

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

Recommended use : solvent based, two component coating hardener

Company : SigmaKalon Belgium N.V.
Tweemontstraat 104
2100 Deurne-Antwerpen

Telephone : +32 3 3606311

Telefax : +32 3 3606437

Emergency telephone number : +31 20 4075210

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	EC No.	CAS-No.	DSD	Note	Classification	Concentration
benzyl alcohol	202-859-9	100-51-6	19th		Xn; R20/22	>=10.00 - <25.00%
methanol	200-659-6	67-56-1	28th		F; R11 T; R23/24/25, R39/23/24/25	>=0.10 - <1.00%
2,4,6-tris-(dimethylaminomethyl)-phenol	202-013-9	90-72-2	19th		Xn; R22 Xi; R36/38	>=1.00 - <2.50%
2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)	229-962-1	6864-37-5	22nd		T; R23/24 Xn; R22 C; R35 N; R51, R53	>=75.00 - <100.00%
N-(3-(Trimethoxysilyl)propyl)ethylenediamine	217-164-6	1760-24-3			Xi; R41 R43	>=2.50 - <5.00%

For components with an occupational threshold limit value see chapter 8.

If multiple components with identical identifiers appear, these have different hazardous properties, e.g. flashpoint.

3. HAZARDS IDENTIFICATION

Hazardous components :

2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)
N-(3-(Trimethoxysilyl)propyl)ethylenediamine

R-phrases(s) :

HARMFUL IF SWALLOWED.
TOXIC BY INHALATION AND IN CONTACT WITH SKIN.
CAUSES SEVERE BURNS.

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

MAY CAUSE SENSITIZATION BY SKIN CONTACT.
TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.

4. FIRST AID MEASURES

- General advice** : When symptoms persist or in all cases of doubt seek medical advice. Never give anything by mouth to an unconscious person.
- Eye contact** : Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. Remove contact lenses. Seek medical advice.
- Skin contact** : Take off all contaminated clothing immediately. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners.
- Inhalation** : Remove to fresh air. Keep patient warm and at rest. If breathing is irregular or stopped, administer artificial respiration. If unconscious place in recovery position and seek medical advice.
- Ingestion** : If accidentally swallowed obtain immediate medical attention. Keep at rest. Do not induce vomiting.
- Burns** : If spills on clothing catch fire, wash with plenty of water. Remove loose clothing. Do not remove clothing that has melted to the skin. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

- Specific hazards during fire fighting** : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10). Exposure to decomposition products may be a hazard to health. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters** : In the event of fire, wear self-contained breathing apparatus.
- Suitable extinguishing media** : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.
- Extinguishing media which must not be used for safety reasons** : Do NOT use water jet.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Use personal protective equipment. Ventilate the area. Refer to protective measures listed in sections 7 and 8. Wear respiratory protection. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Remove all sources of ignition.
- Environmental precautions** : Try to prevent the material from entering drains or water ways. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up** : Clean with detergents. Avoid solvents. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
- Additional advice** : Refer to section 15 for specific national regulation.

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

7. HANDLING AND STORAGE

Handling

Safe handling advice : Avoid exceeding of the given occupational exposure limits (see section 8). Use only in area provided with appropriate exhaust ventilation. Avoid contact with skin, eyes and clothing. Smoking, eating and drinking should be prohibited in the application area. Avoid inhalation of vapour or mist. For personal protection see section 8.

Advice on protection against fire and explosion : Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. When transferring from one container to another apply earthing measures and use conductive hose material. No sparking tools should be used. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. No smoking. The accumulation of contaminated rags and dry overspray, particularly in spray booth filters, may result in spontaneous combustion. Good housekeeping standards, regular safe removal of waste materials and regular maintenance of spray booth filters will minimise the risks of spontaneous combustion and other fire hazards.

Storage

Requirements for storage areas and containers : Observe label precautions. Prevent unauthorized access. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store between 5 and 25°C (41 - 77 F) in a dry, well ventilated place away from sources of heat, ignition and direct sunlight. Solvent vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Electrical installations / working materials must comply with the technological safety standards. Keep away from sources of ignition - No smoking. Store in accordance with the particular national regulations (see section 15).

