OKS 464

Version	Revision Date:	Date of last issue: 22.07.2026	Print Date:
3.1	01.10.2026	Date of first issue: 13.06.2016	01.10.2026

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

1.1 Product identifier

Product name : OKS 464

This substance/ mixture contains nanoforms (according to REACH Regulation)

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

Use of the Substance/Mixture : Grease

Recommended restrictions on use : Restricted to professional users.

1.3 Details of the supplier of the safety data sheet

Company : OKS Spezialschmierstoffe GmbH
Ganghoferstr. 47
82216 Maisach
Germany
Tel.: +49 8142 3051-500
info@oks-germany.com

E-mail address of person responsible for the SDS : mcm@oks-germany.com

National contact : Klüber Lubrication Deutschland GmbH & Co. KG
Geisenhausenerstraße 7
81379 München
Germany
Tel.: +49 (0) 89 7876 0
customer.service.de@klueber.com

1.4 Emergency telephone number

Emergency telephone number : +49 8142 3051 517

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Specific target organ toxicity - repeated exposure, Category 2, lymph node	H373: May cause damage to organs through prolonged or repeated exposure.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Warning

Hazard statements : H373 May cause damage to organs (lymph node) through prolonged or repeated exposure.

Precautionary statements : **Response:**

P314 Get medical advice/ attention if you feel unwell.

Hazardous components which must be listed on the label:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Synthetic hydrocarbon oil
lithium soap
solid lubricant

Components

Chemical name	CAS-No. EC-No. Index-No.	Classification	specific concentration limit M-Factor	Concentration (% w/w)

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	Registration number		Notes Acute toxicity estimate	
Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates	80939-62-4 279-632-6 01-2119976322-36-XXXX	Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT RE 1; H372 (lymph node) Aquatic Chronic 2; H411		>= 1 - < 2,5
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	68411-46-1 270-128-1 01-2119491299-23-XXXX	Repr. 2; H361f Aquatic Chronic 3; H412		>= 0,25 - < 1
(tetrapropenyl)succinic acid	27859-58-1 248-698-8 01-2120752504-57-XXXX	Skin Corr. 1C; H314 Eye Dam. 1; H318 Repr. 2; H361d STOT RE 2; H373 (Liver)		>= 0,1 - < 1
Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol	947-696-0 01-2120768184-49-XXXX	Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Dam. 1; H318 Repr. 2; H361 STOT RE 2; H373 (Liver) Aquatic Chronic 3; H412	ATE (Oral): 500 mg/kg	>= 0,1 - < 0,25
Substances with a workplace exposure limit :				
Carbon black	1333-86-4 215-609-9 01-2119384822-32-XXXX	Not classified		>= 1 - < 10
Graphite (synthetic)	7782-42-5 231-955-3 01-2119486977-12-XXXX	Not classified		>= 1 - < 10

For explanation of abbreviations see section 16.

This substance/ mixture contains nanoforms (according to REACH Regulation)

Components:

Carbon black:

Particle characteristics

Particle Size Distribution : D10 = 20 - 43 nm
D50 = 30 - 87 nm

D90 = 54 - 178 nm
Type of distribution: number distribution
Physical state: single particles

Specific surface area : 35 - 600 m2/g
Measurement technique: Brunauer, Emmett and Teller (BET) method using Nitrogen

Assessment : This substance/ mixture contains nanoforms (according to REACH Regulation)
based on: Measurement data
Total Content of Nanomaterials: 100 %

Shape : Shape: spheres
Aspect Ratio (:1): < 3
Measurement technique: TEM

Crystallinity : Crystallinity: amorphous
Fraction (Weight): 100 %
Measurement technique: X-ray Diffraction (XRD)

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled : Obtain medical attention.
Remove person to fresh air. If signs/symptoms continue, get medical attention.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact : Take off all contaminated clothing immediately.
Get medical attention immediately if irritation develops and persists.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
Wash off immediately with plenty of water.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
Get medical attention immediately.

If swallowed : Move the victim to fresh air.
If unconscious, place in recovery position and seek medical advice.

