

SAFETY DATA SHEET ACCORDING TO REGULATION (EC) 1907/2006



Product name: Nanoflex Dura VF

Creation date: 16.11.2021, Revision: 10.03.2023, version: 3.0

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name
Nanoflex Dura VF



<https://my.chemius.net/p/cUnHIK/en/pd/en>

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

Relevant identified uses
Ceramic coating for surface modification.

Uses advised against
No information.

1.3 Details of the supplier of the safety data sheet

Manufacturer
Signo NanoCare UK Ltd
PO Box 225, Oswestry
Shropshire SY10 1DL
+44 1691 654282
Info@signo-nanocare.com

1.4 Emergency Telephone Number

Emergency
112

Manufacturer
Poison centre in Berlin (Giftnotruf Berlin): +49 (0)30 30686 700

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)
Flam. Liq. 2; H225 Highly flammable liquid and vapour.
Acute Tox. 4; H302 Harmful if swallowed.
Skin Corr. 1B; H314 Causes severe skin burns and eye damage.
Eye Dam. 1; H318 Causes serious eye damage.
Aquatic Chronic 3; H412 Harmful to aquatic life with long lasting effects.

2.2 Label elements

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

**Signal word: DANGER**

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H412 Harmful to aquatic life with long lasting effects.

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 Use explosion-proof electrical/ventilating/lighting equipment.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/physician.

Contains:

organic polysilazanes

dichlorosilane, polymer with ammonia

2.3 Other hazards

PBT/vPvB

No information.

Endocrine disrupting properties

No information.

Additional information

While working with the product flammable/explosive vapour-air mixtures may develop. decamethylcyclopentasiloxane:

The substance meets the criteria for PBT/vPvB according to Regulation (EC) No. 1907/2006, Annex XIII.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

For mixtures see 3.2.

3.2 Mixtures

Name	CAS EC Index Reach	%	Classification according to Regulation (EC) No 1272/2008 (CLP)	Specific Conc. Limits	Notes for substances
decamethylpentasiloxane	541-02-6 208-764-9 -	20-60	Aquatic Chronic 4; H413	/	SVHC
organic polysilazanes	475645-84-2 - -	10-30	Flam. Liq. 2; H225 Acute Tox. 4; H302 Skin Corr. 1B; H314 Eye Dam. 1; H318 Aquatic Chronic 3; H412	/	/
dichlorosilane, polymer with ammonia	90387-00-1 - -	10-30	Skin Corr. 1B; H314	/	/

Notes for substances

SVHC

Substance of very high concern.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Never give anything by mouth to an unconscious person. Place patient in recovery position and ensure airway patency.

Following inhalation

Remove patient to fresh air - move out of dangerous area. Obtain professional medical help! In case of unconsciousness bring patient into stable side position and seek medical attention.

Following skin contact

Immediately remove contaminated clothing. Do not remove clothing stuck to the skin. Areas of the body that have come into contact with the product must be rinsed immediately with plenty of running water. Immediately obtain professional medical help!

Following eye contact

Immediately flush eyes with running water, keeping eyelids apart. Consult a physician immediately!

Following ingestion

Rinse mouth thoroughly with water. Do not induce vomiting! If conscious, give half a litre of water to drink immediately. Immediately consult a doctor. Show the physician the safety data sheet or label.

4.2 Most important symptoms and effects, both acute and delayed

Following inhalation

Excessive exposure to spray mist, fog, or vapours may cause respiratory irritation. Coughing, sneezing, nasal discharge, labored breathing.

Following skin contact

Causes corrosions, heavy burns. Skin burns: Signs/symptoms may include localised redness, swelling, itching, dryness, blistering.

Following eye contact

Corrosive effect. Risk of serious damage to eyes. Redness, pain, burning sensation, tearing, can cause permanent damage to the eyes.

Following ingestion

Harmful to health. May cause nausea/vomiting. If ingested, causes severe burns of the mouth and throat, as well as perforation of the esophagus and stomach.

4.3 Indication of any immediate medical attention and special treatment needed

No information.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Alcohol-resistant foam.

Carbon dioxide (CO₂).

Fire extinguishing powder. Cool the endangered containers with water spray.

