

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

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

1.1 Product identifier

Identification of the substance	Nitrobenzene-d5
Registration number (REACH)	this information is not available
CAS number	4165-60-0
Alternative name(s)	1-nitro(² H ₅)benzene

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

Relevant identified uses	laboratory and analytical use laboratory chemical
HS code	2845.90.

1.3 Details of the supplier of the safety data sheet

Zeochem AG Joweid 5, CH-8630 Rüti Switzerland	Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com Website: https://www.zeochem.com
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1.4 Emergency telephone number

Poison centre		
Country	Name	Telephone
Switzerland	Toxzentrum Zürich / Tox. Info Suisse	+41 44 251 51 51 / CH: 145 - 24h/7d
United States	CHEMTREC USA	+1 800 424 9300 - 24h/7d

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.1O	acute toxicity (oral)	3	Acute Tox. 3	H301
3.1D	acute toxicity (dermal)	3	Acute Tox. 3	H311
3.1I	acute toxicity (inhal.)	3	Acute Tox. 3	H331
3.6	carcinogenicity	2	Carc. 2	H351
3.7	reproductive toxicity	1B	Repr. 1B	H360F
3.9	specific target organ toxicity - repeated exposure	1	STOT RE 1	H372
4.1C	hazardous to the aquatic environment - chronic hazard	3	Aquatic Chronic 3	H412

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

Delayed or immediate effects can be expected after short or long-term exposure. Spillage and fire water can cause pollution of watercourses.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

- Signal word danger

2.2.1.2 Pictograms

GHS06, GHS08	 
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Hazard statements	
H301+H311+H331	toxic if swallowed, in contact with skin or if inhaled
H351	suspected of causing cancer
H360F	may damage fertility
H372	causes damage to organs (blood) through prolonged or repeated exposure
H412	harmful to aquatic life with long lasting effects

Precautionary statements	
P201	obtain special instructions before use
P260	do not breathe dust/fume/gas/mist/vapours/spray
P273	avoid release to the environment
P280	wear protective gloves/protective clothing/eye protection/face protection/hearing protection
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing
P311	call a POISON CENTER/doctor
P361+P364	take off immediately all contaminated clothing and wash it before reuse
P403+P233	store in a well-ventilated place. Keep container tightly closed
P501	dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Other hazards

This material is combustible, but will not ignite readily.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance

Nitrobenzene-d5

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

Identifiers

CAS No	4165-60-0
EC No	224-014-3
Purity	>98 %

Specific Conc. Limits	M-Factors	ATE	Exposure route
-	-	100 mg/kg 760 mg/kg 3 mg/l/4h	oral dermal inhalation: vapour

Molecular formula	C6D5NO2
Molar mass	128 g/mol

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, Alcohol resistant foam, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO2)

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Remove persons to safety.

For emergency responders
Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill
Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques
Use of adsorbent materials.

Other information relating to spills and releases
Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations
Store in a dry place.

- Measures to prevent fire as well as aerosol and dust generation
Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

- Ventilation requirements
Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted.

- Specific designs for storage rooms or vessels

- Storage temperature
Recommended storage temperature: 15 – 20 °C

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

15 °C

- Packaging compatibilities
- Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)											
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Notation	Source
DE	nitrobenzene	98-95-3	MAK	0.1	0.51	0.4	2.04			va, H	DFG
DE	nitrobenzene	98-95-3	AGW	0.1	0.51	0.4	2.04			va, H, Y	TRGS 900
ES	nitrobenzene	98-95-3	VLA	0.2	1					H	INSHT
EU	nitrobenzene	98-95-3	IOELV	0.2	1					H	2022/431/EU
FR	nitrobenzene	98-95-3	VME	0.2	1					H	INRS
IT	nitrobenzene	98-95-3	VLEP	0.2	1					H	D.lgs. 9, XXXVIII

Notation

Ceiling-C	ceiling value is a limit value above which exposure should not occur
H	absorbed through the skin
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)
va	as vapours and aerosols
Y	a risk of developmental toxicity does not need to be expected if the occupational exposure limit value and the biological limit value (BGW) are adhered to

Biological limit values						
Country	Name of agent	Parameter	Notation	Identifier	Value	Source
DE	nitrobenzene	aniline	Hb	BAT (BLW)	100 µg/l	DFG
ES	nitrobenzene	p-nitrophenol	crea	VLB	5 mg/g	INSHT
ES	nitrobenzene	methemoglobin	Hb	VLB	1.5 %	INSHT

Notation

crea	creatinine
Hb	haemoglobin

8.2 Exposure controls

- Appropriate engineering controls
- General ventilation.

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

- Type of material

Nitrile

IIR: isobutene-isoprene (butyl) rubber

- Breakthrough times of the glove material

>30 minutes (permeation: level 2)

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	not determined
Odour	pungent
Melting point/freezing point	5.26 °C
Boiling point or initial boiling point and boiling range	211 °C at 1,013 hPa
Flammability	this material is combustible, but will not ignite readily
Lower and upper explosion limit	not determined
Flash point	88 °C at 1,013 hPa (closed cup)
Auto-ignition temperature	480 °C at 1,013 hPa (ECHA) (auto-ignition temperature (liquids and gases))
Decomposition temperature	not relevant
pH (value)	not determined

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

Kinematic viscosity	not determined
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Solubility(ies)

Water solubility	1.9 g/l at 20 °C
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Partition coefficient

Partition coefficient n-octanol/water (log value)	1.86 (pH value: 7.9, 24.5 °C) (ECHA)
Soil organic carbon/water (log KOC)	2.07 (ECHA)

Vapour pressure	20 Pa at 20 °C
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Density and/or relative density

Density	1.25 g/cm³ at 25 °C
Relative vapour density	information on this property is not available

Particle characteristics	not relevant (liquid)
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9.2 Other information

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
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Other safety characteristics

Refractive index	1.55 (20 °C) ((lit.))
Temperature class (EU, acc. to ATEX)	T1 (maximum permissible surface temperature on the equipment: 450°C)

SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

10.5 Incompatible materials

Oxidisers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

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

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled.