Advice on common storage : Keep away from oxidising agents and strongly acid or alkaline materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Minimum ventilated air quantity for 1 liter of product

TO REACH 10 % LEL : 22 m³/l

Components on the national list and/or the European TLV list (98/24/EC):

Components	CAS-No.	Value [mg/m ³]	Value [ppm]	Basis

Personal protective equipment

General advice

Respiratory protection : When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all cases. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

- Hand protection** : For prolonged or repeated contact use protective gloves.
Barrier creams may help to protect the exposed areas of skin, they should however not be applied once exposure has occurred.
Skin should be washed after contact.
Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms.
- Recommended gloves: butyl-rubber
Minimum breakthrough time: 480 min
- The recommended gloves are based on most common solvent in this product.
- When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended.
- NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
- Eye protection** : Chemical resistant goggles must be worn.
- Skin and body protection** : Personnel should wear protective clothing. Skin should be washed after contact. Working clothes must not consist of textiles, which show a dangerous melting behaviour in case of fire. Workers should wear antistatic footwear.
- Additional advice**
- Environmental protection** : Refer to national regulations in chapter 15 for regulations on environmental protection.
- Personal protection**
Protective equipment : P3A3 full-face combi mask, safety gloves, safety suit and boots
- Please contact your personal protection equipment supplier for further advice*

9. PHYSICAL AND CHEMICAL PROPERTIES

- Form** : liquid
Colour : various
Odour : strong amine-like
Flash point : 106.0 °C
Note: Calculated
Autoignition temperature : > 426 °C
Upper explosion limit : 16.27 %(V)
Lower explosion limit : 1.64 %(V)
Density : 0.96 g/cm³
at 20 °C
Water solubility : completely soluble
pH :
Viscosity, dynamic : 100 mPa.s at 23 °C

10. STABILITY AND REACTIVITY

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

- Conditions to avoid** : Avoid temperatures above 60°C (140 F), direct sunlight and contact with sources of heat.
- Hazardous reactions** : Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.
- Hazardous decomposition products** : In case of fire hazardous decomposition products may be produced such as: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke.

11. TOXICOLOGICAL INFORMATION

- Acute oral toxicity** : May cause nausea, abdominal spasms and irritation of the mucous membranes.
- Acute inhalation toxicity** : Exposure to component solvent vapours concentration in excess of the stated occupational exposure limit may result in adverse health effects. Such as: mucous membrane irritation, respiratory system irritation, adverse effects on kidney, liver and central nervous system. Symptoms and signs: headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases loss of consciousness.
- Skin irritation** : Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in desiccation of the skin. The product may be absorbed through the skin.
- Eye contact** : May cause irreversible eye damage.
- Further information** : There is no data available for this product.

Acute Toxicity Data for Components

benzyl alcohol(100-51-6)

- Acute oral toxicity** : LD50: 1,230 mg/kg (rat)
Acute dermal toxicity : LD50: 2,000 mg/kg (rabbit)

2,4,6-tris-(dimethylaminomethyl)-phenol(90-72-2)

- Acute oral toxicity** : LD50: 200 - 2,000 mg/kg (rat)
Acute dermal toxicity : LD50: 1,350 mg/kg (rabbit)

2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)(6864-37-5)

- Acute oral toxicity** : LD50: 320 - 460 mg/kg (rat)
Acute inhalation toxicity : LC50: 0.42 mg/l (rat, 4 h)
Acute dermal toxicity : LD50: 200 - 400 mg/kg (rat,)

12. ECOLOGICAL INFORMATION

- Further information** : The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is classified for ecotoxicological properties accordingly. See sections 2 and 15 for details.

13. DISPOSAL CONSIDERATIONS

- Product** : The product should not be allowed to enter drains, water courses or the soil. Disposal together with normal waste is not allowed. Special disposal required according to local regulations.