Unsuitable extinguishing media

Full water jet.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

Flammable liquid and vapours. Vapours and air can form explosive mixtures. In case of a fire toxic gases can be generated; do not inhale gases/smoke.

5.3 Advice for firefighters

Protective actions

In case of fire evacuate the area. In case of fire or heating do not breathe fumes/vapours. No action shall be taken involving any personal risk or without suitable training. Vapours can form explosive mixtures with air. Prolonged heating can cause an explosion. Cool containers at risk with water spray. If possible remove containers from endangered area.

Special protective equipment for fire-fighters

Firefighters should wear appropriate protective clothing for firefighters (including helmets, protective boots and gloves) (EN 469) and self-contained breathing apparatus (SCBA) with a full face-piece (EN 137).

Additional information

Contaminated firefighting water must be disposed of in accordance with the regulations; do not allow to reach the sewage system.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Protective equipment

Use personal protective equipment (Section 8).

Precautionary measures

Ensure adequate ventilation. Keep away from sources of ignition and/or heat; No smoking!

Emergency procedures

No action shall be taken involving any personal risk or without suitable training. Area of accident must be marked and protected. Remove all unauthorized persons upwind to a safe distance. Prevent access to unprotected personnel. Avoid contact with skin, eyes and clothing. Do not breathe vapour or mist.

For emergency responders

Use personal protective equipment.

6.2 Environmental precautions

Do not allow product to reach water/drains/sewage systems or permeable soil. If accidental large entry into water or ground occurs, inform responsible authorities.

6.3 Methods and material for containment and cleaning up

For containment

Close the source of the release only if it is without risk.

For cleaning up

Make sure the leakage site is well aired. Prevent release into the sewer, water, basements or confined areas. Absorb product (with inert material), collect it in special container and dispose it to a licensed hazardous-waste disposal contractor. Clean residue from spill site. Use spark-proof tools. Dispose in accordance with applicable regulations (see Section 13).

OTHER INFORMATION

No information.

6.4 Reference to other sections

See also sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Protective measures

Measures to prevent fire

Ensure adequate ventilation. Keep away from sources of ignition - no smoking. Take precautionary measures against static discharges. Ensure proper grounding of the equipment. Use only explosion-proof devices. Use spark-proof tools.

Measures to prevent aerosol and dust generation

Avoid the formation or spread of mists in the air. Use general or local exhaust ventilation to prevent inhaling vapours and aerosols.

Measures to protect the environment

Do not discharge into drains, surface water and soil. After use immediately close container tightly.

Other measures

No information.

Advice on general occupational hygiene

Use good personal hygiene practices – wash hands at breaks and when done working with material. Wear suitable protective equipment; see Section 8. Use only outdoors or in well-ventilated areas. Do not eat, drink or smoke while working. Prevent direct contact with substance. Avoid contact with skin, eyes and clothes. Do not breathe vapours/mist. Refer to instructions on label and regulations for safety and health at work.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Store in accordance with local regulations. Keep in well closed containers. Keep in a cool, dry and well ventilated place. Keep away from sources of ignition - no smoking. Ensure lighting and electrical equipment are not a source of ignition. Take precautionary measures against static discharges. Keep away from food, drink and animal feeding stuffs.

Packaging materials

The original container of producer.

Requirements for storage rooms and vessels

Close opened containers after use. Put the containers upright to prevent from leaking. Do not store in unlabelled containers.

Storage class

No information.

Further information on storage conditions

No information.

7.3 Specific end use(s)

Recommendations

No information.

Industrial sector specific solutions

No information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limit values

No information.

Information on monitoring procedures

BS EN 14042:2003 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. BS EN 689:2018 Workplace exposure. Measurement of exposure by inhalation to chemical agents. Strategy for testing compliance with occupational exposure limit values. BS EN 482:2021 Workplace exposure. Procedures for the determination of the concentration of chemical agents. Basic performance requirements.

DNEL/DMEL values

For product
No information.

For components
No information.

PNEC values

For product
No information.

For components
No information.

8.2 Exposure controls

Appropriate engineering control

Substance/mixture related measures to prevent exposure during identified uses

Use good personal hygiene practices – wash hands at breaks and when done working with material. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke while working. Avoid contact with skin, eyes and clothes. Do not breathe vapours/aerosols.

Structural measures to prevent exposure

No information.