- Acute toxicity estimate (ATE)

Oral	100 mg/kg
Dermal	760 mg/kg
Inhalation: vapour	3 mg/l/4h

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Suspected of causing cancer.

Reproductive toxicity

May damage fertility.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Causes damage to organs (blood) through prolonged or repeated exposure.

Hazard category	Target organ	Exposure route
1	blood	if exposed

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Harmful to aquatic life with long lasting effects.

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

Aquatic toxicity (chronic)			
Endpoint	Value	Species	Exposure time
LC50	0.002 mg/l	fish	23 d

12.2 Persistence and degradability

Biodegradation

The substance is readily biodegradable.

Process of degradability		
Process	Degradation rate	Time
oxygen depletion	50 – 60 %	28 d

12.3 Bioaccumulative potential

Data are not available.

n-octanol/water (log KOW)	1.86 (pH value: 7.9, 24.5 °C) (ECHA)
BCF	3.1 (ECHA)

12.4 Mobility in soil

Henry's law constant	1.3 Pa m ³ /mol at 20 °C
The Organic Carbon normalised adsorption coefficient	2.07 (ECHA)

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packages

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

SECTION 14: Transport information

14.1 UN number or ID number

ADR/RID/ADN	UN 1662
IMDG-Code	UN 1662
ICAO-TI	UN 1662

14.2 UN proper shipping name

ADR/RID/ADN	NITROBENZENE
IMDG-Code	NITROBENZENE
ICAO-TI	Nitrobenzene

14.3 Transport hazard class(es)

ADR/RID/ADN	6.1
IMDG-Code	6.1
ICAO-TI	6.1

14.4 Packing group

ADR/RID/ADN	II
IMDG-Code	II
ICAO-TI	II

14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - Additional information

Classification code	T1
Danger label(s)	6.1



Special provisions (SP)	279, 802(ADN)
Excepted quantities (EQ)	E4
Limited quantities (LQ)	100 ml
Transport category (TC)	2

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

Tunnel restriction code (TRC)	D/E
Hazard identification No	60
International Maritime Dangerous Goods Code (IMDG) - Additional information	
Marine pollutant	-
Danger label(s)	6.1



Special provisions (SP)	279
Excepted quantities (EQ)	E4
Limited quantities (LQ)	100 mL
EmS	F-A, S-A
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Danger label(s)	6.1
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Special provisions (SP)	A113
Excepted quantities (EQ)	E4
Limited quantities (LQ)	1 L

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Restrictions according to REACH, Annex XVII

Dangerous substances with restrictions (REACH, Annex XVII)			
Name of substance	Name acc. to inventory	CAS No	No
Nitrobenzene-d5	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC		3
Nitrobenzene-d5	toxic for reproduction		30
Nitrobenzene-d5	substances in tattoo inks and permanent make-up		75

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

Substance of Very High Concern (SVHC)			
Name acc. to inventory	CAS No	Listed in	Remarks
nitrobenzene	98-95-3	Candidate list	Repr. A57c

Legend

Candidate list Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV
Repr. A57c Toxic for reproduction (article 57c)

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Water Framework Directive (WFD)

List of pollutants (WFD)			
Name of substance	CAS No	Listed in	Remarks
Nitrobenzene-d5		a)	

Legend

a) Indicative list of the main pollutants

Regulation on persistent organic pollutants (POP)

not listed

National inventories

Country	Inventory	Status
EU	REACH Reg.	substance is listed
US	TSCA	substance is listed (ACTIVE)

Legend

REACH Reg. REACH registered substances
TSCA Toxic Substance Control Act

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance.

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
1.3	Details of the supplier of the safety data sheet: Zeochem AG Joweid 5, CH-8630 Rüti Switzerland Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com / info@zeochem.ch Website: https://www.zeochem.com	Details of the supplier of the safety data sheet: Zeochem AG Joweid 5, CH-8630 Rüti Switzerland Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com Website: https://www.zeochem.com	yes
1.4		Poison centre: change in the listing (table)	yes
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.	yes
6.2	Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.	Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.	yes
7.2		- Specific designs for storage rooms or vessels	yes
7.2		Storage temperature: Recommended storage temperature: 15 – 20 °C 15 °C	yes
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)	yes
8.1		Biological limit values: change in the listing (table)	yes
12.5	Results of PBT and vPvB assessment: Data are not available.	Results of PBT and vPvB assessment: According to the results of its assessment, this substance is not a PBT or a vPvB.	yes
12.6	Endocrine disrupting properties: Not listed.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.	yes
15.1		National inventories: change in the listing (table)	yes

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Safety Data Sheet

Nitrobenzene-d5

According to Regulation (EC) No. 1907/2006 (REACH)

Version number: GHS 3.0
Replaces version of: 2023-02-02 (GHS 2)

Revision: 2025-06-10

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H351	Suspected of causing cancer.
H360F	May damage fertility.
H372	Causes damage to organs (blood) through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.