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

1.1 Product identifier
Trade name: 4,4'-Methylenebis(phenyl isocyanate)
Stock number: L15740, 36627
CAS Number: 101-66-8
EC number: 202-966-0
Index number: 615-005-00-9

1.2 Relevant identified uses of the substance or mixture and uses advised against.
Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: Alfa Aesar GmbH & Co.KG
A Johnson Matthey Company
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com

Informing department: Product safety Tel + +049 (0) 7275 988687-0
1.4 Emergency telephone number:
Carechem 24: +44 (o) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.gifinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
GHS06 skull and crossbones
Acute Tox. 2 H330 Fatal if inhaled.

GHS08 health hazard
Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Carc. 2 H351 Suspected of causing cancer.
STOT RE 2 H373 May cause damage to the lung, the blood tissue and the immune system through prolonged or repeated exposure. Route of exposure: Inhalative, Dermal.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC
Xn: Harmful
Xn: Sensitising
R42/43: May cause sensitisation by inhalation and skin contact.
Xi: Irritant
R36/37/38: Irritating to eyes, respiratory system and skin.
Information concerning particular hazards for human and environment: Not applicable
Other hazards that do not result in classification No information known.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008
Hazard pictograms
GHS06, GHS08
Signal word Danger
Hazard statements
H330 Fatal if inhaled.
H315 Causes skin irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H373 May cause damage to the lung, the blood tissue and the immune system through prolonged or repeated exposure. Route of exposure: Inhalative, Dermal.

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves / protective clothing.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310 Immediately call a POISON CENTER or doctor/physician.

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances
CAS# Designation: 101-66-8 4,4'-Methylenebis(phenyl isocyanate)
EC number: 202-966-0
Index number: 615-005-00-9

SECTION 4: First aid measures

4.1 Description of first aid measures
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.

(Contd. on page 2)
Trade name 4,4'-Methylenebis(phenyl isocyanate)

4.2 Most important symptoms and effects, both acute and delayed
4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures
5.1 Extinguishing media
Suitable extinguishing agents
CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

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

SECTION 6: Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.

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

6.3 Methods and material for containment and cleaning up:
Dispose of contaminated material as waste according to item 13.

Prevention of secondary hazards:
No special measures required.

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

SECTION 7: Handling and storage
7.1 Precautions for safe handling
Handle under dry protective gas.
Keep containers tightly sealed.
Ensure good ventilation/exhaustion at the workplace.
Information about protection against explosions and fires:
No information known.

7.2 Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and containers:
Store in freezer (-20°C).

Further information about storage conditions:
Store under dry inert gas.
This product is moisture sensitive.
Store in freezer (-20°C).
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Protect from humidity and keep away from water.

7.3 Specific end use(s)
No further relevant information available.

SECTION 8: Exposure controls/personal protection
Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1 Control parameters
Components with critical values that require monitoring at the workplace:
101-68-8 4,4'-Methylenebis(phenyl isocyanate) (100.0%)

AGW (Germany) 0,05 mg/m³
1;=2=(f);DFG, 11, 12, Sa, Y
PEL (USA) Short-term value: C 0,2 mg/m³, C 0,02 ppm
REL (USA) Short-term value: C 0,2* mg/m³, C 0,02* ppm
Long-term value: 0,05 mg/m³, 0,005 ppm
TLV (USA) 0,051 mg/m³, 0,005 ppm

Ingredients with biological limit values:
101-68-8 4,4'-Methylenebis(phenyl isocyanate) (100.0%)

BGW (Germany) 10 µg/g Kreatinin
4,4'-Diaminodiphenylmethan

Additional information:
No data

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.

Breathing equipment:
Use breathing protection with high concentrations.
Maintain an ergonomically appropriate working environment.