Keep respiratory tract clear.
Do not induce vomiting without medical advice.
Obtain medical attention.
Rinse mouth with water.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No symptoms known or expected.

Risks : May cause damage to organs through prolonged or repeated exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media : High volume water jet

Do NOT use water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not let product enter drains.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Hazardous combustion products : Carbon oxides
Nitrogen oxides (NOx)
Oxides of phosphorus
Metal oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Exposure to decomposition products may be a hazard to health.

Further information : Standard procedure for chemical fires.
Cool containers/tanks with water spray.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Evacuate personnel to safe areas.
Ensure adequate ventilation.
Do not breathe vapours, aerosols.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Try to prevent the material from entering drains or water courses.
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Pick up and transfer to properly labelled containers.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Use only in an area containing explosion proof equipment.
Do not use in areas without adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin and eyes.
For personal protection see section 8.
Keep away from fire, sparks and heated surfaces.
Smoking, eating and drinking should be prohibited in the application area.
Wash hands and face before breaks and immediately after handling the product.
Do not get in eyes or mouth or on skin.
Do not get on skin or clothing.
Do not ingest.
Do not use sparking tools.
Do not enter areas where used or stored until adequately ventilated.
Do not repack.
These safety instructions also apply to empty packaging which may still contain product residues.
Keep container closed when not in use.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep container closed when not in use. Keep in a cool place away from oxidizing agents. Keep in a cool, well ventilated place away from oxidizing agents. Keep in a dry, cool and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in accordance with the particular national regulations. Keep in properly labelled containers.

Storage class (TRGS 510) : 11, Combustible Solids

7.3 Specific end use(s)

Specific use(s) : Specific instructions for handling, not required.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Carbon black	1333-86-4	BM (Alveolar dust fraction)	0,5 mg/m3	DE TRGS 527 (2020-02-19)
Graphite (synthetic)	7782-42-5	MAK (measured as the alveolate fraction)	0,3 mg/m3	DE DFG MAK (2024-07-01)
	Peak-limit: excursion factor (category): 8; II			
	Further information: Substances that cause cancer in humans or animals or that are considered to be carcinogenic for humans and for which a MAK value can be derived., Damage to the embryo or foetus is unlikely when the MAK value or the BAT value is observed			
		MAK (inhalable fraction)	4 mg/m3	DE DFG MAK (2024-07-01)
	Peak-limit: excursion factor (category): 8; II			
	Further information: Substances that cause cancer in humans or animals or that are considered to be carcinogenic for humans and for which a MAK value can be derived., Damage to the embryo or foetus is unlikely when the MAK value or the BAT value is observed			
		AGW (Inhalable fraction)	10 mg/m3	DE TRGS 900 (2014-04-02)
	Peak-limit: excursion factor (category): 2;(II)			

	Further information: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child			
		AGW (Alveolate fraction)	1,25 mg/m3	DE TRGS 900 (2014-04-02)
	Peak-limit: excursion factor (category): 2;(II)			
	Further information: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child			
		BM (Alveolar dust fraction)	0,5 mg/m3	DE TRGS 527 (2020-02-19)

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name	End Use	Exposure routes	Potential health effects	Value
Carbon black	Workers	Inhalation	Long-term local effects	0,5 mg/m3
Graphite (synthetic)	Workers	Inhalation	Long-term systemic effects	1,2 mg/m3
Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates	Workers	Inhalation	Long-term systemic effects	0,2 mg/m3
	Workers	Skin contact	Long-term systemic effects	0,03 mg/kg
	Workers	Skin contact	Acute systemic effects	0,03 mg/kg
1,3,4-Thiadiazolidine-2,5-dithione, reaction products with hydrogen peroxide and tert-dodecanethiol	Workers	Inhalation		4,408 mg/m3
	Workers	Dermal		6,25 mg/kg bw/day
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	Workers	Skin contact	Long-term systemic effects	0,44 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	0,31 mg/m3
(tetrapropenyl)succinic acid	Workers	Inhalation	Long-term systemic effects	1,76 mg/m3
	Workers	Skin contact	Long-term systemic effects	0,5 mg/kg bw/day
Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol	Workers	Inhalation	Long-term systemic effects	7 mg/m3
	Workers	Dermal	Long-term systemic	4 mg/kg

