

NANOBYK-3605

Product code: 00000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

SECTION 1: Identification of the hazardous chemical and of the supplier**Product identifier**

Product name : NANOBYK-3605

Recommended use : Additive to Improve Mechanical Properties

Manufacturer or supplier's details

Company : BYK-Chemie GmbH

Address : Abelstrasse 45
46483 Wesel

Telephone : +49 281 670-23532

Telefax : +49 281 670-23533

E-mail address : GHS.BYK@altana.com

Emergency telephone number : +60 3 6207 4347 (Malay and English)
+65 3158 1074 (All languages)

SECTION 2: Hazards identification**Classification of the hazardous chemical**

Skin corrosion/irritation : Category 2

Serious eye damage/eye irritation : Category 2

Skin sensitisation : Category 1

Hazardous to the aquatic environment - acute hazard : Category 1

Hazardous to the aquatic environment - chronic hazard : Category 2

Label elements

Hazard pictograms : 

Signal word : Warning

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H400 Very toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P391 Collect spillage.

Other hazards which do not result in classification

None known.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture : Mixture
Chemical nature : Nanoparticle dispersion

Components

Chemical name	CAS-No.	Concentration (% w/w)
hexamethylene diacrylate	13048-33-4	>= 30 -< 50
2,6-di-tert-butyl-p-cresol	128-37-0	>= 0.1 -< 0.25
cyclohexane	110-82-7	>= 0.1 -< 0.25

SECTION 4: First aid measures

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : No information available.

Notes to physician : No information available.

SECTION 5: Firefighting measures**Extinguishing media**

Suitable extinguishing media : Foam

NANOBYK-3605

Product code: 00000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Carbon dioxide (CO₂)
 Dry chemical
 Unsuitable extinguishing media : High volume water jet

Physicochemical hazards arising from the chemical

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Carbon oxides
 silicone compounds

Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.
 Specific extinguishing methods : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
 Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.

Environmental precautions : Prevent product from entering drains.
 Prevent further leakage or spillage if safe to do so.
 If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
 Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling

Precautions for safe handling

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapours/dust.
 Avoid contact with skin and eyes.
 For personal protection see section 8.
 Smoking, eating and drinking should be prohibited in the application area.
 Dispose of rinse water in accordance with local and national regulations.
 Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

NANOBYK-3605

Product code: 00000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Storage

Conditions for safe storage, including any incompatibilities

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8: Exposure controls and personal protection

Control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2,6-di-tert-butyl-p-cresol	128-37-0	TWA	10 mg/m ³	MY PEL
		TWA (Inhalable fraction and vapor)	2 mg/m ³	ACGIH
cyclohexane	110-82-7	TWA	300 ppm 1,030 mg/m ³	MY PEL
		TWA	100 ppm	ACGIH

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
cyclohexane	110-82-7	1,2-Cyclohexanediol	Urine	End of shift at end of workweek	50 mg/g creatinine	ACGIH BEI

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hand protection
Material : Nitrile rubber
Break through time : > 480 min
Glove thickness : 0.4 mm

Remarks : Wear suitable gloves.
Hygiene measures : When using do not eat or drink.
When using do not smoke.

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Appearance	:	dispersion
Colour	:	colourless, translucent, clear
Odour	:	acrylic-like
Odour Threshold	:	No data available
pH	:	7 (20 °C) Concentration: 1 % Method: Universal pH-value indicator
Melting point/ range	:	< 10 °C Method: derived
Initial boiling point	:	107 °C Method: derived
Flash point	:	ca. 79 °C Method: 48 (Abel-Pensky) DIN 51755
Evaporation rate	:	No data available
Flammability (liquids)	:	Sustains combustion
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	0.02 hPa (20 °C) Method: derived
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	ca. 1.390 g/cm ³ (20 °C, 1,013 hPa) Method: 4 deaerated (20°C oscillating U-tube)
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	max. 0.00001 g/l
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	> 200 °C

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Method: DIN 51794

Decomposition temperature : No data available

Viscosity

Viscosity, dynamic : ca. 50 mPa.s (20 °C)
Method: P/K 20°C

Viscosity, kinematic : No data available

SECTION 10: Stability and reactivity

Reactivity : No decomposition if stored and applied as directed.
Chemical stability : No decomposition if stored and applied as directed.
Possibility of hazardous reactions : No decomposition if stored and applied as directed.
Conditions to avoid : No data available
Incompatible materials : Acids and bases
Strong oxidizing agents
Hazardous decomposition products : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Information on likely routes of exposure : None known.

