

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

1.0 Identification of the substance/mixture and of the company

1.1 Product identifier

Trade name: Arc All Weather Sealant Black
UFI: MG1H-AW4N-GJ0V-NU4M
Index-No.: --
EG-No.: --
CAS-No.: --
REACH-Registry-No.
Other names:--
This mixture contains nanoforms (according to REACH regulation).

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

against: Use as solvent containing Sealant by professional uses See also for this application the exposure scenario from of a supplier, bottler + *exposure scenario mineral oil distillate*

1.3 Details of the supplier of the data sheet

Manufacturer / Supplier

ARC Building Products
IDA Business & Technology Park
Ballynattin
Arklow, Co.Wicklow
Ireland.
Tel: +353 (0)402 32370
Email: sales@arcbuildingproducts.ie
Web: www.arcbuildingproducts.ie

1.4 Emergency Number

Tel: +353 (0)402 32370
(Office Hours Only)

2. Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation 1272/2008/EU



Warning

Flam. liq. Cat. 3, STOT SE 3
GHS 02, GHS 07, H 226, H 336, EUH 066



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

2.2 Label elements



Warning

Dangerous component contains : n-Butylacetate
Flammable Fluid category 3

Regulation 1228/2008/EU

H-Phrases

H226: Flammable liquid and vapour

H336: May cause drowsiness and dizziness

EUH-Phrases

EUH066: Repeated exposure may cause skin dryness or cracking

Precautionary statements

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

P233: Keep container tightly closed

P403+P235: Store in a well-ventilated place. Keep cool.

P261: Avoid breathing dust/fume/ gas/mist/vapours/spray

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

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

P303+P361+P353: IF ON SKIN (or hair): Remove/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

P312: Call a POISON CENTRE / doctor if you feel unwell

P501 Dispose contents/ container to a plant for burning waste

2.3 Other hazards

Vapours may form explosive mixture with air Components of the product may be absorbed into the body by inhalation, no endocrine disruptors

PBT- and vPvB-Assessment: there is no substance in the mixture to be persistent, bioaccumulating nor toxix (PBT), nor very persistent nor very bioaccumulating (vPvB)

3. Composition/ information on integredients

Mixture: Synthetic rubber (Polymer mixture) and helping substances with the following hazardous Substances

Substance: Petroleum, Distillate

EC-No.: 265-157-1 CAS-No. : 64742-54-7 Index-No.:

REACH-Registry-Number.: 01-2119484627-25

Share : 31-35%

Classification according to Regulation (EU) No. 1272/2008: GHS 8, Asp. Tox. 1 H304

Highly refined mineral oil.

The highly refined mineral oil contains <3% (w/w) DMSO extract,

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Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

according to IP346. It is note H, L Annex VI

Substance: n-Butylacetate

EG-No.: 204-658-1 CAS-No. : 123-86-4 Index-No.:

REACH-Registry-Number.: 01-2119485493-29-0000

Share : 22-26%

Classification according to Regulation (EU) Nr. 1272/2008:

GHS 02 Flam. Liq. 3 H 226; GHS 07 STOT SE 3 H 336; EUH 066

Substance: Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate

EG-No: 258-207-9 CAS-Nr. : 52829-07-9 Index-Nr.:

REACH- Registry-Number: 01-2119537297-32-0001

Share : ca. 0,1-0,2%

Classification according to Regulation (EU) No. 1272/2008: GHS 05, 08, 09, Eye Dam.1 H318,
Repr. 2 H361f, Aquatic Acute 1 H400, Aquatic Chronic 2 H 411 M (acute) =1

Particle properties

Name of the (group of) nanoform(s):

Synthetic amorphous silica, nanostructured material.

Number-based particle size distribution (internal structure/primary particles)

D10: 7-15 nm

D50: 2-30 nm

D90: 10-35 nm

4. First aid measures

4.1 Description of first aid measures

Remove contaminated, soaked clothin immediately and dispose of safely. First aider need to protect himself.

After Inhalation Keep at rest. Aerate wirth fresh air. When symtoms persist or in all cases of doubt seek medical advice

Skin Wash immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice

Eyes Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion Call a physican immediately. Do not induce vomiting without medical advice.

4.2 Most important symtoms and effects, both acute and delayed

Cough, nausea, vomiting, headache,

Lung oedema, central nervous system effects. Prolonged skin contact may defat the skin and produce dermatitits

4.3 Indication of any immediate medical attention and special treatment needed

Treat symthomatically

5. Fire-fighting measures

5.1 Suitable extinguishing media: Alcohol-resistant foam, powder, carbon dioxide, water spray



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Extinguishing media which must not be used for safety reasons: Do not use a solid water stream as it may scatter and spread fire

5.2 Special hazards arising from the substance or mixture:

Can be released in case of fire: carbon monoxide and carbon dioxide

5.3 Advice for fire-fighters

Wear self-contained breathing apparatus , like EN 133

6. Accidental release measures

6.1 Personal precautions

Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3 Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in

large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take

necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4 Reference to other sections: see also section 7 and 13

7. Handling and storage

7.1 Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air.