Organisational measures to prevent exposure

Immediately remove contaminated clothing. Keep eyewash bottles or personal eyewash units and emergency showers available.

Technical measures to prevent exposure

Provide good ventilation and local exhaust in areas with increased concentration. Electricity and lighting installations to be carried out as anti-explosive.

Personal protective equipment

Eye and face protection

Tight fitting protective goggles (EN 166).

Hand protection

Protective gloves (BS EN ISO 374). Use impermeable protective gloves, resistant to the product / substance / preparation.

Appropriate materials

Skin protection

Protective work clothing resistant to liquid chemicals (BS EN 14605:2005+A1:2009). Shoes that cover the entire foot (EN ISO 20345). At high risk of skin exposure chemical suits (BS EN ISO 6530:2005) and boots may be required (BS EN ISO 20345:2022).

Respiratory protection

In case of insufficient ventilation wear suitable respiratory protection. If the concentration limit values are exceeded, it is necessary to wear appropriate respiratory protection. In case of insufficient ventilation wear a mask with filter ABEK-P2 (EN 14387). For dust/gas/ vapor concentrations above the applicable filter limit, in case of oxygen concentrations below 17% or in vague conditions, autonomous self-contained breathing apparatus should be used, according to standard BS EN 137, BS EN 138.

Thermal hazards

No information.

Environmental exposure controls

Substance/mixture related measures to prevent exposure

No information.

Instruction measures to prevent exposure

No information.

Organisational measures to prevent exposure

No information.

Technical measures to prevent exposure

Do not allow product to reach drains, sewage systems or ground water.

9.1 Information on basic physical and chemical properties

Physical state

liquid

Colour

colourless

Odour

characteristic

Important health, safety and environmental information

Odour threshold	No information.
Melting point/Freezing point	No information.
Boiling point or initial boiling point and boiling range	No information.
Flammability	No information.
Lower and upper explosion limit	No information.
Flash point	21 °C
Auto-ignition temperature	No information.
Decomposition temperature	No information.
pH	No information.
Viscosity	No information.
Solubility	No information.
Partition coefficient	No information.
Vapour pressure	No information.
Density and/or relative density	No information.
Relative vapour density	No information.
Particle characteristics	No information.

9.2 OTHER INFORMATION

Explosive properties	No information.
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SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended transport or storage conditions.

10.2 Chemical stability

Stable at room temperature and under normal conditions of use.

10.3 Possibility of hazardous reactions

The product is stable under recommended storage and handling conditions. Vapours and air can form flammable or explosive mixtures.

10.4 Conditions to avoid

Heat, sparks, flames and other ignition sources.

10.5 Incompatible materials

Strong oxidising agents.

Strong acids.

10.6 Hazardous decomposition products

In case of fire/explosion vapours/gases that pose a health hazard are released.

SECTION 11: TOXICOLOGICAL INFORMATION

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

(a) Acute toxicity

For components

Name	Exposure route	Type	Species	Time	value	Method	Remark
decamethylpenta siloxane	inhalation (dusts/mists)	LC ₅₀	rat	4 h	8.67 mg/l	/	/
decamethylpenta siloxane	dermal	LD ₅₀	rabbit	/	2000 mg/kg	/	/
decamethylpenta siloxane	oral	LD ₅₀	rat	/	5000 mg/kg	/	/
organic polysilazanes	dermal	LD ₅₀	rabbit	/	300 - 2000 mg/kg	/	/
organic polysilazanes	oral	LD ₅₀	rat	/	300 - 2000 mg/kg	/	/

Additional information

Harmful if swallowed.

(b) Skin corrosion/irritation

No information.

Additional information

Causes severe burns and skin damage.

(c) Serious eye damage/irritation

No information.

Additional information

Causes serious eye damage.

(d) Respiratory or skin sensitisation

No information.

Additional information

The product is not classified as sensitising.

(e) (Germ cell) mutagenicity

No information.

(f) Carcinogenicity

For components

Name	Exposure route	Type	Species	Time	value	result	Method	Remark
decamethylpentasiloxane	inhalation	-	rat (female)	2 years	160 ppm	indicate effects (uterine endometrial tumors). Studies to date have not demonstrated if this effect occurs through a pathway that is relevant to humans.	/	/

(g) Reproductive toxicity

No information.