Acute toxicity**Product:**

Acute oral toxicity : Remarks: No data available

Components:**hexamethylene diacrylate:**Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg
Method: OECD Test Guideline 402**2,6-di-tert-butyl-p-cresol:**Acute oral toxicity : LD50 (Rat): > 6,000 mg/kg
Method: OECD Test Guideline 401
GLP: yesAcute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes**cyclohexane:**Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

GLP: No information available.

Acute inhalation toxicity : LC50 (Rat): > 32.88 mg/l
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: no

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: No information available.

Skin corrosion/irritation**Product:**

Remarks : May irritate skin.
May cause skin irritation and/or dermatitis.

Components:**hexamethylene diacrylate:**

Species : Rabbit
Exposure time : 4 h
Method : OECD Test Guideline 404
Result : Skin irritation
GLP : yes

Serious eye damage/eye irritation**Product:**

Remarks : Causes serious eye irritation.

Components:**hexamethylene diacrylate:**

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

cyclohexane:

Species : Rabbit
Result : slight irritation
Method : OECD Test Guideline 405
GLP : No information available.

Respiratory or skin sensitisation**Product:**

Remarks : Causes sensitisation.

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Components:**hexamethylene diacrylate:**

Test Type : Maximisation Test
Exposure routes : Dermal
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Causes sensitisation.

Germ cell mutagenicity**Product:**

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

Carcinogenicity**Product:**

Remarks : No data available

Reproductive toxicity**Product:**

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

STOT - single exposure**Product:**

Remarks : No data available

STOT - repeated exposure**Product:**

Remarks : No data available

Repeated dose toxicity**Product:**

Remarks : No data available

Aspiration toxicity**Product:**

No data available

Further information**Product:**

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Remarks : No data available

SECTION 12: Ecological information

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Components:

hexamethylene diacrylate:

M-Factor (Acute aquatic toxicity) : 1

2,6-di-tert-butyl-p-cresol:

Toxicity to fish : LC50: 199 mg/l
Exposure time: 96 hToxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 0.42 mg/l
Exposure time: 72 h
Test Type: static test
Method: Regulation (EC) No. 440/2008, Annex, C.3
GLP: yes

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

cyclohexane:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 4.53 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: OECD Test Guideline 203
GLP: No information available.Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.9 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: noToxicity to algae/aquatic plants : (Pseudokirchneriella subcapitata (green algae)): 9.317 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes

M-Factor (Acute aquatic toxicity) : 1

NANOBYK-3605

Product code: 000000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

M-Factor (Chronic aquatic toxicity) : 1

Persistence and degradability**Product:**

Biodegradability : Remarks: No data available

Components:**hexamethylene diacrylate:**Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 310
GLP: yes**Bioaccumulative potential****Product:**

Bioaccumulation : Remarks: No data available

Components:**hexamethylene diacrylate:**Partition coefficient: n-octanol/water : log Pow: 2.81 (25 °C)
Method: OECD Test Guideline 107**cyclohexane:**Partition coefficient: n-octanol/water : log Pow: 3.44 (25 °C)
pH: 7
GLP: No information available.**Mobility in soil**

No data available

Other adverse effects**Product:**Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.**SECTION 13: Disposal information****Disposal methods**Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.
Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

NANOBYK-3605

Product code: 00000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

Do not re-use empty containers.

SECTION 14: Transport information**International Regulations****IATA-DGR**

UN/ID No. : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(Hexandiol diacrylate)
Class : 9
Packing group : III
Labels : Miscellaneous Dangerous Goods
Packing instruction (cargo aircraft) : 964
Packing instruction (passenger aircraft) : 964

IMDG-Code

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S.
(Hexandiol diacrylate)
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes
Remarks : IMDG Code segregation group - none

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15: Regulatory information**Safety, health, and environmental regulations specific for the hazardous chemical**

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.

Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

SECTION 16: Other information

Date format : dd.mm.yyyy

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

NANOBYK-3605

Product code: 00000000000126547

Version 6.1 SDS_APJ_MY

Revision Date 19.03.2025

Print Date 26.03.2025

ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
MY PEL	:	Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.
ACGIH / TWA	:	8-hour, time-weighted average
MY PEL / TWA	:	Eight-hour time-weighted average airborne concentration

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

MY / EN