

### Danger



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

### 1.1. Product identifier

Product code : ALSA073  
Other means of identification : Hydrogen sulphide  
CAS-No. : 007783-06-4  
EC-No. : 231-977-3  
EC Index-No. : ---

Chemical formula : H<sub>2</sub>S

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

Relevant identified uses : No additional information available  
Uses advised against : Consumer use.  
Uses other than those listed above are not supported, contact your supplier for more information on other uses.

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

AIR LIQUIDE (PTY) LTD  
03 Crn Vereeniging Road & Andre Marais Street Alrode, Alberton  
1451 Gauteng  
SOUTH AFRICA  
T +27 87 288 1100  
[reshoketsoe.makuse@airliquide.com](mailto:reshoketsoe.makuse@airliquide.com) - [www.airliquide.co.za](http://www.airliquide.co.za)

### 1.4. Emergency telephone number

Emergency telephone number : +27 87 288 1100

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

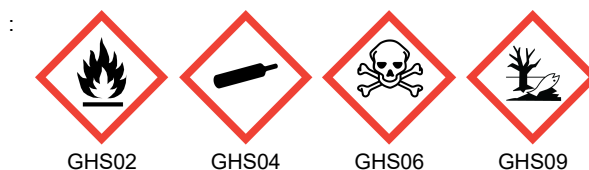
#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1A	H220
	Gases under pressure : Liquefied gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 2	H330
	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation	H335
Environmental hazards	Hazardous to the aquatic environment – Acute Hazard, Category 1	H400

### 2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H220 - Extremely flammable gas.  
H280 - Contains gas under pressure; may explode if heated.  
H330 - Fatal if inhaled.  
H335 - May cause respiratory irritation.  
H400 - Very toxic to aquatic life.

Precautionary statements (CLP)

- Prevention

: P271 - Use only outdoors or in a well-ventilated area.  
P273 - Avoid release to the environment.  
P260 - Do not breathe vapours, spray, mist, gas, fume, dust.  
P284 - In case of inadequate ventilation wear respiratory protection.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.  
No smoking.

- Response

: P391 - Collect spillage.  
P320 - Specific treatment is urgent (see ANTIDOTE, specific cleansing agent(s), supplemental first aid instruction on this label).  
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P310 - Immediately call a POISON CENTER, a doctor.  
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 - In case of leakage, eliminate all ignition sources.  
P312 - Call a POISON CENTER, doctor if you feel unwell.

- Storage

: P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P405 - Store locked up.  
P403 - Store in a well-ventilated place.  
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

- Disposal considerations

: P501 - Dispose of contents, contents and container, container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste, hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation, an approved waste disposal plant, an industrial incineration plant, Collection point, a hazardous or special waste collection point, an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal..

### 2.3. Other hazards

Not classified as PBT or vPvB.

The substance/mixture has no endocrine disrupting properties.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
hydrogen sulphide	CAS-No.: 7783-06-4 EC-No.: 231-977-3 EC Index-No.: 016-001-00-4 REACH registration No: 01-2119445737-29	≤ 100	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Acute Tox. 2 (Inhalation:gas), H330 STOT SE 3, H335 Aquatic Acute 1, H400

Name	Product identifier	Specific concentration limits
hydrogen sulphide	CAS-No.: 7783-06-4 EC-No.: 231-977-3 EC Index-No.: 016-001-00-4 REACH registration No: 01-2119445737-29	(1 ≤ C ≤ 100) STOT SE 3, H335

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

### 3.2. Mixtures

Not applicable

## 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. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

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

May cause irritation to the respiratory tract, sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.  
See section 11.

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

Obtain medical assistance.

## 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 : If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Sulphur dioxide.

### 5.3. Advice for firefighters

- Specific methods : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.  
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.  
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.  
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.  
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.  
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.  
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.
- Purge air from system before introducing gas.
- Take precautionary measures against static discharge.
- Keep away from ignition sources (including static discharges).
- Consider the use of only non-sparking tools.
- Ensure equipment is adequately earthed.
- Avoid exposure, obtain special instructions before use.
- Installation of a cross purge assembly between the container and the regulator is recommended.
- The product must be handled in accordance with good industrial hygiene and safety procedures.
- Only experienced and properly instructed persons should handle gases under pressure.
- Consider pressure relief device(s) in gas installations.
- Ensure the complete gas system was (or is regularly) checked for leaks before use.
- Do not smoke while handling product.
- 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.
- Do not allow backfeed into the container.
- 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 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 remove or deface labels provided by the supplier for the identification of the content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

#### 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

hydrogen sulphide (7783-06-4)	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Local name	Hydrogen sulphide
IOEL TWA	7 mg/m <sup>3</sup>
IOEL TWA [ppm]	5 ppm
IOEL STEL	14 mg/m <sup>3</sup>
IOEL STEL [ppm]	10 ppm
Regulatory reference	COMMISSION DIRECTIVE 2009/161/EU

hydrogen sulphide (7783-06-4)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	14 mg/m <sup>3</sup>
Acute - systemic effects, inhalation	14 mg/m <sup>3</sup>
Long-term - local effects, inhalation	7 mg/m <sup>3</sup>
Long-term - systemic effects, inhalation	7 mg/m <sup>3</sup>

PNEC (Predicted No-Effect Concentration) : None established.

### 8.2. Exposure controls

#### 8.2.1. Appropriate engineering controls

Product to be handled in a closed system and under strictly controlled conditions.  
Provide adequate general and local exhaust ventilation.  
Preferably use permanent leak-tight installations (e.g. welded pipes).  
Systems under pressure should be regularly checked for leakages.  
Ensure exposure is below occupational exposure limits (where available).  
Gas detectors should be used when toxic gases 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 goggles when transfilling or breaking transfer connections.