Advice on the protection of the environment

See Section 8: Environmental exposure controls.

Advice on general occupational hygiene

Do not eat, drink and smoke in work

7.2 Conditions for safe storage, including any incompatibilities



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
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Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care.
Don't store above 60 °C

Advice on common storage

Incompatible products: strong acids and strong bases
strong oxidizing agents

Temperature class T 2

- 7.3 Specific end uses:** solvent containing sealant by professional use
See also Exposition scenario of the supplier to the containing solvent

8. Exposure controls / personal protection

8.1 Control parameters

8.1.1 Exposure Limits EC

According to Directive (EU) 2019/1831 of the Commission according to Directive 98/24/EG
Chemical Substance TWA (mg/m³) TWA (ppm) STEL(mg/m³) STEL(ppm)
n-Butylacetate CAS:123-86-4 241 50 723 150

Exposure Limits UK

Component:

n-Butylacetate	TWA(mg/m ³)	TWA (ppm)	STEL(mg/m ³)	STEL (ppm)
CAS 123-86-4	724	150	966	200 UK
	710	150	950	200 Ireland

Silicon dioxide

CAS 7631-86-9 OEL 6mg/m³ Inhalable dust/mist OEL 2,4 mg/m³ respirable dust/mist

Mineral Oil (Fog)

CAS 64742-54-7 Mixture of hydrocarbons

ACGIH: TWA 5 mg/m³

Bariumsulphate CAS-Nr. 13462-86-7, Carbon Black CAS-Nr. 1333-86-4

Carbon black Limit value 8h

3,5 mg/m³ (UK)

3,5 mg/m³ (Ireland)

Bariumsulphate Limit value 8h

10 mg/m³ inhalable fraction (UK)

4 mg/m³ respirable fraction (UK)

1 mg/m³ (Ireland)

Note: For details and further information please refer to the original regulation.

8.1.2 DNEL- and PNEC- Data n-Butylacetate CAS 123-86-4

Worker

DN(M)EL - long-term exposure - systemic effects - Inhalation 300*** mg/m³***

DN(M)EL - acute / short-term exposure - systemic effects - Inhalation 600*** mg/m³***

DN(M)EL - long-term exposure - local effects - Inhalation 300*** mg/m³

DN(M)EL - acute / short-term exposure - local effects - Inhalation 600*** mg/m³

DN(M)EL - long-term exposure - systemic effects - Dermal 11*** mg/kg bw/day***



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

DN(M)EL - acute / short-term exposure - systemic effects - Dermal 11*** mg/kg bw/day***
DN(M)EL - long-term exposure - local effects - Dermal No hazard identified***
DN(M)EL - acute / short-term exposure - local effects - Dermal No hazard identified***
DN(M)EL - local effects - eyes No hazard identified***

General population ***

DN(M)EL - long-term exposure - systemic effects - Inhalation 35,7*** mg/m³***
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation 300*** mg/m³***
DN(M)EL - long-term exposure - local effects - Inhalation 35,7*** mg/m³
DN(M)EL - acute / short-term exposure - local effects - Inhalation 300*** mg/m³
DN(M)EL - long-term exposure - systemic effects - Dermal 6*** mg/kg bw/day***
DN(M)EL - acute / short-term exposure - systemic effects - Dermal 6*** mg/kg bw/day***
DN(M)EL - long-term exposure - local effects - Dermal No hazard identified***
DN(M)EL - acute / short-term exposure - local effects - Dermal No hazard identified***
DN(M)EL - long-term exposure - systemic effects - Oral 2*** mg/kg bw/day***
DN(M)EL - acute / short-term exposure - systemic effects - Oral 2*** mg/kg bw/day***
DN(M)EL - local effects - eyes No hazard identified***

Environment ***

PNEC aqua - freshwater 0,18 mg/l
PNEC aqua - marine water 0,018 mg/l
PNEC aqua - intermittent releases 0,36 mg/l
PNEC STP 35,6 mg/l
PNEC sediment - freshwater 0,981 mg/kg
PNEC sediment - marine water 0,0981 mg/l
PNEC soil 0,0903 mg/kg
Secondary poisoning No potential for bioaccumulation***

DNEL Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate CAS-Number: 52829-07-9

Worker: long-term and short-term exposure - systemic effects - Inhalation: 2,82 mg/m³
Worker: long-term exposure - systemic effects , dermal: 1,6 mg/kg
General population: long-term exposure - systemic effects, Inhalation: 0,69 mg/m³
General population long-term exposure - systemic effects, dermal: 0,8 mg/kg
General population: long-term exposure - systemic effects, oral: 0,4 mg/kg

PNEC Bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate CAS-Number: 52829-07-9

aqua - freshwater: 0,018 mg/l
marine water: 0,0018 mg/l
aqua - intermittent releases: 0,007 mg/l
sediment - freshwater 29 mg/kg
sediment - marine water: 2,9 mg/kg
Soil: 5,9 mg/kg
STPe: 1 mg/l

Exposure limits European Union: Silicon dioxide and Petroleum are no exposure limits established

8.2 Occupational exposure controls

8.2.1 Engineering measures

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.



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Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

8.2.2. Personal protective equipment

General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Respiratory protection

Respirator with A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material butyl-rubber

Evaluation according to EN 374, level 3

Glove thickness approx 0,3 mm

Break through time approx 60 min

Suitable material polyvinylchloride /nitrile rubber

Evaluation according to EN 374, level 2

Glove thickness approx 0,9 mm

Break through time approx 30 min

Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face. Equipment should conform to EN 166.

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Note: the information to protection according to the dangerous substance n-Butylacetate

8.2.3 Environmental exposure controls If possible use in closed systems. If leakage can not be prevented, the substance needs to be sucked off at the emission point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains

9. Physical and Chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Liquid with high viscosity

- Aggregate state:

polymer, containing a solvent (liquid)

- color :

black

Odor :

like Butylacetate

**Safety Data Sheet according to regulation (EU) 1907/2006
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Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Odor threshold :	7-20 ppm (n-Butylacetate)
pH-value :	6,2 (n-Butylacetate data of supplier, <u>pH not applicable to product</u>)
Meltingpoint :	Not applicable
Bolingpoint and boiling range:	126 °C (solvent n-Butylacetate)
Flashpoint :	27 °C Vapor from n-Butylacetate, according to EC A.9)
Evapoating rate :	Not applicable
Flammability	Short-term ignition (5- 10 sec.) possible due to butyl acetate
Upper/lower flammability ore	1,2 % (lower limit n-Butylacetate)
explosive limits:	7,5 % (upper limit n-Butylacetate)
Vapour pressure:	15 mbar bei 20 °C (n-Butylacetate)
Vapour densitiy :	4 (air =1) bei 20 °C (n-Butylacetate)
relative density :	0,94 g/cm ³ (20 °C)
Solubility :	Not soluble in water
Partition coefficient:	Not applicable
n-Octanol/Water :	Not applicable
Auto-ignition temperature :	Not applicable
Decomposition temperature:	Not applicable
Kinemat. Viscosity	>> 20,5 mm ² /s 40 °C
Viscosity :	>15.000 mPas (20 °C) <i>Brookfield</i>
Explosive properties :	Not applicable
Oxidising properties :	Not applicable
Particle properties	Particle size distribution Number-based particle size distribution (internal structure/primary particles) D10: 7-15 nm D50: 2-30 nm D90: 10-35 nm Synthetic amorphous silica exists as a nanostructured material consisting of aggregates and agglomerates made up of fused primary particles

Other information

9.2.1 Information on physical hazard classes

Information not available.

9.2.2 Other safety characteristics

9.2 Evaporation rate Not determined

Molecular weight g/mol Undetermined

Total solids ---

Explosive properties non-explosive

Oxidising properties non-oxidising

VOC: approx. 24 %

Containing Solvent: approx. 24 % n-Butylacetate

10. Stability and reactivity

10.1 Reactivity: no data known

10.2 Chemical Stability Stable if used and stored according to the specifications

10.3 Possibility of hazardous reactions: vapors can form with air explosive mixtures

10.4 Conditions to be avoid : strong acids and strong bases, also strong oxidants



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

10.5 Incompatible materials: no data known

10.6 Hazardous decomposition products: see also section 5

11. Toxicological information

Acute Toxicity (all data corresponding to n-Butylacetate and Petroleum)

oral: LD50 10760 mg/kg (rat) OECD 423

dermal: LD50 >14000 mg/kg (rabbit) OECD 402

inhalative: LC0 23,4 mg/l (rat) OECD 403

Petroleum Toxicity: LD50 > 5000 mg/kg and in a matrix, no acute toxic effects

Irritation and Corrosion

Skin: no skin irritation (rabbit) OECD 404

Eye: no eye irritation (rabbit) OECD 405

Sensitization not sensitizing: skin, (guinea pig) OECD 406

Specific Target Organ Systemic Toxicant - Single exposure May cause drowsiness and dizziness

Specific Target Organ Systemic Toxicant - Repeated exposure

Repeated exposure may cause skin dryness or cracking.

Danger of aspiration: no, high viscosity of the product

Carcinogenicity, Mutagenicity, Reproductive toxicity (CMR): no effects, but see below

Additional toxicological notes: dizziness, narcosis, cough, nausea, vomiting, headache, unconsciousness, shortness of breath. Components (n-butylacetate) of the product may be absorbed into the body by inhalation.

Data on carcinogenic, mutagenic and reproductive toxic properties (CMR properties) of the raw material Bis(2,2,6,6-tetramethyl-4-piperidyl)sebazate can probably affect fertility

11.2. Endocrine properties: currently no ingredient classified in this way

12. Ecological information

12.1 Toxicity Fish toxicity LC50 18 mg/l (96h) (American Phoxinus phoxinus) OECD 203

Daphnia toxicity EC50 44 mg/l (48h) (Daphnia magna)

(Data from dangerous substance n-Butylacetate)

12.2 Persistence and degradability

Biodegradation 83 % (28 d), aerobic, Readily biodegradable, OECD 301 D.

(dangerous substance n-Butylacetate)

12.3 Bioaccumulative potential no data available

12.4 Mobility in soil no data available

12.5 Results of PBT and vPvB assessment

there is no substance in the mixture to be persistent, bioaccumulating nor toxix (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6 Endocrinous properties currently unknown

12.7 Other harmful effects currently unknown



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

13. Disposal considerations

13.1 Waste treatment methods

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal

Uncleaned empty packaging: Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

Empty plastic packaging: 150110

European Waste Catalogue (EU)

08 04 09 waste adhesives and sealants containing organic solvents or other dangerous substances.

Extra caution: Leave waste to a dump or to a plant for burning waste

Other EU or national legislation HP 03

14. Transport information

14.1 UN-Number 1133

14.2 Correct UN- proper shipping name: Adhesive*

14.3. Transport hazard class see

Transport by Street /Rail

ADR/RID: not subjected to ADR/RID see 2.2.3.1.5.

(packaging < 450 l) no dangerous good

Class /Packaging group : no dangerous good

Accompanying documents: Meets the chemical and physical criteria set out in 2.2.3.1.5 ADR

Sea transport

IMDG-Code /GGV-See: not subjected to IMDG-Code 2.3.2.5 (packaging <450 l)

No dangerous good

Class /Packaging group: no dangerous good

[Accompanying documents Carriage in accordance with IMDG code 2.3.2.5](#)

Air Transport: ICAO-TI / IATA-DGR

Class 3

Label 3

UN-Number 1133

Packaging group III

Correct technical name: 1133 Adhesive*

14.4 Packaging group see 14.3

14.5 Environmental hazards

ADR/RID / IMDG-Code / ICAO-TI / IATA-DGR: no

Marine Pollutant: no

14.6 Special precautions for user: no, see also section 7

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

14.7 Transport in bulk according to Annex II des MARPOL- 73/78 and the IBC-Code

Pollution category (X, Y or Z) : no
Ship type (1, 2 oder 3) : no

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture According to 1907/2006/EU

The mixture is not subject to regulations 1005/2009/EU, 2019/1021/EU (POP) and 649/2012/EU (PIC)

Classification according to Regulation 1272/2008/EU



Warning

Dangerous component contains : n-Butylacetate
Flammable Liquid category 3

National Regulation (Germany)

Wassergefährdungsklasse 1 (Solvent n-Butylacetate) AwSV
VOC: approx. 24 %
Lagerklasse by TRGS 510 : LGK 3

15.2 Chemical safety Assessment not be done yet by Downstream User

16. Other information

Changes compared to the latest version: Chapter 1,3,9 Changes, adapted to new regulations and classifications. Updating of the previous version due to adaptation to the regulations and classification of a raw material by the supplier.

Note: The above mentioned dates correspond to our present state of knowledge and experience.

The safety data sheet serves as description of the products in regards to necessary safety measures. The indications have not the meaning of guarantees on properties.

All information (n-Butylacetate, mineral oil) is data from suppliers, also the exposure scenario

Date of issue 01.09.2023 Changes cursive Department Product Safety

Contact: info@baden-chemie.de

Specific hazards:

Flam. Liq. 3: Flammable liquids, Hazard Category 3

STOT SE 3: Specific target organ toxicity -Single exposure, Hazard Category 3

Asp. Tox. 1: Aspiration Toxicity 1

H-Phrases (raw materials)

H226: Flammable liquid and vapor

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
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Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

H304: May be fatal if swallowed and enters airways
H336: May cause drowsiness and dizziness
H 318 Causes serious eye damage
H 351 Suspected of causing cancer (inhale)
H 361f Suspected of damaging fertility
H 400 Very toxic to aquatic life
H 411 Toxic to aquatic life with long lasting effects

EUH-Phrases

EUH066: Repeated exposure may cause skin dryness or cracking

P-Phrases

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P233: Keep container tightly closed
P403+P235: Store in a well-ventilated place. Keep cool.
P261: Avoid breathing dust/fume/ gas/mist/vapours/spray
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351+ P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P303+P361+P353: IF ON SKIN (or hair): Remove/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
P312: Call a POISON CENTRE / doctor if you feel unwell
P501 Dispose contents/ container to a plant for burning waste

Global Inventory Status (GIS)

All components of the mixture are registered in or exempt from registration in the following registers

EU EINC / REACH

USA TSCA active

Canada DSL/NDSL

Australia AICS

New Zealand NZIOC

PR China IECSC

Philippines PICCS

Switzerland

TSCA

AIC

DSL

ENCS

ISHL

KECI

PICCS

IECSC

NZIoC

United States TSCA Inventory

Australian Inventory of Industrial Chemicals

Canadian Domestic Substances List (DSL)

Japan. ENCS - Existing and New Chemical Substances Inventory

Japan. ISHL - Inventory of Chemical Substances

Korea. Korean Existing Chemicals Inventory (KECI)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)

China. Inventory of Existing Chemical Substances in China (IECSC)

New Zealand. Inventory of Chemical Substances



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
CAS: Chemical Abstract Service
EINECS: European Inventory of Existing Commercial Chemical Substance
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
TRGS Technische Regel Gefahrstoffe (Germany)
VOC: Volatile Organic Compounds
DNEL: Derived No Effect Level
PNEC: Predicted No Effect Concentration

Annex to the extended Safety Data Sheet eSDS

For bottler ES 1 and professional Application in Coatings ES 4 an Exposure scenario (Oxea) for the dangerous substance n-Butylacetate (the product contains n-Butylacetate)

ES 1: Use for re-packing

Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14: production of preparations or articles by tableting, compression, extrusion, pelettisation
PROC15: Use as laboratory reagent

Environmental release categories [ERC]

ERC2: Formulation of preparations (mixtures)

Product characteristics

Refer to attached safety data sheets

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

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Processes and activities covered by the exposure scenario

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.***

Further explanations

Industrial use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Assumes an advanced standard of occupational Health and Safety Management System***

Number of the contributing scenario 1

**Contributing exposure scenario controlling environmental exposure for
ERC 2**

Further specification

SpERC ESVOC 2.2.v1 (ESVOC 4), release factors for (Sp)ERC were modified, assessment tool used: Chesar 2.3.***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP.

Amounts used

Daily amount per site: 13.33 to

Annual amount per site: 4000 to

Fraction of Regional tonnage used locally: 1

Frequency and duration of use

Covers use up to: 300 days***

Environment factors not influenced by risk management

River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 2.5 %

Release fraction to wastewater from process: 0.05 %

Release fraction to soil from process: 0.01%

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 90 %***

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m³/d): 2000

Estimated substance removal from wastewater via domestic sewage treatment (%): 88.9

Do not apply industrial sludge to natural soils***

Number of the contributing scenario 2

**Contributing exposure scenario controlling worker exposure for
PROC 1**

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Number of the contributing scenario 3***

**Contributing exposure scenario controlling worker exposure for
PROC 2*****

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 4***

**Contributing exposure scenario controlling worker exposure for
PROC 3*****

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 5***

**Contributing exposure scenario controlling worker exposure for
PROC 4*****

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 6

**Contributing exposure scenario controlling worker exposure for
PROC 5*****



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where

emissions occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative). If no adequate ventilation is available,

respiratory protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 7***

Contributing exposure scenario controlling worker exposure for

PROC 8a***

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where

emissions occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative). If no adequate ventilation is available,

respiratory protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 8***

Contributing exposure scenario controlling worker exposure for

PROC 8b***

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.***



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Number of the contributing scenario 9***

Contributing exposure scenario controlling worker exposure for PROC 9***

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust entilation): 90 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***

Number of the contributing scenario 10

Contributing exposure scenario controlling worker exposure for PROC 14

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***

Number of the contributing scenario 11***

Contributing exposure scenario controlling worker exposure for PROC 15

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Exposure estimation and reference to its source Environment

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic) PEC: 0.037 mg/l; RCR: 0.208

Fresh Water (Sediment) PEC: 0.75 mg/kg dw; RCR: 0.765

Marine Water (Pelagic) PEC: 0.004 mg/l; RCR: 0.208

Marine Water (Sediment) PEC: 0.075 mg/kg dw; RCR: 0.764

Agricultural Soil PEC: 0.012 mg/kg dw; RCR: 0.129

Sewage Treatment Plant(Effluent) PEC: 0.372 mg/l; RCR: 0.01

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. ***

Proc 1 EE(inhal): 0.194 ; EE(derm): 0.034***

Proc 2 EE(inhal): 96.8 ; EE(derm): 1.37***

Proc 3 EE(inhal): 193.6 ; EE(derm): 0.69***

Proc 4 EE(inhal): 387.2; EE(derm): 1.372***

Proc 5 EE(inhal): 96.8 ; EE(derm): 2.742***

Proc 8a EE(inhal): 96.8; EE(derm): 2.742***

Proc 8b EE(inhal): 484 ; EE(derm): 1.371***

Proc 9 EE(inhal): 96.8 ; EE(derm): 6.86***

Proc 14 EE(inhal): 96.8 ; EE(derm): 3.43***

Proc 15 EE(inhal): 193.6 ; EE(derm): 0.34***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

Proc 1 RCR(inhal): 0.0003 ; RCR(derm): 0.003***

Proc 2 RCR(inhal): 0.161 ; RCR(derm): 0.124***

Proc 3 RCR(inhal): 0.323 ; RCR(derm): 0.063***

Proc 4 RCR(inhal): 0.645 ; RCR(derm): 0.125***

Proc 5 RCR(inhal): 0.161; RCR(derm): 0.249***

Proc 8a RCR(inhal): 0.161 ; RCR(derm): 0.249***

Proc 8b RCR(inhal): 0.807 ; RCR(derm): 0.125***

Proc 9 RCR(inhal): 0.161 ; RCR(derm): 0.624***

Proc 14 RCR(inhal): 0.161 ; RCR(derm): 0.312***

Proc 15 RCR(inhal): 0.323 ; RCR(derm): 0.031***

ES 4: professional Application in Coatings

List of use descriptors

Sector of uses [SU]

SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10: Roller application or brushing
PROC11: Non industrial spraying
PROC13: Treatment of articles by dipping and pouring
PROC15: Use as laboratory reagent
PROC19: Hand-mixing with intimate contact and only PPE available

Environmental release categories [ERC]

ERC8a: Wide dispersive indoor use of processing aids in open systems

Product characteristics

Refer to attached safety data sheets

Processes and activities covered by the exposure scenario

Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities.

Further explanations

Professional use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Assumes a basic standard of occupational Health and Safety Management System***

Contributing Scenarios

Number of the contributing scenario 1

**Contributing exposure scenario controlling environmental exposure for
ERC 8a**

Further specification

SpERC ESVOC 8.3b.v1 (ESVOC 6),
assessment tool used: Chesar 2.3.***

Amounts used

daily wide dispersive use: 0.00055 to/d
Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used locally: 0.0005
Amounts used (EU): 4000 to/a

Environment factors not influenced by risk management

River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure

Indoor/Outdoor use***

Technical conditions and measures at process level (source) to prevent release

Release fraction to air from wide dispersive use (regional only): 98 %
Release fraction to wastewater from wide dispersive use: 1 %
Release fraction to soil from wide dispersive use (regional only): 1%***

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m³/d): 2000
The minimum grade of elimination in the sewage plant is (%): 88.9

Conditions and measures related to external treatment of waste for disposal

Dispose of waste product or used containers according to local regulations***

Number of the contributing scenario 2

**Contributing exposure scenario controlling worker exposure for
PROC 1**

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 3

Contributing exposure scenario controlling worker exposure for PROC 2

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 4

Contributing exposure scenario controlling worker exposure for PROC 3

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 5***

Contributing exposure scenario controlling worker exposure for PROC 4

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***

Number of the contributing scenario 6***

Contributing exposure scenario controlling worker exposure for PROC 5

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.*

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 7***

Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 8***

Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 9***

Contributing exposure scenario controlling worker exposure for PROC 10

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)***

Technical conditions and measures to control dispersion from source towards the worker

Provide extract ventilation to points where emissions occur. provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory

protection (efficiency 90 %) must be used.***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.***

Number of the contributing scenario 10

Contributing exposure scenario controlling worker exposure for PROC 11

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 25 %***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to hands and lower arms (1500 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario 11***

Contributing exposure scenario controlling worker exposure for PROC 11

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure 0,5 - 10 kPa at STP***

Frequency and duration of use

Avoid carrying out activities involving exposure for more than 4 hours***

Human factors not influenced by risk management

Area potentially exposed: corresponds to hands and lower arms (1500 cm²)***

Other given operational conditions affecting workers exposure

Indoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative).***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection (Efficiency: 90 %).***



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Number of the contributing scenario 12***

Contributing exposure scenario controlling worker exposure for PROC 11

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 25 %***

Frequency and duration of use

Avoid carrying out activities involving exposure for more than 4 hours***

Human factors not influenced by risk management

Area potentially exposed: corresponds to hands and lower arms (1500 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario 13***

Contributing exposure scenario controlling worker exposure for PROC 13

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 25 %***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)***

Other given operational conditions affecting workers exposure

Indoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative).***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.***

Number of the contributing scenario 14***

Contributing exposure scenario controlling worker exposure for 15

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

8 h (full shift)***

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Number of the contributing scenario 15***

Contributing exposure scenario controlling worker exposure for PROC 19

Further specification

assessment tool used: Chesar 2.3***

Product characteristics

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

Liquid, vapour pressure 0,5 - 10 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)***

Frequency and duration of use

Avoid carrying out activities involving exposure for more than 4 hours***

Human factors not influenced by risk management

Area potentially exposed: corresponds to 1980 cm²***

Other given operational conditions affecting workers exposure

Indoor and outdoor use***

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).***

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant

Exposure estimation and reference to its source

Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic) PEC: 0.0003 mg/l; RCR: 0.002

Fresh Water (Sediment) PEC: 0.006 mg/kg dw; RCR: 0.006

Marine Water (Pelagic) PEC: 0.0000 mg/l; RCR: 0.0002

Marine Water (Sediment) PEC: 0.0006 mg/kg dw; RCR: 0.006

Agricultural Soil PEC: 0.0001 mg/kg dw; RCR: 0.002

Sewage Treatment Plant(Effluent) PEC: 0.0003 mg/l; RCR: 0.0000

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm):

Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.***

Proc 1 EE(inhal): 0.194; EE(derm): 0.034***

Proc 2 EE(inhal): 387.2; EE(derm): 1.37***

Proc 3 EE(inhal): 484; EE(derm): 0.69***

Proc 4 EE(inhal): 193.6; EE(derm): 6.86***

Proc 5 EE(inhal): 387.2; EE(derm): 2.742***

Proc 8a EE(inhal): 387.2; EE(derm): 2.742***

Proc 8b EE(inhal): 96.8; EE(derm): 2.742***

Proc 10 EE(inhal): 387.2; EE(derm): 2.743***

Proc 11 EE(inhal): 203.3; EE(derm): 6.428 - Contributing Scenarios 10

EE(inhal): 193.6; EE(derm): 6.428 - Contributing Scenarios 11

EE(inhal): 290.4; EE(derm): 3.857 - Contributing Scenarios 12***

Proc 13 EE(inhal): 232.3; EE(derm): 1.645***

Proc 15 EE(inhal): 193.6 ; EE(derm): 0.34***

Proc 19 EE(inhal): 135.5; EE(derm): 8.486***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

Proc 1 RCR(inhal): 0.0003; RCR(derm): 0.003***

Proc 2 RCR(inhal): 0.645; RCR(derm): 0.124***

Proc 3 RCR(inhal): 0.807; RCR(derm): 0.063***

Proc 4 RCR(inhal): 0.323; RCR(derm): 0.624***

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

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Proc 5 RCR(inhal): 0.645; RCR(derm): 0.249***
Proc 8a RCR(inhal): 0.645; RCR(derm): 0.249***
Proc 8b RCR(inhal): 0.161; RCR(derm): 0.249***
Proc 10 RCR(inhal): 0.645; RCR(derm): 0.249***
Proc 11 RCR(inhal): 0.339; RCR(derm): 0.584 - Contributing Scenarios 10
RCR(inhal): 0.323; RCR(derm): 0.584 - Contributing Scenarios 11
RCR(inhal): 0.484; RCR(derm): 0.351 - Contributing Scenarios 12***
Proc 13 RCR(inhal): 0.387; RCR(derm): 0.149***
Proc 15 RCR(inhal): 0.323; RCR(derm): 0.031***
Proc 19 RCR(inhal): 0.226; RCR(derm): 0.772***

Exposure Scenario mineral oil distillate Shell

Exposure Scenario – Worker

SECTION 1

Title

Use Descriptor

Scope of process

EXPOSURE SCENARIO TITLE

Formulation & (re)packing of substances and mixtures- Industrial

Sector of Use: SU 10

Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 14, PROC 15

Environmental Release Categories: ERC2, ESVOC SpERC 2.2.v1

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

SECTION 2

Section 2.1

Physical form of product

Concentration of the Substance in Mixture/Article

Frequency and Duration of Use

Covers daily exposures up to 8 hours (unless stated differently).

Other Operational Conditions affecting Exposure

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

Assumes a good basic standard of occupational hygiene is implemented

Contributing Scenarios

General measures (Aspiration)

General exposures (closed systems)

General exposures (open systems)

Batch processes at elevated temperaturesUse

OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Control of Worker Exposure

Liquid, vapour pressure < 0.5 kPa

with potential for aerosol generation

Covers use of substance/product up to 100% (unless stated differently).,

Risk Management Measures

Do not ingest. If swallowed then seek immediate medical assistance

Risk Management Measures are based on qualitative risk characterisation.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

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(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

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in contained batch processes

Process sampling

Laboratory activities

Bulk transfersDedicated facility

Mixing operations (open systems)

ManualTransfer from/pouring from

containersNon-dedicated facility

Drum/batch transfersDedicated facility

Production or preparation of articles by
tableting, compression, extrusion or
pelletisation

Drum and small package filling

Equipment cleaning and maintenance

Storage.

No other specific measures identified

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

Drain down system prior to equipment
opening or maintenance.

Store substance within a closed system.

Section 2.2

Substance is complex UVCB.

Predominantly hydrophobic

Amounts Used

Fraction of EU tonnage used in region: 0.1

Regional use tonnage (tonnes/year): 8.5E+05

Fraction of Regional tonnage used locally: 1

Annual site tonnage (tonnes/year): 3.0E+04

Maximum daily site tonnage (kg/day): 1.0E+05

Frequency and Duration of Use

Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other Operational Conditions affecting Environmental Exposure

Release fraction to air from process (initial
release prior to RMM): 2.5E-03

Release fraction to wastewater from
process (initial release prior to RMM): 5.0E-06

Release fraction to soil from process
(initial release prior to RMM): 0.0001

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater sediment.

Prevent discharge of undissolved substance to or recover from onsite wastewater.

If discharging to domestic sewage treatment plant, no onsite wastewater treatment
required.