Protection of hands:
Check protective gloves prior to each use for their proper condition.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Impervious gloves
Trade name: 4,4'-Methylenebis(phenyl isocyanate)

Penetration time of glove material: Not determined
Eye protection: Safety glasses, Face protection
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance: Crystalline
Colour: White
Smell: Weak, characteristic
Odour threshold: Not determined.

pH-value: Not applicable.
Change in condition
Melting point/Melting range: 41-44 °C
Boiling point/Boiling range: 194 °C
Sublimation temperature / start: Not determined

Flash point: 196 °C
Inflammability (solid, gaseous) Not determined.
Ignition temperature: >600 °C
Decomposition temperature: Not determined
Self-inflammability: Not determined.
Critical values for explosion:
Lower: 0.4 Vol %
Upper: Not determined
Steam pressure at 20 °C: 0.066 hPa
Density at 20 °C: 1.239 g/cm³
Relative density: Not determined.
Vapour density: Not applicable.
Evaporation rate: Not applicable.
Solubility in / Miscibility with
Water at 20 °C: 2 g/l
Partition coefficient (n-octanol/water): Not determined.
Viscosity:
dynamic at 43 °C: 5 mPas
kinematic: Not applicable.

9.2 Other information
No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity: No information known.
10.2 Chemical stability: Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.
10.3 Possibility of hazardous reactions: Reacts with strong oxidizing agents
10.5 Incompatible materials: Water/moisture, Oxidizing agents, Heat
10.6 Hazardous decomposition products: Carbon monoxide and carbon dioxide, Nitrogen oxides (NOx)

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity:
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: Causes skin irritation.
Eye irritation or corrosion: Causes serious eye irritation.
Sensitization: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.
Carcinogenicity: Suspected of causing cancer.
EP A-D: Not classifiable as to human carcinogenicity; inadequate human and animal evidence of carcinogenicity or no data are available.
IARC-3: Not classifiable as to carcinogenicity to humans.
Reproductive toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for components in this product.
Specific target organ system toxicity - repeated exposure: May cause damage to the lung, the blood tissue and the immune system through prolonged or repeated exposure. Route of exposure: Inhalational, Dermal.
Specific target organ system toxicity - single exposure: May cause respiratory irritation.
Aspiration hazard: No effects known.
Experience with humans: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for components in this product.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

SECTION 12: Ecological information

12.1 Toxicity: No further relevant information available.
12.2 Persistence and degradability: No further relevant information available.
12.3 Bioaccumulative potential: No further relevant information available.
12.4 Mobility in soil: No further relevant information available.
Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
Water hazard class 1 (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
Avoid transfer into the environment.

12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
SECTION 13: Disposal considerations

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

Uncleaned packagings: Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

UN-Number: UN2811
ADR, IMDG, IATA

14.2 UN proper shipping name
ADR, IMDG, IATA

2811 TOXIC SOLID, ORGANIC, N.O.S. (4,4'-Methylenebis(phenyl isocyanate))

14.3 Transport hazard class(es)
ADR

Class
Label
IMDG, IATA

6.1 (T2) Toxic substances.
6.1

Class
Label
IMDG, IATA

6.1 Toxic substances.
6.1

Packing group
ADR, IMDG, IATA

III

14.5 Environmental hazards:
Not applicable.

14.6 Special precautions for user
Kemler Number:
60

Warning: Toxic substances.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

Transport/Additional information:

ADR

Excepted quantities (EO):

Limited quantities (LQ): 5 kg

Transport category

Tunnel restriction code

E

UN "Model Regulation": UN2811, TOXIC SOLID, ORGANIC, N.O.S. (4,4'-Methylenebis(phenyl isocyanate)), 6.1, III

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Australian Inventory of Chemical Substances
Substance is listed.

Standard for the Uniform Scheduling of Drugs and Poisons
Substance is not listed.

National regulations
Information about limitation of use: Employment restrictions concerning young persons must be observed. For use only by technically qualified individuals.

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

Other regulations, limitations and prohibitive regulations
ELINCS (European List of Notified Chemical Substances)
Substance is not listed.

Substances of very high concern (SVHC) according to REACH, Article 57
REACH - Pre-registered substances
Substance is not listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

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

Department issuing data specification sheet: Health, Safety and Environmental Department.

Abbreviations and acronyms:
ADR: Accord européen pour le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent