

Fiberon™ PA12-CF10

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Reference number: CSSS-TCO-010-155128

Issue date: 31-10-2024 Revision date: 31-10-2024 Version 2.0

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

1.1. Product identifier

Product form : Substance
 Substance name : Fiberon™PA12-CF10
 Additional identification : Nanoform is NOT covered by this SDS.
 CAS-No. : 24937-16-4
 Formula : C36H69N3O3X2

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

1.2.1. Relevant identified uses

Use of the substance/mixture : 3D printing materials.

1.2.2. Uses advised against

Restrictions on use : Not available

1.3. Details of the supplier of the safety data sheet

JF Polymers(Suzhou) Co., Ltd.
 No.7-1,XinggongEastRoad,BixiStreet,Changshu,Suzhou,Jiangsu Province ,China
 T +86-512-52058005 - F +86-512-52096516
 zhenxing.miao@polymaker.com

1.4. Emergency telephone number

Emergency number : Only available during office hours (9:00a.m.-17:30p.m.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Skin corrosion/irritation, Category 1, Sub-Category 1B	H314
Serious eye damage/eye irritation, Category 1	H318
Respiratory sensitisation, Category 1	H334
Skin sensitisation, category 1A	H317
Specific target organ toxicity – Repeated exposure, Category 2	H373
Full text of H- and EUH-statements: see section 16	

Adverse physicochemical, human health and environmental effects

May cause damage to organs through prolonged or repeated exposure. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

2.2. Label elements

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

Hazard pictograms (CLP) :



GHS05

GHS08

Signal word (CLP) :

Danger

Hazard statements (CLP) :

H314 - Causes severe skin burns and eye damage.
 H317 - May cause an allergic skin reaction.
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H373 - May cause damage to organs (respiratory system) through prolonged or repeated exposure (inhalation).

Precautionary statements (CLP) :

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
 P301+P330+P331+P310 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.

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P303+P361+P353+P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.
 P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

EUH-statements

: EUH071 - Corrosive to the respiratory tract.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Poly(12-aminododecanoic acid lauro lactam)	CAS-No.: 24937-16-4	70 – 80	Not classified
Carbon ; Activated carbon	CAS-No.: 7440-44-0	10 – 20	Eye Irrit. 2, H319 STOT SE 3, H335
Calcium Chloride	CAS-No.: 10043-52-4 EC-No.: 233-140-8 EC Index-No.: 017-013-00-2	1 – 5	Eye Irrit. 2, H319
2,5-Furandione ; Maleic anhydride	CAS-No.: 108-31-6 EC-No.: 203-571-6 EC Index-No.: 607-096-00-9	1 – 5	Acute Tox. 4 (Oral), H302 (ATE=1030 mg/kg bodyweight) Skin Corr. 1B, H314 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1A, H317 STOT RE 1, H372 EUH071
Ethylene bis[3,3-bis(3-tert-butyl-4-hydroxyphenyl)butyrate]	CAS-No.: 32509-66-3 EC-No.: 251-073-2	0 – 0,5	Not classified

Specific concentration limits:

Name	Product identifier	Specific concentration limits
2,5-Furandione ; Maleic anhydride	CAS-No.: 108-31-6 EC-No.: 203-571-6 EC Index-No.: 607-096-00-9	(0,001 \leq C \leq 100) Skin Sens. 1A, H317

Full text of H- and EUH-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general

: Call a physician immediately.

First-aid measures after inhalation

: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory

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- | | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First-aid measures after skin contact | : symptoms: Call a poison center or a doctor.
: Rinse skin with water/shower. Take off immediately all contaminated clothing. Call a physician immediately. |
| First-aid measures after eye contact | : Obtain medical attention if irritation persists. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately. |
| First-aid measures after ingestion | : Rinse mouth. Do not induce vomiting. Call a physician immediately. |

4.2. Most important symptoms and effects, both acute and delayed

- | | |
|-------------------------------------|------------------------------------------------------------------------------|
| Symptoms/effects after inhalation | : May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Symptoms/effects after skin contact | : Burns. May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : Serious damage to eyes. |
| Symptoms/effects after ingestion | : Burns. |

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- | | |
|--------------------------------|-----------------------------------------------------------------|
| Suitable extinguishing media | : Carbon dioxide. Water spray. Dry powder. Foam. |
| Unsuitable extinguishing media | : Do not use a water jet since it may cause the fire to spread. |