Treat air emission to provide a
typical removal efficiency of (%) 0

Treat onsite wastewater (prior to
receiving water discharge) to
provide the required removal
efficiency of >= (%) 69.5

If discharging to domestic sewage treatment plant, provide the required onsite wastewater

Control of Environmental Exposure

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(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
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Version: 01/2023 last Version: 01/2022

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removal efficiency of (%) 0,0
Organisational measures to prevent/limit release from site
Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Conditions and Measures related to municipal sewage treatment plant

Estimated substance removal from 94.7

wastewater via domestic sewage
treatment (%)

Total efficiency of removal from 94.7

wastewater after onsite and offsite
(domestic treatment plant) RMMs (%)

Maximum allowable site tonnage 5.7E+05

(MSafe) based on release following
total wastewater treatment removal
(kg/d)

Assumed domestic sewage treatment 2,000
plant flow (m3/d)

Conditions and Measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or
regional regulations.

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or
regional regulations

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 3.2 -Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk
model.

**SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH
THE EXPOSURE SCENARIO**

Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management
Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should
ensure that risks are managed to at least equivalent levels.

Section 4.2 -Environment

Guidance is based on assumed operating conditions which may not be applicable to all
sites; thus, scaling may be necessary to define appropriate site-specific risk
management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite
technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either
alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet
(<http://cefic.org/en/reach-for-industries-libraries.html>).

Exposure Scenario – Worker Seite 40

SECTION 1

Title

EXPOSURE SCENARIO TITLE

Use as binders and release agents-

**Safety Data Sheet according to regulation (EU) 1907/2006
(changed by regulation (EU) Nr. 2020/878)**



Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

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Use Descriptor

Professional
Sector of Use: SU 22
Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 6, PROC 8a, PROC 8b, PROC10, PROC11, PROC14
Environmental Release Categories: ERC8a, ERC8d, ESVOC SpERC 8.10b.v1
Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.

Scope of process

SECTION 2

OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES Control of Worker Exposure

Section 2.1

Product Characteristics

Physical form of product

Liquid, vapour pressure < 0.5 kPa
with potential for aerosol generation.
Covers use of substance/product up to 100%
(unless stated differently).,

Concentration of the Substance in
Mixture/Article

Frequency and Duration of Use

Covers daily exposures up to 8 hours (unless stated differently).
Other Operational Conditions affecting Exposure
Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Assumes a good basic standard of occupational hygiene is implemented

Contributing Scenarios

General measures

(Aspiration)

Material transfers(closed
systems)

Drum/batch

transfersDedicated facility

Drum/batch transfersNon-
dedicated facility

Mixing operations (closed
systems)

Mixing operations (open
systems)

Mold forming

Casting operations(open
systems)elevated

temperature

SprayingMachine

SprayingManual

ManualRolling, Brushing
Equipment cleaning and

Risk Management Measures

Do not ingest. If swallowed then seek immediate medical
assistance

No other specific measures identified.

No other specific measures identified.

Avoid carrying out activities involving exposure for more than 1
hour.

No other specific measures identified.

No other specific measures identified.

No other specific measures identified.

Provide extraction ventilation at points where emissions
occur.

Carry out in a vented booth or extracted enclosure.
Avoid carrying out activities involving exposure for more than 4
hours

Provide a good standard of general ventilation (not less than 3 to
5 air changes per hour).

Avoid carrying out activities involving exposure for more than 1
hour.

, or:

Wear a respirator conforming to EN140 with Type A filter or
better.

No other specific measures identified.

Drain down system prior to equipment opening or maintenance.

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Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

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maintenance

Storage.

Store substance within a closed system.

Section 2.2

Control of Environmental Exposure

Substance is complex UVCB.

Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2.7E+03
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	1.3E+00
Maximum daily site tonnage (kg/day):	3.7E+00

Frequency and Duration of Use

Continuous release.

Emission Days (days/year):	365
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Environmental factors not influenced by risk management

Local freshwater dilution factor:	10
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Local marine water dilution	100
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factor:

Other Operational Conditions affecting Environmental Exposure

Release fraction to air from wide	0.95
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dispersive use (regional only):

Release fraction to wastewater	0.025
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from wide dispersive use:

Release fraction to soil from wide	0.025
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dispersive use (regional only):

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater sediment.

Treat air emission to provide a	0
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typical removal efficiency of (%)

Treat onsite wastewater (prior to	65.5
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receiving water discharge) to

provide the required removal

efficiency of >= (%)

If discharging to domestic sewage	0
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treatment plant, provide the

required onsite wastewater removal efficiency of (%)

Organisational measures to prevent/limit release from site

Do not apply industrial sludge to natural soils.

Sludge should be incinerated, contained or reclaimed.

Conditions and Measures related to municipal sewage treatment plant

Estimated substance removal from	94.7
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wastewater via domestic sewage

treatment (%)

Total efficiency of removal from	94.7
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wastewater after onsite and offsite

(domestic treatment plant) RMMs (%)

Maximum allowable site tonnage	2.4E+01
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Date of issue: 2012-09-11 Date of Revise: 2023-09-01
Effective from: 2023-09-01
Version: 01/2023 last Version: 01/2022

ARC ALL WEATHER SEALANT BLACK

(MSafe) based on release following
total wastewater treatment removal
(kg/d)

Assumed domestic sewage treatment plant flow (m3/d) 2,000

Conditions and Measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or regional regulations.

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or regional regulations.

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 3.2 -Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Section 4.2 -Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).