			effects	bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
Carbon black	Fresh water	5 mg/l
	Marine water	5 mg/l
Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates	Fresh water	0,055 mg/l
	Intermittent use/release	0,01 mg/l
	Marine water	0,005 mg/l
	Sewage treatment plant	1 mg/l
	Fresh water sediment	239,64 mg/kg
	Marine sediment	23,96 mg/kg
	Soil	47,76 mg/kg
1,3,4-Thiadiazolidine-2,5-dithione, reaction products with hydrogen peroxide and tert-dodecanethiol	Fresh water	0,041 mg/l
	Marine water	0,0041 mg/l
	Fresh water sediment	380,62 mg/kg
	Marine sediment	38,06 mg/kg
	Sewage treatment plant	8000 mg/l
	Soil	308,98 mg/kg
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	Fresh water	0,034 mg/l
	Marine water	0,003 mg/l
	Microbiological Activity in Sewage Treatment Systems	10 mg/l
	Fresh water sediment	0,446 mg/kg
	Marine sediment	0,045 mg/kg
	Soil	1,76 mg/kg
(tetrapropenyl)succinic acid	Fresh water	0,1 mg/l
	Marine water	0,01 mg/l
	Marine sediment	6,21 mg/kg dry weight (d.w.)
	Fresh water sediment	62,1 mg/kg dry weight (d.w.)
	Microbiological Activity in Sewage Treatment Systems	100 mg/l
	Shrew (terrestrial mammalian)	12,4 mg/kg dry weight (d.w.)
Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol	Fresh water	0,026 mg/l
	Marine water	0,003 mg/l
	Microbiological Activity in Sewage Treatment Systems	100 mg/l
	Fresh water sediment	0,344 mg/kg
	Marine sediment	0,034 mg/kg

	Soil	0,053 mg/kg

8.2 Exposure controls

Engineering measures

Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Eye/face protection : Safety glasses

Hand protection
- Material : Nitrile rubber
- Break through time : > 10 min
- Protective index : Class 1

Remarks : Wear protective gloves. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.
The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory protection : Not required; except in case of aerosol formation.

Filter type : Filter type P

Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Environmental exposure controls

Air : No special environmental precautions required.
Soil : The product should not be allowed to enter drains, water courses or the soil.
Water : The product should not be allowed to enter drains, water courses or the soil.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : solid

Form : paste

Colour	:	black
Odour	:	characteristic
Odour Threshold	:	No data available
Melting point/ range	:	No data available
Boiling point/boiling range	:	No data available
Flammability	:	Flammability (solid, gas): Combustible Solids
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	Not applicable
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
pH	:	Not applicable substance/mixture is non-soluble (in water)
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	Not applicable
Solubility(ies)		
Water solubility	:	insoluble

Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	ca. < 0,013 hPa (20 °C)
Relative density	:	0,89 (20 °C) Reference substance: Water The value is calculated
Density	:	0,89 g/cm3 (20 °C)
Bulk density	:	No data available
Relative vapour density	:	No data available
Particle characteristics		
Assessment	:	This substance/ mixture contains nanoforms (according to REACH Regulation)
Particle size	:	Further particle properties for nanomaterials see section 3
Particle Size Distribution	:	Not applicable

9.2 Other information

Explosives	:	Not explosive
Oxidizing properties	:	No data available
Self-ignition	:	No data available
Evaporation rate	:	No data available
Sublimation point	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Possibility of hazardous reactions
In contact with water releases flammable gases.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : Oxidizing agents

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

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

Acute toxicity

Based on available data, the classification criteria are not met.

Product:

Acute oral toxicity : Remarks: This information is not available.

Acute inhalation toxicity : Remarks: This information is not available.

Acute dermal toxicity : Remarks: This information is not available.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg
Method: OECD Test Guideline 401
GLP: yes

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 402

GLP: no
Assessment: The substance or mixture has no acute dermal toxicity

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

(tetrapropenyl)succinic acid:

Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 401
GLP: yes

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Acute oral toxicity : LD50 (Rat): > 300 - 2.000 mg/kg
Method: OECD Test Guideline 420
GLP: yes

Carbon black:

Acute oral toxicity : LD50 (Rat): > 8.000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Graphite (synthetic):

Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 2.000 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Remarks : This information is not available.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Species	:	Rabbit
Exposure time	:	24 h
Assessment	:	Irritating to skin.
Method	:	OECD Test Guideline 404
Result	:	Irritating to skin.
GLP	:	no

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Species	:	Rabbit
Assessment	:	No skin irritation
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

(tetrapropenyl)succinic acid:

Result	:	Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Species	:	reconstructed human epidermis (RhE)
Assessment	:	Irritating to skin.
Method	:	OECD Test Guideline 439
Result	:	Irritating to skin.
GLP	:	yes

Carbon black:

Species	:	Rabbit
Exposure time	:	24 h
Assessment	:	No skin irritation
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Graphite (synthetic):

Species	:	Rabbit
Assessment	:	No skin irritation
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Remarks	:	This information is not available.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Species	:	Rabbit
Assessment	:	Irritating to eyes.
Method	:	OECD Test Guideline 405
Result	:	Irritating to eyes.
GLP	:	no

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

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

(tetrapropenyl)succinic acid:

Assessment	:	Risk of serious damage to eyes.
Result	:	Irreversible effects on the eye

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Species	:	Bovine cornea
Assessment	:	Risk of serious damage to eyes.
Method	:	OECD Test Guideline 437
Result	:	Risk of serious damage to eyes.
GLP	:	yes

Carbon black:

Species	:	Rabbit
Exposure time	:	24 h
Assessment	:	No eye irritation
Method	:	OECD Test Guideline 405
Result	:	No eye irritation

Graphite (synthetic):

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

Respiratory or skin sensitisation

Skin sensitisation

Based on available data, the classification criteria are not met.

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Product:

Remarks : This information is not available.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Test Type : Maximisation Test
Species : Guinea pig
Assessment : Did not cause sensitisation on laboratory animals.
Method : OECD Test Guideline 406
Result : Did not cause sensitisation on laboratory animals.
GLP : no

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Species : Guinea pig
Assessment : Did not cause sensitisation on laboratory animals.
Method : OECD Test Guideline 406
Result : Did not cause sensitisation on laboratory animals.

(tetrapropenyl)succinic acid:

Test Type : Buehler Test
Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.
GLP : yes

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.
GLP : yes

Carbon black:

Test Type : Buehler Test
Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.

Graphite (synthetic):

Species : Mouse
Method : OECD Test Guideline 429

Result : negative

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Product:

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster fibroblasts
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster fibroblasts
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Germ cell mutagenicity-Assessment : In vitro tests did not show mutagenic effects

Carbon black:

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative

Genotoxicity in vivo : Species: Rat
Application Route: Inhalation
Result: Positive results were obtained in some in vivo tests.

Germ cell mutagenicity- : Animal testing did not show any mutagenic effects.

Assessment

Graphite (synthetic):

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)
Method: OECD Test Guideline 471
Result: negative

Test Type: gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Carcinogenicity

Based on available data, the classification criteria are not met.

Product:

Remarks : No data available

Components:

Carbon black:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen., Carcinogenicity classification not possible from current data.

Reproductive toxicity

Based on available data, the classification criteria are not met.

Product:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Effects on foetal development : Species: Rat, male and female
Application Route: oral (gavage)
General Toxicity Maternal: NOAEL: > 100 mg/kg body weight
Method: OECD Test Guideline 422
Result: No effects on fertility and early embryonic development were detected.

Reproductive toxicity - Assessment : - Fertility -

Animal testing did not show any effects on fertility.

- Teratogenicity -

Animal testing did not show any effects on foetal development.

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Reproductive toxicity - Assessment : - Fertility -

Some evidence of adverse effects on sexual function and fertility, based on animal experiments.

(tetrapropenyl)succinic acid:

Reproductive toxicity - Assessment : - Fertility -

Some evidence of adverse effects on development, based on animal experiments.