Summary of evaluation of the CMR properties

The product is not classified as carcinogenic, mutagenic or toxic for reproduction.

(h) STOT-single exposure

No information.

Additional information

STOT SE (single exposure): Not classified.

(i) STOT-repeated exposure

No information.

Additional information

STOT RE (repeated exposure): Not classified.

(j) Aspiration hazard

No information.

Additional information

Aspiration hazard: Not classified.

Symptoms related to the physical, chemical and toxicological characteristics

No information.

Interactive effects

No information.

11.2 Information on other hazards

Endocrine disrupting properties

No information.

Other information

No information.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute (short-term) toxicity

For components

Name	Type	value	Exposure time	Species	organism	Method	Remark
organic polysilazanes	LC ₅₀	57.1 mg/L	96 h	fish	<i>Brachydanio rerio</i>	/	/

Chronic (long-term) toxicity

No information.

12.2 Persistence and degradability

Abiotic degradation, physical- and photo-chemical elimination

No information.

Biodegradation

No information.

Additional information

Biodegradable.

12.3 Bioaccumulative potential

Partition coefficient

No information.

Bioconcentration factor (BCF)

No information.

Additional information

No bioaccumulation expected.

12.4 Mobility in soil

Known or predicted distribution to environmental compartments

No information.

Surface tension

No information.

Adsorption/Desorption

No information.

Additional information

Readily absorbed into soil.

12.5 Results of PBT and vPvB assessment

No evaluation.

12.6 Endocrine disrupting properties

No information.

12.7 Other adverse effects

No information.

12.8 Additional information

For product

Harmful to aquatic life with long lasting effects. Avoid release to the environment. Water hazard class (WGK): 3 (Self-assessment), very hazardous for water.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product / Packaging disposal

Waste chemical

Avoid release to the environment. Dispose of in accordance with applicable waste disposal regulation. Disposal must be made according to official regulations: deliver it to authorised collector/remover/transformer of hazardous waste.

Product and container must be disposed of safely.

Waste codes / waste designations according to LoW

No information.

Packaging

Dispose of in accordance with applicable waste disposal regulation. Deliver completely emptied containers to approved waste disposal authorities. Uncleaned containers should not be perforated, cut or welded. Empty containers represent a fire hazard as they may contain flammable product residues and vapour.

Waste codes / waste designations according to LoW

No information.

Waste treatment-relevant information

No information.

Sewage disposal-relevant information

No information.

Other disposal recommendations

No information.

SECTION 14: TRANSPORT INFORMATION

ADR/RID	IMDG	IATA	ADN
14.1 UN number or ID number			
UN 2924	UN 2924	UN 2924	UN 2924
14.2 UN proper shipping name			
FLAMMABLE LIQUID, CORROSIVE, N.O.S. (dichlorosilane, polymer with ammonia)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (dichlorosilane, polymer with ammonia)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (dichlorosilane, polymer with ammonia)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (dichlorosilane, polymer with ammonia)
14.3 Transport hazard class(es)			
3 (8)	3 (8)	3 (8)	3 (8)
14.4 Packing group			
II	II	II	II
14.5 Environmental hazards			
NO	NO	NO	NO
14.6 Special precautions for user			
Limited quantities 1 L Special provisions 274 Packing Instructions P001, IBC02 Transport category 2 Tunnel restriction code (D/E)	Limited quantities 1 L EmS F-E, S-C Flash point 21 °C	Limited Quantity, Packing Instructions (Ltd Qty, Pkg Inst) Y340 Limited Quantity, Maximum Net Quantity/Package (Ltd Qty, Max Net Qty/Pkg) 0.5 L Packing Instructions (Pkg Inst) 352 Maximum Net Quantity/Package (Max Net Qty/Pkg) 1 L Cargo Aircraft Only, Packing Instructions (CAO, Pkg Inst) 363 Cargo Aircraft Only, Maximum Net Quantity/Package (CAO, Max Net Qty/Pkg) 5 L Special provisions A803 Excepted quantities E2 ERG code 3CH	Limited quantities 1 L
14.7 Maritime transport in bulk according to IMO instruments			

	Goods may not be carried in bulk in bulk containers, containers or vehicles.		