Standard EN 166 - Personal eye-protection - specifications.

• Skin protection

: Wear working gloves when handling gas containers.

- Hand protection

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 : Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.  
Consult respiratory device supplier's product information for the selection of the appropriate device.  
Keep self contained breathing apparatus readily available for emergency use.  
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
- 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. Odour threshold is subjective and inadequate to warn of overexposure.
pH	: Not applicable for gases and gas mixtures.
Melting point / Freezing point	: Not applicable for gases and gas mixtures.
Boiling point	: Not known.
Flash point	: Not applicable for gases and gas mixtures.
Flammability	: Extremely flammable gas.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Vapour pressure [20°C]	: Not available
Vapour pressure [50°C]	: Not available
Density	: Not applicable
Vapour density	: Not applicable for gases and gas mixtures.
Relative density, liquid (water=1)	: Not applicable for gases and gas mixtures.
Relative density, gas (air=1)	: Heavier than air.
Water solubility	: No reliable data available.
Partition coefficient n-octanol/water (Log Kow)	: Not known.
Auto-ignition temperature	: Not known.
Decomposition temperature	: Not applicable.
Viscosity, kinematic	: Not applicable for gases and gas mixtures.
Particle characteristics	: Not applicable for gases and gas mixtures.

### 9.2. Other information

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

Oxidising properties : No oxidising properties.

#### 9.2.2. Other safety characteristics

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

#### 10.2. Chemical stability

Stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

Reactivity

Can form explosive mixture with air.  
May react violently with oxidants.  
: This mixture contains components with the following reactivity : 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

With water causes rapid corrosion of some metals.  
Moisture.  
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 : Fatal if inhaled.

#### hydrogen sulphide (7783-06-4)

LC50 Inhalation - Rat [ppm]	356 ppm/4h
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**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** : May cause respiratory irritation.  
**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.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Assessment : Very toxic to aquatic life.

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 sulphide (7783-06-4)

EC50 48h - Daphnia magna [mg/l]	0.12 mg/l
EC50 72h - Algae [mg/l]	1.87 mg/l
LC50 96 h - Fish [mg/l]	0.007 - 0.019 mg/l

#### 12.2. Persistence and degradability

Assessment : No data available.

#### 12.3. Bioaccumulative potential

Assessment : No data available.

#### 12.4. Mobility in soil

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

#### 12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

#### 12.6. Endocrine disrupting properties

The substance/mixture has no endocrine disrupting properties.

#### 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 : No known effects from this product.

## 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.  
Must not be discharged to atmosphere.  
Ensure that the emission levels from local regulations or operating permits are not exceeded.  
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods.  
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. : 3162

### 14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN)	: LIQUEFIED GAS, TOXIC, N.O.S. (hydrogen sulphide)
Transport by air (ICAO-TI / IATA-DGR)	: Liquefied gas, toxic, n.o.s. (hydrogen sulphide)
Transport by sea (IMDG)	: LIQUEFIED GAS, TOXIC, N.O.S. (hydrogen sulphide)

### 14.3. Transport hazard class(es)

#### Labelling



2.3 : Toxic gases.  
2.1 : Flammable gases.  
Environmentally hazardous substances

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

Class	: 2
Classification code	: 2T
Hazard identification number	: 26
Tunnel Restriction	: C/D - Tank carriage: Passage forbidden through tunnels of category 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)) : 2.3

#### Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.3  
Emergency Schedule (EmS) - Fire : F-C  
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)	: Environmentally hazardous substance / mixture.
Transport by air (ICAO-TI / IATA-DGR)	: Environmentally hazardous substance / mixture.
Transport by sea (IMDG)	: Marine pollutant

### 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	: Forbidden.
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****EU-Regulations**

- Restrictions on use : None.  
Seveso Directive : 2012/18/EU (Seveso III) : Covered.

**National regulations**

- Regulatory reference : Ensure all national/local regulations are observed.

**15.2. Chemical safety assessment**

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

**SECTION 16: Other information**

- Indication of changes : Safety data sheet in accordance with commission regulation (EU) No 2020/878.
- Abbreviations and acronyms : ATE - Acute Toxicity Estimate  
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008  
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006  
EINECS - European Inventory of Existing Commercial Chemical Substances  
CAS# - Chemical Abstract Service number  
PPE - Personal Protection Equipment  
LC50 - Lethal Concentration to 50 % of a test population  
RMM - Risk Management Measures  
PBT - Persistent, Bioaccumulative and Toxic  
vPvB - Very Persistent and Very Bioaccumulative  
STOT- SE : Specific Target Organ Toxicity - Single Exposure  
CSA - Chemical Safety Assessment  
EN - European Standard  
UN - United Nations  
ADR - Agreement concerning the International Carriage of Dangerous Goods by Road  
IATA - International Air Transport Association  
IMDG code - International Maritime Dangerous Goods  
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail  
WGK - Water Hazard Class  
STOT - RE : Specific Target Organ Toxicity - Repeated Exposure  
UFI : Unique Formula Identifier
- Training advice : Ensure operators understand the flammability hazard.  
Users of breathing apparatus must be trained.  
Ensure operators understand the toxicity hazard.

## Further information

: Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Key literature references and sources of data are maintained in EIGA doc 169 :  
'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu> .**Full text of H- and EUH-statements**

Acute Tox. 2 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 2
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation

## 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.**End of document**