5.2. Special hazards arising from the substance or mixture

- | | |
|--------------------------------------------------|--------------------------------|
| Hazardous decomposition products in case of fire | : Toxic fumes may be released. |
|--------------------------------------------------|--------------------------------|

5.3. Advice for firefighters

- | | |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Protection during firefighting | : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- | | |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emergency procedures | : Ventilate spillage area. Avoid dust formation. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes. |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

6.1.2. For emergency responders

- | | |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

6.2. Environmental precautions

Avoid release to the environment. Do not allow to enter drains or water courses.

6.3. Methods and material for containment and cleaning up

- | | |
|-------------------------|-----------------------------------------------------------------|
| Methods for cleaning up | : Mechanically recover the product. |
| Other information | : Dispose of materials or solid residues at an authorized site. |

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- | | |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions for safe handling | : Ensure good ventilation of the work station. Avoid dust formation. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes. Wear personal protective equipment. |
| Hygiene measures | : Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. |

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store locked up. Store in a well-ventilated place. Keep cool.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Calcium Chloride (10043-52-4)	
Czech Republic - Occupational Exposure Limits	
Local name	Chlorid vápenatý
PEL (OEL TWA)	2 mg/m ³
NPK-P (OEL C)	4 mg/m ³
Remark	I - dráždí sliznice (oči, dýchací cesty), respektive kůži.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Latvia - Occupational Exposure Limits	
Local name	Kalcija hlorīds
OEL TWA	2 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
2,5-Furandione ; Maleic anhydride (108-31-6)	
Austria - Occupational Exposure Limits	
Local name	Maleinsäureanhydrid
MAK (OEL TWA)	0,4 mg/m ³
MAK (OEL TWA) [ppm]	0,1 ppm
MAK (OEL STEL)	0,8 mg/m ³ (8x 5(Mow) min)
MAK (OEL STEL) [ppm]	0,2 ppm (8x 5(Mow) min)
Remark	Sah
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Anhydride maléique (vapeur et aerosol) # Maleïnezuuranhydride (damp en aërosol)
OEL TWA	0,01 mg/m ³
OEL TWA [ppm]	0,0025 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Малеинов анхидрид
OEL TWA	1 mg/m ³
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.)

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2,5-Furandione ; Maleic anhydride (108-31-6)

Croatia - Occupational Exposure Limits

Local name	Anhidrid maleinske kiseline
GVI (OEL TWA) [1]	0,41 mg/m ³
GVI (OEL TWA) [2]	0,1 ppm
KGVI (OEL STEL)	0,8 mg/m ³
KGVI (OEL STEL) [ppm]	0,2 ppm
Remark	Alergen (koža (tvar koja može izazvati alergijsku reakciju na koži (H317)) i udisanje (tvar koja udisanjem može izazvati simptome alergije ili astme ili poteškoće s disanjem (H334)))
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)

Czech Republic - Occupational Exposure Limits

Local name	Maleinanhydrid (2,5-Furandion)
PEL (OEL TWA)	1 mg/m ³
PEL (OEL TWA) [ppm]	0,25 ppm
NPK-P (OEL C)	2 mg/m ³
NPK-P (OEL C) [ppm]	0,5 ppm
Remark	I - dráždí sliznice (oči, dýchací cesty), respektive kůži, S - látka má senzibilizující účinek (s větou H317, H334).
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)

Denmark - Occupational Exposure Limits

Local name	Maleinsyreanhydrid
OEL TWA [1]	0,4 mg/m ³
OEL TWA [2]	0,1 ppm
Regulatory reference	BEK nr 1054 af 28/06/2022

Estonia - Occupational Exposure Limits

Local name	Maleiianhüdriid
OEL TWA	1,2 mg/m ³
OEL TWA [ppm]	0,3 ppm
OEL STEL	2,5 mg/m ³
OEL STEL [ppm]	0,6 ppm
Remark	S (Sensibiliseeriv aine)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)

Finland - Occupational Exposure Limits

Local name	Maleiiniianhydridi
HTP (OEL TWA) [1]	0,41 mg/m ³
HTP (OEL TWA) [2]	0,1 ppm
HTP (OEL C)	0,81 mg/m ³
HTP (OEL C) [ppm]	0,2 ppm
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)