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Reproductive toxicity - Assessment : - Fertility -

Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Carbon black:

Reproductive toxicity - Assessment : - Fertility -

Animal testing did not show any effects on fertility.
- Teratogenicity -

Animal testing did not show any effects on foetal development.

Graphite (synthetic):

Effects on fertility : Species: Rat
Application Route: Oral
General Toxicity F1: NOAEL: 813 mg/kg body weight
Method: OECD Test Guideline 422

STOT - single exposure

Based on available data, the classification criteria are not met.

Product:

Remarks : No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Carbon black:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

May cause damage to organs (lymph node) through prolonged or repeated exposure.

Product:

Remarks : No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Target Organs : lymph node
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

(tetrapropenyl)succinic acid:

Exposure routes : Oral
Target Organs : Liver
Assessment : May cause damage to organs through prolonged or repeated exposure.

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Target Organs : Liver
Assessment : May cause damage to organs through prolonged or repeated exposure.

Carbon black:

Exposure routes : Inhalation
Target Organs : Lungs
Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Product:

Remarks : This information is not available.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Species : Rat, male and female
LOAEL : 10 mg/kg
Application Route : oral (gavage)
Exposure time : 29 - 54 d
Number of exposures : daily

Method	:	OECD Test Guideline 422
GLP	:	yes
Species	:	Rat, male and female
NOAEL	:	4 mg/kg
LOAEL	:	20 mg/kg
Application Route	:	oral (gavage)
Exposure time	:	90 d
Number of exposures	:	daily
Method	:	OECD Test Guideline 408
GLP	:	yes
Target Organs	:	lymph node

Carbon black:

Species	:	Rat
NOAEL	:	0,001 mg/l
Application Route	:	Inhalation
Test atmosphere	:	dust/mist
Exposure time	:	90 d
Target Organs	:	Lungs

Graphite (synthetic):

Species	:	Rat
NOAEL	:	813 mg/kg
Application Route	:	Oral
Method	:	OECD Test Guideline 422
Species	:	Rat
NOAEL	:	> 2 mg/l
Application Route	:	inhalation (dust/mist/fume)
Method	:	OECD Test Guideline 412

Aspiration toxicity

Based on available data, the classification criteria are not met.

Product:

This information is not available.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

No aspiration toxicity classification

Carbon black:

No aspiration toxicity classification

11.2 Information on other hazards

Endocrine disrupting properties

Based on available data, the classification criteria are not met.

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : Information given is based on data on the components and the toxicology of similar products.

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Remarks : Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.

Carbon black:

Remarks : Information given is based on data on the components and the toxicology of similar products.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: No data available

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

Toxicity to algae/aquatic plants : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 5,5 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1,2 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Selenastrum capricornutum (green algae)): > 10 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	:	EC50 (activated sludge): > 100 mg/l Exposure time: 3 h

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 51 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201

(tetrapropenyl)succinic acid:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 GLP: yes

Ecotoxicology Assessment

Acute aquatic toxicity	:	No toxicity at the limit of solubility
Chronic aquatic toxicity	:	No toxicity at the limit of solubility

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 26,3 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 84,91 mg/l Exposure time: 48 h Test Type: Immobilization Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 59,6 mg/l Exposure time: 72 h Test Type: Growth inhibition Method: OECD Test Guideline 201

Carbon black:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 1.000 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 5.600 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Scenedesmus capricornutum (fresh water algae)): 10.000 mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201
Toxicity to microorganisms	:	EC50 (Bacteria): > 800 mg/l Exposure time: 3 h

Graphite (synthetic):

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	(Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Physico-chemical removability : Remarks: No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Biodegradability : Result: Not rapidly biodegradable
Biodegradation: 12 %
Method: OECD Test Guideline 301B

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: Not rapidly biodegradable
Biodegradation: 1 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

(tetrapropenyl)succinic acid:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: Not rapidly biodegradable
Biodegradation: 18,3 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Biodegradability : Result: Not rapidly biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

Carbon black:

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Graphite (synthetic):

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

Components:

Amines, C11-14-branched alkyl, monohexyl and dihexyl phosphates:

Partition coefficient: n-octanol/water : log Pow: 1,74 - 11,61

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene:

