this product.
Respiratory or skin sensitisation	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.

**11.2. Information on other hazards**

Other information	: The substance / mixture has no endocrine disrupting properties.
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**SECTION 12: Ecological information**

**12.1. Toxicity**

Assessment	: No ecological damage caused by this product.
EC50 48h - Daphnia magna [mg/l]	: No data available.
EC50 72h - Algae [mg/l]	: No data available.
LC50 96 h - Fish [mg/l]	: No data available.

Hydrogen (1333-74-0)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

Helium (7440-59-7)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

**12.2. Persistence and degradability**

Assessment	: No ecological damage caused by this product.
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**12.3. Bioaccumulative potential**

Assessment	: No ecological damage caused by this product.
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**12.4. Mobility in soil**

Assessment	: Partition into soil is unlikely.
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**12.5. Results of PBT and vPvB assessment**

Assessment	: Not classified as PBT or vPvB.
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**12.6. Endocrine disrupting properties**

Assessment	: The substance/mixture has no endocrine disrupting properties.
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**12.7. Other adverse effects**

Other adverse effects : No known effects from this product.  
Effect on the ozone layer : No effect on the ozone layer.  
Effect on global warming : Contains greenhouse gas(es).

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

Contact supplier if guidance is required.  
Do not discharge into areas where there is a risk of forming an explosive mixture with air.  
Waste gas should be flared through a suitable burner with flash back arrestor.  
Ensure that the emission levels from local regulations or operating permits are not exceeded.  
Refer to the EIGA code of practice Doc.30/21 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods.  
Do not discharge into any place where its accumulation could be dangerous.  
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 \*: Gases in pressure containers (including halons) containing hazardous substances.

**13.2. Additional information**

External treatment and disposal of waste should comply with applicable local and/or national regulations.

**SECTION 14: Transport information**

**14.1. UN number or ID number**

In accordance with ADR / RID / IMDG / IATA / ADN  
UN-No. : 1954

**14.2. UN proper shipping name**

**Transport by road/rail/inland waterways (ADR/RID/ADN)** : COMPRESSED GAS, FLAMMABLE, N.O.S. (hydrogen, Helium)  
**Transport by air (ICAO-TI / IATA-DGR)** : Compressed gas, flammable, n.o.s. (hydrogen, Helium)  
**Transport by sea (IMDG)** : COMPRESSED GAS, FLAMMABLE, N.O.S. (hydrogen, Helium)

**14.3. Transport hazard class(es)**

**Labelling**



2.1 : Flammable gases.

**Transport by road/rail/inland waterways (ADR/RID/ADN)**

Class : 2  
Classification code : 1F  
Hazard identification number : 23  
Tunnel Restriction : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other carriage : Passage forbidden through tunnels of category D and E

**Transport by air (ICAO-TI / IATA-DGR)**

Class / Div. (Sub. risk(s)) : 2.1

**Transport by sea (IMDG)**

Class / Div. (Sub. risk(s)) : 2.1  
Emergency Schedule (EmS) - Fire : F-D  
Emergency Schedule (EmS) - Spillage : S-U



**14.4. Packing group**

Transport by road/rail/inland waterways (ADR/RID/ADN) : Not applicable.  
 Transport by air (ICAO-TI / IATA-DGR) : Not applicable.  
 Transport by sea (IMDG) : Not applicable.

**14.5. Environmental hazards**

Transport by road/rail/inland waterways (ADR/RID/ADN) : None.  
 Transport by air (ICAO-TI / IATA-DGR) : None.  
 Transport by sea (IMDG) : None.

**14.6. Special precautions for user**

**Packing Instruction(s)**

Transport by road/rail/inland waterways (ADR/RID/ADN) : P200.  
 Transport by air (ICAO-TI / IATA-DGR)  
     Passenger and Cargo Aircraft : Forbidden.  
     Cargo Aircraft only : 200.  
 Transport by sea (IMDG) : P200.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment.  
 Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.  
 Before transporting product containers:  
 - Ensure there is adequate ventilation.  
 - Ensure that containers are firmly secured.  
 - Ensure valve is closed and not leaking.  
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.  
 - Ensure valve protection device (where provided) is correctly fitted.