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2,5-Furandione ; Maleic anhydride (108-31-6)	
France - Occupational Exposure Limits	
Local name	Anhydride maléique
VLE (OEL C/STEL)	1 mg/m ³
Remark	Valeurs recommandées/admises; risque d'allergie
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Maleinsäureanhydrid
AGW (OEL TWA) [1]	0,081 mg/m ³
AGW (OEL TWA) [2]	0,02 ppm
Peak exposure limitation factor	1;=2,5=(I)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); Sah - Atemwegs- und Hautsensibilisierender Stoff; Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden; 11 - Summe aus Dampf und Aerosolen
Regulatory reference	TRGS900
Greece - Occupational Exposure Limits	
Local name	Μηλεϊνικός ανυδρίτης
OEL TWA	1 mg/m ³
OEL TWA [ppm]	0,25 ppm
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	MALEINSAV-ANHIDRID
AK (OEL TWA)	0,08 mg/m ³
CK (OEL STEL)	0,08 mg/m ³
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármát), sz (Túlérzékenységet okozó (szenzibilizáló) tulajdonságú anyag. Az anyagra érzékeny egyéneken „túlérzékenységen” alapuló bőr-, légzőrendszeri, esetleg más szervet/szervrendszert károsító megbetegedést okozhat); R+T (Azok az anyagok, amelyek RÖVID és TARTÓS expozíciója is egészségkárosodást okoz)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Maleic anhydride
OEL TWA [2]	0,01 ppm IFV (Inhale Fraction and Vapour)
Remark	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE))
Regulatory reference	Chemical Agents Code of Practice 2021

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2,5-Furandione ; Maleic anhydride (108-31-6)	
Latvia - Occupational Exposure Limits	
Local name	Maleīnskābes anhidrīds (maleīnanhidrīds, 1,2-etilēndikarbonskābes anhidrīds)
OEL TWA	1 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Lithuania - Occupational Exposure Limits	
Local name	Maleino anhidridas
IPRV (OEL TWA)	1,2 mg/m ³
IPRV (OEL TWA) [ppm]	0,3 ppm
TPRV (OEL STEL)	2,5 mg/m ³
TPRV (OEL STEL) [ppm]	0,6 ppm
Remark	J (jautrinantis poveikis)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Poland - Occupational Exposure Limits	
Local name	Bezwodnik maleinowy
NDS (OEL TWA)	0,5 mg/m ³
NDSCh (OEL STEL)	1 mg/m ³
Remark	Skóra (Oznakowanie substancji notacją „skóra” oznacza, że wchłanianie substancji przez skórę może być tak samo istotne jak przy narażeniu drogą oddechową).
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Anidrido maleico
OEL TWA	0,1 mg/m ³ FIV (Fração inalável e vapor)
Remark	SC (Agente com potencial para produzir sensibilização pela via cutânea); SR (Agente com potencial para produzir sensibilização pela via respiratória); A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Anhidridă maleică
OEL TWA	1 mg/m ³
OEL TWA [ppm]	0,25 ppm
OEL STEL	3 mg/m ³
OEL STEL [ppm]	0,75 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Slovakia - Occupational Exposure Limits	
Local name	Maleīnanhydrid (anhydrid kyseliny maleīnovej)
NPHV (OEL TWA) [1]	0,41 mg/m ³
NPHV (OEL TWA) [2]	0,1 ppm
Remark	S - znamená, že faktor môže spôsobiť senzibilizáciu
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)