Partition coefficient: n-octanol/water : log Pow: 5,2 - 10,82

(tetrapropenyl)succinic acid:

Partition coefficient: n-octanol/water : log Pow: 4,76
Method: OECD Test Guideline 107
GLP: yes

Reaction products of Dihydro-3-(tetrapropenyl)furan-2,5 dione with Propane-1,2,diol:

Partition coefficient: n-octanol/water : log Pow: 1,84

12.4 Mobility in soil

Product:

Mobility : Remarks: No data available

Distribution among environmental compartments : Remarks: No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Components:

Carbon black:

Assessment : Not persistent, bioaccumulative, and toxic (PBT).. Not very persistent and very bioaccumulative (vPvB).

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : No information on ecology is available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not dispose of with domestic refuse.
Dispose of as hazardous waste in compliance with local and national regulations.

Waste codes should be assigned by the user based on the application for which the product was used.

Contaminated packaging : Packaging that is not properly emptied must be disposed of as the unused product.
Dispose of waste product or used containers according to local regulations.

The following Waste Codes are only suggestions:

Waste Code : used product, unused product
12 01 12*, spent waxes and fats

uncleaned packagings
15 01 10*, packaging containing residues of or contaminated by hazardous substances

SECTION 14: Transport information

14.1 UN number or ID number

ADN : Not regulated as a dangerous good

ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.2 UN proper shipping name

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.3 Transport hazard class(es)

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.4 Packing group

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA (Cargo)	:	Not regulated as a dangerous good
IATA (Passenger)	:	Not regulated as a dangerous good

14.5 Environmental hazards

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Maritime transport in bulk according to IMO instruments

Remarks	:	Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). (EU SVHC)	:	This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).
Regulation (EU) No 2024/590 on substances that deplete the ozone layer (EC 2024/590)	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast) (EU POP)	:	Not applicable
Regulation (EU) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals (EU PIC)	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV) (EU. REACH-Annex XIV)	:	Not applicable
Regulation (EU) 2019/1148 on the marketing and use of explosives precursors		Not applicable
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.		Not applicable
Water hazard class (Germany)	:	WGK 1 slightly hazardous to water Classification according to AwSV, Annex 1 (5.2)

TA Luft List (Germany)	:	5.2.1: Total dust: others: 14,2 % 5.2.5: Organic Substances: Class 1: 84,61 %
Volatile organic compounds	:	Directive 2010/75/EU of 24 November 2010 on industrial and livestock rearing emissions (integrated pollution prevention and control) Not applicable

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical safety assessment

This information is not available.

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H314	:	Causes severe skin burns and eye damage.
H315	:	Causes skin irritation.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H361	:	Suspected of damaging fertility or the unborn child.
H361d	:	Suspected of damaging the unborn child.
H361f	:	Suspected of damaging fertility.
H372	:	Causes damage to organs through prolonged or repeated exposure.
H373	:	May cause damage to organs through prolonged or repeated exposure.
H373	:	May cause damage to organs through prolonged or repeated exposure if swallowed.
H411	:	Toxic to aquatic life with long lasting effects.
H412	:	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Eye Dam.	:	Serious eye damage

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Eye Irrit.	:	Eye irritation
Repr.	:	Reproductive toxicity
Skin Corr.	:	Skin corrosion
Skin Irrit.	:	Skin irritation
STOT RE	:	Specific target organ toxicity - repeated exposure
DE DFG MAK	:	Germany. MAK BAT Annex IIa
DE TRGS 527	:	Germany. TRGS 527 - Activities with nanomaterials
DE TRGS 900	:	Germany. TRGS 900 - Occupational exposure limit values.
DE DFG MAK / MAK	:	MAK value
DE TRGS 527 / BM	:	Assessment scale
DE TRGS 900 / AGW	:	Time Weighted Average

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; BGW - Biological Limit Values; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; 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; GHS - Globally Harmonised 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 Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; 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); LSPN - List of Hazardous Notified Substances (Chile); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation 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; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:		**Classification procedure:**
STOT RE 2	H373	Calculation method

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|| Relevant changes compared to the last edition are highlighted at the left margin. This version replaces all previous editions.

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