**14.7. Maritime transport in bulk according to IMO instruments**

Not applicable.

**SECTION 15: Regulatory information**

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**RS Regulations**

Pravilnik o ograničenjima i zabranama proizvodnje, stavljanja u promet i korišćenja hemikalija ("Sl. glasnik RS", br. 105/2013, 52/2017, 21/2019 i 29/2024) : None.

Pravilnik o izvozu i uvozu određenih opasnih hemikalija („Sl. glasnik RS“ br. 93/23) : None.

Pravilnik o Listi opasnih materija i njihovim količinama i kriterijumima za određivanje vrste dokumenta koje izrađuje operater seveso postrojenja, odnosno kompleksa ("Sl. glasnik RS", br. 41/2010, 51/2015 i 50/2018) : Covered.

**EU Regulations**

Restrictions on use : Contains no substance(s) listed on the REACH Candidate List.

Other information, restriction and prohibition regulations : None.  
 Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals).  
 Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants).

Seveso Directive : 2012/18/EU (Seveso III) : Covered.

**15.2. Chemical safety assessment**

A CSA does not need to be carried out for this product.

### SECTION 16: Other information

- Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 2020/878.  
In Section 1, the Safety Data Sheet is supplemented with information about relevant identified uses of the substance or mixture and uses advised against.  
In Section 5, the Safety Data Sheet is supplemented with information about special hazards arising from the substance or mixture.  
In Section 7, the Safety Data Sheet is supplemented with information about safe use of the product.  
In Section 8, the Safety Data Sheet is supplemented with information about exposure control and personal protection.  
In Section 13, the Safety Data Sheet is supplemented with information about waste treatment methods.  
In Section 15, the Safety Data Sheet is supplemented with regulatory information.
- Abbreviations and acronyms : ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road  
ATE - Acute Toxicity Estimate  
CAS - Chemical Abstract Service number  
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008  
CSA - Chemical Safety Assessment  
DNEL - Derived No Effect Levels  
EINECS - European Inventory of Existing Commercial Chemical Substances  
EC- European Community number  
EIGA - European Industrial Gases Association  
EN - European Standard  
IATA - International Air Transport Association  
ICAO - International Civil Aviation Organization  
IMDG code - International Maritime Dangerous Goods  
IMO - International Maritime Organization  
LC50 - Lethal Concentration to 50 % of a test population  
LD50 - Lethal Dose 50%  
LEL - Lower Explosive Limit  
OEL - Occupational exposure limits  
PBT - Persistent, Bioaccumulative and Toxic  
PNEC - Predicted No Effect Concentration  
PPE - Personal Protection Equipment  
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006  
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail  
RMM - Risk Management Measures  
STOT - RE - Specific Target Organ Toxicity - Repeated Exposure  
STOT- SE - Specific Target Organ Toxicity - Single Exposure  
STEL - Short Term Exposure Limit  
TWA - 8-hour total weight average  
UEL - Upper explosive limit  
UFI - Unique Formula Identifier  
UN - United Nations  
vPvB - Very Persistent and Very Bioaccumulative  
WGK - Water Hazard Class
- Training advice : Receptacle under pressure.  
Ensure operators understand the flammability hazard.
- Further information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).  
Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at: <http://www.eiga.eu>

Full text of H- and EUH-statements	
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Gas 1B	Flammable gases, Category 1B
H220	Extremely flammable gas.
H221	Flammable gas.
H280	Contains gas under pressure; may explode if heated.
Press. Gas (Comp.)	Gases under pressure : Compressed gas

#### DISCLAIMER OF LIABILITY

: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.  
Details given in this document are believed to be correct at the time of going to press.  
Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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