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2,5-Furandione ; Maleic anhydride (108-31-6)	
Slovenia - Occupational Exposure Limits	
Local name	anhidrid maleinske kisline
OEL TWA	0,41 mg/m ³
OEL TWA [ppm]	0,1 ppm
OEL STEL	0,41 mg/m ³
OEL STEL [ppm]	0,1 ppm
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Anhídrido maleico
VLA-ED (OEL TWA) [1]	0,4 mg/m ³
VLA-ED (OEL TWA) [2]	0,1 ppm
Remark	FIV (Fracción inhalable y vapor. La notación FIV señala a aquellos agentes químicos que se pueden presentar en el ambiente de trabajo, tanto en forma de materia particulada como vapor, por lo que las dos fases pueden coexistir, contribuyendo ambas a la exposición. Esta situación se puede dar, principalmente, en los siguientes casos: • Cuando el agente en cuestión tiene un valor "intermedio" de presión de vapor (en estos casos se tiene en cuenta la relación entre su concentración en el aire saturado de vapor y el valor del VLA-ED® y la nota se asigna, generalmente, cuando el cociente entre ambas cantidades se encuentra entre 0.1 y 10). • Por razón de la forma de uso del agente químico (por ejemplo, pulverización). • En los procesos que conlleven cambios importantes de temperatura que puedan afectar al estado físico del agente químico. • En los procesos en los que una fracción significativa del vapor puede disolverse o adsorberse en las partículas de otra sustancia, a semejanza de lo que ocurre con los agentes solubles en agua en ambientes con humedad elevada), Sen (Sensibilizante).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2023. INSHT
Sweden - Occupational Exposure Limits	
Local name	Maleinsyraanhydrid
NGV (OEL TWA)	0,2 mg/m ³
NGV (OEL TWA) [ppm]	0,05 ppm
KTV (OEL STEL)	0,4 mg/m ³
KTV (OEL STEL) [ppm]	0,1 ppm
Remark	M (Medicinska kontroller kan krävas för hantering av ämnet. Se vidare föreskrifterna om medicinska kontroller i arbetslivet. För visa ämnen ska arbetsgivaren erbjuda läkarundersökning och för andra ämnen gäller krav på periodisk läkarundersökning och tjänstbarhetsbedömning); S (Ämnet är sensibiliserande. Sensibiliserande ämnen kan ge allergi eller annan överkänslighet. Överkänslighetsbesvären drabbar främst huden eller andningsorganen. Överkänslighet innebär att man reagerar vid kontakt med ämnen som normalt inte ger besvär. Allergi är en undergrupp av överkänslighet som orsakas av reaktioner i kroppens immunsystem. Särskilt låga gränsvärden har fastställts för ämnen med mer uttalat luftvägssensibiliserande egenskaper. Några ämnen med starkt sensibiliserande egenskaper får endast hanteras efter tillstånd från Arbetsmiljöverket, se föreskrifterna om kemiska arbetsmiljörisker. Dessa ämnen har inga gränsvärden men i vissa fall riktvärden)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)

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2,5-Furandione ; Maleic anhydride (108-31-6)	
United Kingdom - Occupational Exposure Limits	
Local name	Maleic anhydride
WEL TWA (OEL TWA) [1]	1 mg/m ³
WEL STEL (OEL STEL)	3 mg/m ³
Remark	Sen (Capable of causing occupational asthma)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Maleinsýruanhýdríð
OEL TWA	0,4 mg/m ³
OEL TWA [ppm]	0,1 ppm
Remark	O (efnið er ofnæmisvaldandi)
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Maleinsyreanhydrid
Grenseverdi (OEL TWA) [1]	0,8 mg/m ³
Grenseverdi (OEL TWA) [2]	0,2 ppm
Remark	A: Kjemikalier som skal betraktes som at de fremkaller allergi eller annen overfølsomhet i øynene eller luftveier, eller som skal betraktes som at de fremkaller allergi ved hudkontakt.
Regulatory reference	FOR-2021-06-28-2248
North Macedonia - Occupational Exposure Limits	
Local name	anhidрид на малеинска киселина
OEL TWA	0,41 mg/m ³
OEL TWA [ppm]	0,1 ppm
KTV	1
Short time value [mg/m ³]	0,41 mg/m ³
Short time value [ppm]	0,1 ppm
Remark	(KTV) краткотрајна вредност (KTV) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покосо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m ³ или во ml/m ³ (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (Y)
Regulatory reference	Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)
Switzerland - Occupational Exposure Limits	
Local name	Anhydride maléique / Maleinsäureanhydrid [2,5-Furandion]
MAK (OEL TWA) [1]	0,4 mg/m ³
MAK (OEL TWA) [2]	0,1 ppm
KZGW (OEL STEL)	0,4 mg/m ³

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2,5-Furandione ; Maleic anhydride (108-31-6)	
KZGW (OEL STEL) [ppm]	0,1 ppm
Critical toxicity	VR / AW
Notation	S, SSc / S, SSc
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 01.01.2023
Carbon ; Activated carbon (7440-44-0)	
Austria - Occupational Exposure Limits	
Local name	Graphit (Alveolarstaub mit < 1% Quarz)
MAK (OEL TWA)	5 mg/m ³ (A)
MAK (OEL STEL)	10 mg/m ³ (A, 2x 60(Miw) min)
Regulatory reference	BGBl. II Nr. 156/2021
Poland - Occupational Exposure Limits	
Local name	Grafit syntetyczny
NDS (OEL TWA)	6 mg/m ³ frakcja wdychalna
Remark	Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia.
Regulatory reference	Dz. U. 2018 poz. 1286
United Kingdom - Occupational Exposure Limits	
Local name	Graphite
WEL TWA (OEL TWA) [1]	10 mg/m ³ inhalable dust 4 mg/m ³ respirable
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):



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8.2.2.1. Eye and face protection

Eye protection:

Safety glasses

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

8.2.2.3. Respiratory protection

Respiratory protection:

[In case of inadequate ventilation] wear respiratory protection.

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Colour	: Black.
Odour	: odourless.
Odour threshold	: Not available
Melting point	: 240 °C
Freezing point	: Not applicable
Boiling point	: Not available
Flammability	: Non flammable.
Explosive limits	: Not applicable
Lower explosion limit	: Not applicable
Upper explosion limit	: Not applicable
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: Not available
pH	: Not available
pH solution	: Not available
Viscosity, kinematic	: Not applicable
Solubility	: insoluble in water.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: Not available
Relative density	: 1,02
Relative vapour density at 20°C	: Not applicable
Particle size	: Not available

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

No additional information available

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SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Incompatible materials.

10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂).

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

2,5-Furandione ; Maleic anhydride (108-31-6)

LD50 oral rat	1090 mg/kg Source: ECHA
LD50 dermal rabbit	2620 mg/kg Source: ECHA, female

Skin corrosion/irritation : Causes severe skin burns.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitisation : May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : May cause damage to organs (respiratory system) through prolonged or repeated exposure (inhalation).

Aspiration hazard : Not classified

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The substance/mixture has no endocrine disrupting properties.

11.2.2. Other information

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Before neutralisation, the product may represent a danger to aquatic organisms.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Not rapidly degradable

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2,5-Furandione ; Maleic anhydride (108-31-6)	
EC50 48h - Crustacea [1]	42.81 mg/L
EC50 72h - Algae [1]	74.35 mg/L

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Fiberon™ PA12-CF10 (24937-16-4)
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
 HP Code : HP5 - "Specific Target Organ Toxicity (STOT)/Aspiration Toxicity:" waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following aspiration.
 HP8 - "Corrosive:" waste which on application can cause skin corrosion.

SECTION 14: Transport information






In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 1759	UN 1759	UN 1759	UN 1759	UN 1759
14.2. UN proper shipping name				
CORROSIVE SOLID, N.O.S. (Maleic anhydride)	CORROSIVE SOLID, N.O.S. (Maleic anhydride)	Corrosive solid, n.o.s. (Maleic anhydride)	CORROSIVE SOLID, N.O.S. (Maleic anhydride)	CORROSIVE SOLID, N.O.S. (Maleic anhydride)
Transport document description				
UN 1759 CORROSIVE SOLID, N.O.S. (Maleic anhydride), 8, II, (E)	UN 1759 CORROSIVE SOLID, N.O.S. (Maleic anhydride), 8, II	UN 1759 Corrosive solid, n.o.s. (Maleic anhydride), 8, II	UN 1759 CORROSIVE SOLID, N.O.S. (Maleic anhydride), 8, II	UN 1759 CORROSIVE SOLID, N.O.S. (Maleic anhydride), 8, II
14.3. Transport hazard class(es)				
8	8	8	8	8

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ADR	IMDG	IATA	ADN	RID
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR) : C10
 Special provisions (ADR) : 274
 Limited quantities (ADR) : 1kg
 Excepted quantities (ADR) : E2
 Packing instructions (ADR) : P002, IBC08
 Special packing provisions (ADR) : B4
 Mixed packing provisions (ADR) : MP10
 Portable tank and bulk container instructions (ADR) : T3
 Portable tank and bulk container special provisions (ADR) : TP33
 Tank code (ADR) : SGAN, L4BN
 Vehicle for tank carriage : AT
 Transport category (ADR) : 2
 Special provisions for carriage - Packages (ADR) : V11
 Hazard identification number (Kemler No.) : 80
 Orange plates :