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

Waste key for the unused product : The European Waste Catalogue classification of this product, when disposed of as waste is:
08 01 11 Waste paint and varnish containing organic solvents or other dangerous substances.

If this product is fully cured or mixed with other wastes, this code may no longer apply. If mixed with other wastes, the appropriate code should be assigned. For further information contact your local waste authority

14. TRANSPORT INFORMATION

Transport within user's premises: always transport in closed containers that are upright, labelled and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport to be in accordance with ADR for road, IMDG for sea and IATA for air transport:

UN-No : 2922
Proper shipping name : CORROSIVE LIQUID, TOXIC, N.O.S.
Class : 8
Sub Class : 6.1
Packing group : II
Label : 8 + 6.1
Proper shipping name (ADR) : CORROSIVE LIQUID, TOXIC, N.O.S.
Technical name 1 : dimethyl diamino dicyclohexyl methane

Marine Pollutant (IMDG)(P,PP,-) : P
Marine Pollutant component (IMDG) : dimethyl diamino dicyclohexyl methane
EmS (IMDG) : F-A, S-B

Limited quantity (ADR) : Max. per inner pack. : 1.00 L
Max. per outer pack. : 4.00 KG
Limited quantity (IMDG) : Max. per inner pack. : 1.00 L
Max. per outer pack. : 30.00 KG

15. REGULATORY INFORMATION

The product is classified and labelled in accordance with Directive 1999/45/EC.



Toxic



Dangerous for the environment

Hazardous components which must be listed on the label:

- 2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)
- N-(3-(Trimethoxysilyl)propyl)ethylenediamine

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

R-phrase(s)	:	R22 R23/24 R35 R43 R51/53	Harmful if swallowed. Toxic by inhalation and in contact with skin. Causes severe burns. May cause sensitization by skin contact. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
--------------------	---	---------------------------------------	---

S-phrase(s)	:	S23 S26 S36/37/39 S38 S45 S61	Do not breathe spray. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.
--------------------	---	--	---

The information contained in this safety data sheet does not constitute the user's own assessment of workplace risks, as required by other health and safety legislation. The provisions of the national health and safety at work regulations apply to the use of this product at work.

National legislation

16. OTHER INFORMATION

Explanation of R-phrases mentioned in section 2

benzyl alcohol	R20/22	Harmful by inhalation and if swallowed.
methanol	R11 R23/24/25 R39/23/24/25	Highly flammable. Toxic by inhalation, in contact with skin and if swallowed. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
2,4,6-tris-(dimethylaminomethyl)-phenol	R22 R36/38	Harmful if swallowed. Irritating to eyes and skin.
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	R22 R23/24 R35 R51/53	Harmful if swallowed. Also toxic by inhalation and in contact with skin. Causes severe burns. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
N-(3-(Trimethoxysilyl)propyl)ethylenediamine	R41 R43	Risk of serious damage to eyes. May cause sensitization by skin contact.

Version: 1

Revision date 17.03.2007

SAFETY DATA SHEET

This safety data sheet is prepared in accordance with EU directive 91/155/EC amended by directive 2001/58/EC.



SIGMA NOVAGUARD 200/840 (SIGMA NOVAGUARD) HARDENER

MSDS EU 01 / EN Version 1

Print Date 3/28/2007
Revision date 17-03-07

The information contained in this safety data sheet is based on the present state of knowledge and current European and National legislation at the date of issue. The supplier reserves the right to modify data on the safety data sheet without further notice. Any change in data will normally be followed by the issue of a new safety data sheet. The user should check the date of issue and if more than 12 months have elapsed, then the data should only be used after checking with the nearest sales office of the supplier to establish that the data is still valid. As the specific conditions of use of the product are outside the suppliers control, the supplier is not responsible for the (negative) consequences of these specific conditions of use, which are outside of the suppliers. control and which are not compliant with the handling, storage and other instructions in this safety data sheet.

After all component(s) stated on the relevant Technical Data Sheet have been mixed the safety precautions mentioned on each of the component(s) safety data sheets and labels should be used in assessing the safety precautions of the mixed product.

For further information see technical data sheet number: 7462/7468