

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

SECTION 1: Identification

1.1 Product identifier

Trade name

Defender plus Graphene

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

Relevant identified uses

General use

Uses advised against

Do not use for squirting or spraying. Do not use for products which come into direct contact with the skin.

1.3 Details of the supplier of the safety data sheet

Blair Enterprises LLC
18540 Apache Drive
Parker, CO 80138
1-720-383-4558

<https://blairceramics.com>
orders@blairceramics.com

1.4 Emergency telephone number

Emergency information service

USA 1.800.535.5053, INTL 1.352.323.3500
24 hour emergency number

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Section	Hazard class	Category	Hazard class and category	Hazard statement
A.2	skin corrosion/irritation	1B	Skin Corr. 1B	H314
A.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
A.4S	skin sensitization	1	Skin Sens. 1	H317
A.7	reproductive toxicity	2	Repr. 2	H361f
B.6	flammable liquid	3	Flam. Liq. 3	H226

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis. The product is combustible and can be ignited by potential ignition sources. The mixture contains a substance that was identified as a PBT (persistent, bioaccumulative and toxic). The mixture contains a substance that was identified as vPvB (very persistent and very bioaccumulative).

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- Signal word danger

- Pictograms

GHS02, GHS05,
GHS07, GHS08



Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

- Hazard statements

H226	Flammable liquid and vapor.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H361f	Suspected of damaging fertility.

- Precautionary statements

P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	If swallowed: Rinse mouth. Do NOT induce vomiting.
P302+P352	If on skin: Wash with plenty of water.
P303+P361+P353	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
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/doctor.
P321	Specific treatment (see on this label).
P363	Wash contaminated clothing before reuse.
P370+P378	In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

- Hazardous ingredients for labelling

octamethylcyclotetrasiloxane, Dicoconium chlorides, Orange oil, sweet

2.3 Other hazards

Hazards not otherwise classified

Contains Orange oil, sweet. May produce an allergic reaction.
May be harmful if swallowed (GHS category 5: acutely toxic - oral).
Very toxic to aquatic life with long lasting effects (GHS category 1: aquatic toxicity - acute and/or chronic).

Results of PBT and vPvB assessment

Containing a PBT-/vPvB-substance in a concentration of $\geq 0,1\%$.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture)

3.2 Mixtures

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Description of the mixture

Name of substance	Identifier	Wt%	Classification acc. to GHS
Dicoco alkyldimethyl ammonium chlorides	CAS No 61789-77-3 68391-05-9	12 – < 20	Acute Tox. 4 / H302 Acute Tox. 2 / H330 Skin Corr. 1B / H314 Eye Dam. 1 / H318
2-(2-butoxyethoxy)ethanol	CAS No 112-34-5	3 – < 12	Eye Irrit. 2 / H319
octamethylcyclotetrasiloxane	CAS No 556-67-2	3 – < 12	Repr. 2 / H361f Flam. Liq. 3 / H226
Propan-2-ol	CAS No 67-63-0	3 – < 12	Eye Irrit. 2 / H319 STOT SE 3 / H336 Flam. Liq. 2 / H225
decamethylcyclopentasiloxane	CAS No 541-02-6	1 – < 3	Flam. Liq. 4 / H227
Orange oil, sweet	CAS No 8008-57-9 8028-48-6 68647-72-3	0.1 – < 1	Skin Irrit. 2 / H315 Skin Sens. 1 / H317 Asp. Tox. 1 / H304 Flam. Liq. 3 / H226
C.I. Acid Violet 76	CAS No 61901-47-1 63589-10-6	< 0.1	Eye Irrit. 2A / H319 cD / OSHA003

Hazardous ingredients, Consideration of other advice

This table, if present, includes all GHS classified ingredients present above their cut-off limits, even if the finished product is not classified as hazardous by GHS.

Exact percentage of ingredients is withheld as a trade secret.

For full text of abbreviations: see SECTION 16.

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

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

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

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

Following ingestion

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

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

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

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

In case of insufficient ventilation and/or in use, may form flammable/explosive vapor-air mixture. Solvent vapors are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.

Hazardous combustion products

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

5.3 Advice for firefighters

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

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

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

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

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

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools.

- Specific notes/details

Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapors are heavier than air, spread along floors and form explosive mixtures with air. Vapors may form explosive mixtures with air.

Advice on general occupational hygiene

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

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- Explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

- Flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

Control of the effects

Protect against external exposure, such as frost

- Ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

- Packaging compatibilities

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)											
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Ceiling-C [ppm]	Ceiling-C [mg/m ³]	Notation	Source
US	diethylene glycol monobutyl ether	112-34-5	TLV®	10						iv	AC-GIH® 2019

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Occupational exposure limit values (Workplace Exposure Limits)											
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Ceiling-C [ppm]	Ceiling-C [mg/m ³]	Notation	Source
US	2-propanol	67-63-0	TLV®	200		400					ACGIH® 2019
US	isopropyl alcohol	67-63-0	PEL (CA)	400	980	500	1,225				Cal/OSHA PEL
US	isopropyl alcohol	67-63-0	REL	400 (10 h)	980 (10 h)	500	1,225				NIOSH REL
US	isopropyl alcohol	67-63-0	PEL	400	980						29 CFR 1910.1000

Notation

Ceiling-C iv

ceiling value is a limit value above which exposure should not occur

STEL

short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA

time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Biological limit values						
Country	Name of agent	Parameter	Notation	Identifier	Value	Source
US	isopropanol	acetone		BEI®	40 mg/l	ACGIH® 2019

Relevant DNELs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	DNEL	27 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	DNEL	13 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
2-(2-butoxyethoxy)ethanol	112-34-5	DNEL	68 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
2-(2-butoxyethoxy)ethanol	112-34-5	DNEL	68 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
2-(2-butoxyethoxy)ethanol	112-34-5	DNEL	101 mg/m ³	human, inhalatory	worker (industry)	acute - local effects
2-(2-butoxyethoxy)ethanol	112-34-5	DNEL	83 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
octamethylcyclotetrasiloxane	556-67-2	DNEL	73 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

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Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
octamethylcyclotetrasiloxane	556-67-2	DNEL	73 mg/m ³	human, inhalatory	worker (industry)	acute - systemic effects
octamethylcyclotetrasiloxane	556-67-2	DNEL	73 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
octamethylcyclotetrasiloxane	556-67-2	DNEL	73 mg/m ³	human, inhalatory	worker (industry)	acute - local effects
Propan-2-ol	67-63-0	DNEL	888 mg/kg	human, dermal	worker (industry)	chronic - systemic effects
Propan-2-ol	67-63-0	DNEL	500 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
decamethylcyclopentasiloxane	541-02-6	DNEL	97 mg/m ³	human, inhalatory	worker (industry)	acute - systemic effects
decamethylcyclopentasiloxane	541-02-6	DNEL	24 mg/m ³	human, inhalatory	worker (industry)	acute - local effects
decamethylcyclopentasiloxane	541-02-6	DNEL	97 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
decamethylcyclopentasiloxane	541-02-6	DNEL	24 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	DNEL	8.9 mg/kg	human, dermal	worker (industry)	chronic - systemic effects
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	DNEL	31 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	DNEL	186 µg/cm ²	human, dermal	worker (industry)	acute - local effects

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	PNEC	13 µg/l	aquatic organisms	freshwater	short-term (single instance)
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	PNEC	1.3 µg/l	aquatic organisms	marine water	short-term (single instance)
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	PNEC	1.2 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	PNEC	8.8 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	PNEC	0.88 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	PNEC	7 mg/kg	terrestrial organisms	soil	short-term (single instance)

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	200 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	4 mg/kg	benthic organisms	sediment	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	56 mg/kg	(top) predators	water	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	3.9 mg/l	aquatic organisms	water	intermittent release
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	0.4 mg/kg	pelagic organisms	sediment	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	1.1 mg/l	aquatic organisms	freshwater	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	0.11 mg/l	aquatic organisms	marine water	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	200 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	4.4 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	0.44 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
2-(2-butoxyethoxy)ethanol	112-34-5	PNEC	0.32 mg/kg	terrestrial organisms	soil	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	10 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	0.059 mg/kg	pelagic organisms	sediment	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	1.7 mg/kg	(top) predators	water	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	0.44 µg/l	aquatic organisms	freshwater	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	0.044 µg/l	aquatic organisms	marine water	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	3 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	0.3 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	0.59 mg/kg	benthic organisms	sediment	short-term (single instance)
octamethylcyclotetrasiloxane	556-67-2	PNEC	0.16 mg/kg	terrestrial organisms	soil	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	141 mg/l	aquatic organisms	freshwater	short-term (single instance)

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Propan-2-ol	67-63-0	PNEC	141 mg/l	aquatic organisms	marine water	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	2,251 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	552 mg/kg	benthic organisms	sediment	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	552 mg/kg	pelagic organisms	sediment	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	160 mg/kg	(top) predators	water	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	28 mg/kg	terrestrial organisms	soil	short-term (single instance)
Propan-2-ol	67-63-0	PNEC	141 mg/l	aquatic organisms	water	intermittent release
decamethylcyclopentasiloxane	541-02-6	PNEC	10 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	11 mg/kg	benthic organisms	sediment	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	13 mg/kg	(top) predators	water	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	1.1 mg/kg	pelagic organisms	sediment	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	1.2 µg/l	aquatic organisms	freshwater	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	0.12 µg/l	aquatic organisms	marine water	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	11 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	1.1 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
decamethylcyclopentasiloxane	541-02-6	PNEC	2.5 mg/kg	terrestrial organisms	soil	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	5.4 µg/l	aquatic organisms	freshwater	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	0.54 µg/l	aquatic organisms	marine water	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	2.1 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	1.3 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	0.13 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	44 mg/kg	aquatic organisms	water	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	0.26 mg/kg	terrestrial organisms	soil	short-term (single instance)
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	PNEC	5.8 µg/l	aquatic organisms	water	intermittent release

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

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

- Other protection measures

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

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

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

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Color	purple
Particle	not relevant (liquid)
Odor	fruity

Other safety parameters

pH (value)	7.5 – 8.5 (25 °C)
Melting point/freezing point	not determined
Initial boiling point and boiling range	82 °C
Flash point	42 °C at 101 kPa 108 °F at 760 mmHg closed cup
Evaporation rate	Not determined
Flammability (solid, gas)	not relevant, (fluid)
Vapor pressure	4.3 kPa at 20 °C
Density	0.97 g/ml
Vapor density	this information is not available

Solubility(ies)

- Water solubility	miscible in any proportion
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Partition coefficient

- n-octanol/water (log KOW)	this information is not available
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Auto-ignition temperature	210 °C (auto-ignition temperature (liquids and gases))
Viscosity	not determined
Explosive properties	none
Oxidizing properties	none
Temperature class (USA, acc. to NEC 500)	T3 (maximum permissible surface temperature on the equipment: 200°C)

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". The mixture contains reactive substance(s). Risk of ignition.

If heated:

Risk of ignition

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

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

Hints to prevent fire or explosion

Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

10.5 Incompatible materials

Oxidizers

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic.

GHS of the United Nations, annex 4: May be harmful if swallowed.

Acute toxicity estimate (ATE) of components of the mixture			
Name of substance	CAS No	Exposure route	ATE
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	oral	930 mg/kg
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	inhalation: dust/mist	0.22 mg/l/4h

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Serious eye damage/eye irritation

Causes serious eye damage.

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Respiratory or skin sensitization

May cause an allergic skin reaction.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			
Name of substance	CAS No	Classification	Number
Propan-2-ol	67-63-0	3	

Legend

3 Not classifiable as to carcinogenicity in humans

Reproductive toxicity

Suspected of damaging fertility.

Specific target organ toxicity - single exposure

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

Specific target organ toxicity - repeated exposure

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

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

SECTION 12: Ecological information

12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	LC50	0.32 mg/l	fish	24 h
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	ErC50	0.39 mg/l	algae	72 h
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	EC50	0.15 mg/l	algae	72 h
2-(2-butoxyethoxy)ethanol	112-34-5	LC50	1,300 mg/l	fish	96 h
2-(2-butoxyethoxy)ethanol	112-34-5	EC50	>100 mg/l	aquatic invertebrates	48 h
2-(2-butoxyethoxy)ethanol	112-34-5	ErC50	>100 mg/l	algae	96 h
octamethylcyclotetrasiloxane	556-67-2	LC50	>22 µg/l	fish	96 h

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Aquatic toxicity (acute) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
octamethylcyclotetrasiloxane	556-67-2	EC50	>1,000 mg/l	aquatic invertebrates	96 h
Propan-2-ol	67-63-0	LC50	10,000 mg/l	fish	96 h
decamethylcyclopentasiloxane	541-02-6	LC50	>16 µg/l	fish	96 h
decamethylcyclopentasiloxane	541-02-6	EC50	>2.9 µg/l	aquatic invertebrates	48 h
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	LL50	5.7 mg/l	fish	96 h
Orange oil, sweet	8008-57-9 8028-48-6 68647-72-3	EL50	1.4 mg/l	aquatic invertebrates	24 h

Aquatic toxicity (chronic) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Dicoco alkyldimethyl ammonium chlorides	61789-77-3 68391-05-9	EC50	68 mg/l	microorganisms	3 h
octamethylcyclotetrasiloxane	556-67-2	LC50	10 µg/l	fish	14 d
octamethylcyclotetrasiloxane	556-67-2	EC50	>500 mg/l	aquatic invertebrates	24 h
Propan-2-ol	67-63-0	LC50	>10,000 mg/l	aquatic invertebrates	24 h
decamethylcyclopentasiloxane	541-02-6	LC50	>16 µg/l	fish	14 d
decamethylcyclopentasiloxane	541-02-6	EC50	>15 µg/l	aquatic invertebrates	21 d

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

The substance fulfills the very bioaccumulative criterion.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

The mixture contains a substance that was identified as a PBT (persistent, bioaccumulative and toxic). The mixture contains a substance that was identified as vPvB (very persistent and very bioaccumulative).

12.6 Endocrine disrupting properties

The mixture contains substance(s) with an endocrine disrupting potential.

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

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

Waste treatment of containers/packages

Only packagings which are approved (e.g. acc. to DOT) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

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

SECTION 14: Transport information

14.1 UN number

DOT	UN 2920
IMDG-Code	UN 2920
ICAO-TI	UN 2920

14.2 UN proper shipping name

DOT	Corrosive liquid, flammable, n.o.s.
IMDG-Code	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
ICAO-TI	Corrosive liquid, flammable, n.o.s.
Technical name (hazardous ingredients)	Dicoco alkyldimethyl ammonium chlorides, Propan-2-ol

14.3 Transport hazard class(es)

DOT	8 (3)
IMDG-Code	8 (3)
ICAO-TI	8 (3)

14.4 Packing group

DOT	II
IMDG-Code	II
ICAO-TI	II

14.5 Environmental hazards

	hazardous to the aquatic environment
Environmentally hazardous substance (aquatic environment)	Dicoco alkyldimethyl ammonium chlorides

14.6 Special precautions for user

There is no additional information.

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)


Revision: 2021-06-23

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code


The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - Additional information

Particulars in the shipper's declaration	UN2920, Corrosive liquid, flammable, n.o.s., (contains: Dicoco alkyldimethyl ammonium chlorides, Propan-2-ol), 8 (3), II, environmentally hazardous
Reportable quantity (RQ)	19,643,443 lbs (8,918,123 kg) (amyl acetate) (methanol)
Danger label(s)	8+3, fish and tree
	
Environmental hazards	YES (hazardous to the aquatic environment)
Special provisions (SP)	B2, IB2, T11, TP2, TP27
ERG No	132

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	YES (hazardous to the aquatic environment) (dimethylditetradecylazanium chloride)
Danger label(s)	8+3, fish and tree
	
Special provisions (SP)	274
Excepted quantities (EQ)	E2
Limited quantities (LQ)	1 L
EmS	F-E, S-C
Stowage category	C

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

Environmental hazards	YES (hazardous to the aquatic environment)
Danger label(s)	8+3
	
Excepted quantities (EQ)	E2
Limited quantities (LQ)	0,5 L

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Superfund Amendment and Reauthorization Act (SARA TITLE III)

- The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

none of the ingredients are listed

- Specific Toxic Chemical Listings (EPCRA Section 313)

Toxics Release Inventory: Specific Toxic Chemical Listings			
Name of substance	CAS No	Remarks	Effective date
Propan-2-ol	67-63-0	only persons who manufacture by the strong acid process are subject, supplier notification not required	1986-12-31

Clean Air Act

none of the ingredients are listed

Right to Know Hazardous Substance List

- Toxic or Hazardous Substance List (MA-TURA)

Name of substance	CAS No	DEP CODE	PBT / HHS / LHS	PBT / HHS Threshold	De Minimis Concentration Threshold
2-(2-butoxyethoxy)ethanol		1022			1.0 %
Propan-2-ol	67-63-0				1.0 %

- Hazardous Substances List (MN-ERTK)

Name of substance	Name acc. to inventory	CAS No	References	Remarks
Propan-2-ol	Isopropyl alcohol	67-63-0	A, N, O	

Legend

- A American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1992-93", available from ACGIH
- N National Institute for Occupational Safety and Health (NIOSH), "Recommendations for Occupational Safety and Health Standards," August 1988, available from NIOSH, Publications Dissemination Office, Division of Standards Development and Technology Transfer
- O Occupational Safety and Health Administration (OSHA), Safety and Health Standards, Code of Federal Regulations, title 29, part 1910, subpart Z, "Toxic and Hazardous Substances, 1990." General information: Minnesota Department of Labor and Industry, Occupational Safety and Health Division

- Hazardous Substance List (NJ-RTK)

Name of substance	Name acc. to inventory	CAS No	Remarks	Classifications
2-(2-butoxyethoxy)ethanol	glycol, ethers			
Propan-2-ol	isopropyl alcohol (2-propanol) (isopropanol)	67-63-0		F3

Legend

- F3 Flammable - Third Degree

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

- Hazardous Substance List (Chapter 323) (PA-RTK)

Name acc. to inventory	CAS No	Classification
GLYCOL ETHERS		E
2-PROPANOL	67-63-0	E

Legend

E Environmental hazard

- Hazardous Substance List (RI-RTK)

Name of substance	CAS No	References
Propan-2-ol	67-63-0	T, F

Legend

F Flammability (NFPA®)
T Toxicity (ACGIH®)

VOC content

- Regulated Volatile Organic Compounds (VOC-EPA) 4.2 %
- Regulated Volatile Organic Compounds (VOC-Cal ARB) 4.2 %

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

Category	Rating	Description
Chronic	*	chronic (long-term) health effects may result from repeated overexposure
Health	3	major injury likely unless prompt action is taken and medical treatment is given
Flammability	2	material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	2	material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur
Health	3	material that, under emergency conditions, can cause serious or permanent injury
Instability	0	material that is normally stable, even under fire conditions
Special hazard		

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

National inventories

Country	Inventory	Status
EU	REACH Reg.	not all ingredients are listed
CA	DSL	not all ingredients are listed
CA	NDSL	not all ingredients are listed
US	TSCA	not all ingredients are listed

Legend

DSL	Domestic Substances List (DSL)
NDSL	Non-domestic Substances List (NDSL)
REACH Reg.	REACH registered substances
TSCA	Toxic Substance Control Act

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information, including date of preparation or last revision

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
15.1	Cleaning Product Right to Know Act Substance List (CA-RTK)		yes
15.1		Cleaning Product Right to Know Act Substance List (CA-RTK): change in the listing (table)	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
29 CFR 1910.1000	29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits)
49 CFR US DOT	49 CFR U.S. Department of Transportation
ACGIH®	American Conference of Governmental Industrial Hygienists
ACGIH® 2019	From ACGIH®, 2019 TLVs® and BEIs® Book. Copyright 2019. Reprinted with permission. Information on the proper use of the TLVs® and BEIs®: http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/tlv-bei-position-statement
Acute Tox.	Acute toxicity
Asp. Tox.	Aspiration hazard
ATE	Acute Toxicity Estimate
Cal/OSHA PEL	California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)
Cal ARB	California Air Resources Board
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
cD	Combustible dust
Ceiling-C	Ceiling value

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Abbr.	Descriptions of used abbreviations
DEP CODE	Department of Environmental Protection Code
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
DOT	Department of Transportation (USA)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EL50	Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms
EmS	Emergency Schedule
EPA	Environmental Protection Agency. An agency of the federal government of the United States charged with protecting human health and the environment
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
ERG No	Emergency Response Guidebook - Number
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
Flam. Liq.	Flammable liquid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
HHS	Higher hazard substance
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LHS	Lower hazard substance
LL50	Lethal Loading 50 %: the LL50 corresponds to the loading rate causing 50 % lethality
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NFPA®	National Fire Protection Association (United States)
NIOSH REL	National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs)
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PEL	Permissible exposure limit
PNEC	Predicted No-Effect Concentration

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Abbr.	Descriptions of used abbreviations
ppm	Parts per million
Repr.	Reproductive toxicity
RTECS	Registry of Toxic Effects of Chemical Substances (database of NIOSH with toxicological information)
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
Skin Sens.	Skin sensitization
STEL	Short-term exposure limit
STOT SE	Specific target organ toxicity - single exposure
TLV®	Threshold Limit Values
TWA	Time-weighted average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.

Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

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

Code	Text
H225	Highly flammable liquid and vapor.
H226	Flammable liquid and vapor.
H227	Combustible liquid.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H336	May cause drowsiness or dizziness.
H361f	Suspected of damaging fertility.

Defender plus Graphene

Version number: GHS 2.0
Replaces version of: 2021-06-23 (GHS 1)

Revision: 2021-06-23

Code	Text
OSHA003	May form combustible dust concentrations in air.

Disclaimer

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