SECTION 15: REGULATORY INFORMATION

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

- Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (including last amendment Commission Regulation (EU) 2020/878)

- Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

Information according 2004/42/EC about limitation of emissions of volatile organic compounds (VOC-guideline) **not applicable**

Regulation EC 648/2004 on detergents

No information.

Special instructions

Observe the regulations on employment and protection against dangerous substances for young people, pregnant women and nursing mothers.

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Indication of changes

2.1 Classification of the substance or mixture 2.2 Label elements 3.2 Mixtures 4.2 Most important symptoms and effects, both acute and delayed 8.1 Control parameters 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Key literature references and sources for data

No information.

Abbreviations and acronyms

ATE - Acute Toxicity Estimate

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

CEN - European Committee for Standardisation

C&L - Classification and Labelling

CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

CAS# - Chemical Abstracts Service number

CMR - Carcinogen, Mutagen, or Reproductive Toxicant

CSA - Chemical Safety Assessment

CSR - Chemical Safety Report

DMEL - Derived Minimal Effect Level

DNEL - Derived No Effect Level

DPD - Dangerous Preparations Directive 1999/45/EC

DSD - Dangerous Substances Directive 67/548/EEC

DU - Downstream User

EC - European Community

ECHA - European Chemicals Agency

EC-Number - EINECS and ELINCS Number (see also EINECS and ELINCS)

EEA - European Economic Area (EU + Iceland, Liechtenstein and Norway)

EEC - European Economic Community

EINECS - European Inventory of Existing Commercial Substances

ELINCS - European List of notified Chemical Substances
EN - European Standard
EQS - Environmental Quality Standard
EU - European Union
Euphrac - European Phrase Catalogue
EWC - European Waste Catalogue (replaced by LoW – see below)
GES - Generic Exposure Scenario
GHS - Globally Harmonized System
IATA - International Air Transport Association
ICAO-TI - Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG - International Maritime Dangerous Goods
IMSBC - International Maritime Solid Bulk Cargoes
IT - Information Technology
IUCLID - International Uniform Chemical Information Database
IUPAC - International Union for Pure Applied Chemistry
JRC - Joint Research Centre
Kow - octanol-water partition coefficient
LC50 - Lethal Concentration to 50 % of a test population
LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose)
LE - Legal Entity
LoW - List of Wastes (see <http://ec.europa.eu/environment/waste/framework/list.htm>)
LR - Lead Registrant
M/I - Manufacturer / Importer
MS - Member States
MSDS - Material Safety Data Sheet
OC - Operational Conditions
OECD - Organization for Economic Co-operation and Development
OEL - Occupational Exposure Limit
OJ - Official Journal
OR - Only Representative
OSHA - European Agency for Safety and Health at work
PBT - Persistent, Bioaccumulative and Toxic substance
PEC - Predicted Effect Concentration
PNEC(s) - Predicted No Effect Concentration(s)
PPE - Personal Protection Equipment
(Q)SAR - Qualitative Structure Activity Relationship
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
RIP - REACH Implementation Project
RMM - Risk Management Measure
SCBA - Self-Contained Breathing Apparatus
SDS - Safety data sheet
SIEF - Substance Information Exchange Forum
SME - Small and Medium sized Enterprises
STOT - Specific Target Organ Toxicity
(STOT) RE - Repeated Exposure
(STOT) SE - Single Exposure
SVHC - Substances of Very High Concern
UN - United Nations
vPvB - Very Persistent and Very Bioaccumulative

List of relevant H phrases

H225 Highly flammable liquid and vapour.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H412 Harmful to aquatic life with long lasting effects.
H413 May cause long lasting harmful effects to aquatic life.



- Provided correct labelling of the product
- Compliance with the local legislation
- Provided correct classification of the product
- Provided adequate transport data

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The information of this SDS is based on the present state of our knowledge and meets the requirements of EU and national laws. The user's working conditions however, are beyond our knowledge and control. The product is not to be used for purposes other than those specified under section 1 without a written permission. It remains the responsibility of the user to ensure that the necessary steps are taken to meet the laws and regulations. Handling of the product may only be done by people above 18 years of age, who are satisfactorily informed of how to do the work, the hazardous properties and necessary safety precautions. The information given in this SDS is to describe the product only in terms of health and safety requirements and should not, therefore, be construed as guaranteeing specific properties.