Tunnel restriction code (ADR) : E
 EAC code : 2X

Transport by sea

Special provisions (IMDG) : 274
 Limited quantities (IMDG) : 1 kg
 Excepted quantities (IMDG) : E2
 Packing instructions (IMDG) : P002
 IBC packing instructions (IMDG) : IBC08
 IBC special provisions (IMDG) : B21, B4
 Tank instructions (IMDG) : T3
 Tank special provisions (IMDG) : TP33
 EmS-No. (Fire) : F-A
 EmS-No. (Spillage) : S-B
 Stowage category (IMDG) : A
 Properties and observations (IMDG) : Causes burns to skin, eyes and mucous membranes.

Air transport

PCA Excepted quantities (IATA) : E2
 PCA Limited quantities (IATA) : Y844
 PCA limited quantity max net quantity (IATA) : 5kg
 PCA packing instructions (IATA) : 859
 PCA max net quantity (IATA) : 15kg

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CAO packing instructions (IATA)	: 863
CAO max net quantity (IATA)	: 50kg
Special provisions (IATA)	: A3, A803
ERG code (IATA)	: 8L

Inland waterway transport

Classification code (ADN)	: C10
Special provisions (ADN)	: 274
Limited quantities (ADN)	: 1 kg
Excepted quantities (ADN)	: E2
Equipment required (ADN)	: PP, EP
Number of blue cones/lights (ADN)	: 0

Rail transport

Classification code (RID)	: C10
Special provisions (RID)	: 274
Limited quantities (RID)	: 1kg
Excepted quantities (RID)	: E2
Packing instructions (RID)	: P002, IBC08
Special packing provisions (RID)	: B4
Mixed packing provisions (RID)	: MP10
Portable tank and bulk container instructions (RID)	: T3
Portable tank and bulk container special provisions (RID)	: TP33
Tank codes for RID tanks (RID)	: SGAN, L4BN
Transport category (RID)	: 2
Special provisions for carriage – Packages (RID)	: W11
Colis express (express parcels) (RID)	: CE10
Hazard identification number (RID)	: 80

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

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15.1.2. National regulations

France

Occupational diseases	
Code	Description
RG 66	Occupational rhinitis and asthma

Germany

Employment restrictions : Observe restrictions according Act on the Protection of Working Mothers (MuSchG).
Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG).

Water hazard class (WGK) : Not classified according to Regulation Governing Systems for Handling Substances Hazardous to Waters (AwSV).

Storage class (LGK, TRGS 510) : LGK 8B - Non-combustible corrosive substances.

Joint storage table

LGK 1	LGK 2A	LGK 2B	LGK 3	LGK 4.1A
LGK 4.1B	LGK 4.2	LGK 4.3	LGK 5.1A	LGK 5.1B
LGK 5.1C	LGK 5.2	LGK 6.1A	LGK 6.1B	LGK 6.1C
LGK 6.1D	LGK 6.2	LGK 7	LGK 8A	LGK 8B
LGK 10	LGK 11	LGK 12	LGK 13	LGK 10-13

Joint storage not permitted for : LGK 1, LGK 5.1A, LGK 5.2, LGK 6.2, LGK 7.

Joint storage with restrictions permitted for : LGK 4.1A, LGK 4.2, LGK 4.3, LGK 5.1C.

Joint storage permitted for : LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 5.1B, LGK 6.1A, LGK 6.1B, LGK 6.1C, LGK 6.1D, LGK 8A, LGK 8B, LGK 10, LGK 11, LGK 12, LGK 13, LGK 10-13.

Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

ABM category : A(4) - low hazard for aquatic organisms, may have longterm hazardous effects in aquatic environment

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : The substance is not listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : The substance is not listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : The substance is not listed

Denmark

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product

Switzerland

Storage class (LK) : LK 6.1 - Toxic materials

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)

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Abbreviations and acronyms:	
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Full text of H- and EUH-statements:	
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
EUH071	Corrosive to the respiratory tract.
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.

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Full text of H- and EUH-statements:	
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
Skin Sens. 1A	Skin sensitisation, category 1A
STOT RE 1	Specific target organ toxicity – Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation

The classification complies with : ATP 12

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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