

**Nafion™ PFSA Membranes**

Version 4.0 (replaces: Version 3.0)

Revision Date 14.10.2015

Ref. 150000002917

The composition information contained in this document is provided to satisfy the requirements of Regulation (EC) No 1907/2006 (REACH), Article 33. Other information is provided voluntarily and is not subject to regulatory requirement.

Identification of the article and of the company/undertaking**Product identifier**

Product name : Nafion™ PFSA Membranes

Types : N115, N115FP, N117, N117FP, N1110

Relevant identified uses of the article and uses advised against

Use of the article : sheets and shaped articles, Manufacture of electronic components, Electrical/electronic industries, Film(s) for electronic industry, For industrial use only.

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Emergency telephone number

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Hazards identification**Classification of the substance or mixture**

The product is an article and therefore is not subject to safety classification and labelling in accordance with EC-directives or respective national laws.

Label elements

Not relevant for article

Product information

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The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.

Composition/information on ingredients**Article composition**

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 59).

The above products are compliant to REACH registration obligations; Registration number(s) may not be provided because substance(s) are exempted, not yet registered under REACH or are registered under another regulatory process (biocide uses, plant protection products), etc.

First aid measures**Description of first aid measures**

- General advice : Never give anything by mouth to an unconscious person. No hazards which require special first aid measures. When symptoms persist or in all cases of doubt seek medical advice.
- Inhalation : Move to fresh air in case of accidental inhalation of fumes from overheating or combustion. Consult a physician.
- Skin contact : No hazards which require special first aid measures. Wash with water and soap as a precaution.
- Eye contact : Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
- Ingestion : Not a probable route of exposure. However, in case of accidental ingestion, call a physician.

Most important symptoms and effects, both acute and delayed

- Symptoms : The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco., Symptoms may be delayed., Repeated episodes of polymer fume fever may result in persistent lung effects., Inhalation of fluorinated compounds may cause lung irritation and pulmonary oedema., Symptoms may be severe or life-threatening., Skin contact may provoke the following symptoms:, Eye contact may provoke the following symptoms:, Mechanical irritation of the eyes is possible.

Indication of any immediate medical attention and special treatment needed



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Treatment : Treat symptomatically.

Firefighting measures

Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO2), Dry powder, Foam, Water

Special hazards arising from the article

Specific hazards during firefighting : Hazardous thermal decomposition products: Carbon oxides acid fluorides
Fluorinated compounds Hydrogen fluoride Sulphur oxides
: Exposure to decomposition products may be a hazard to health.

Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Wear suitable protective equipment. Wear neoprene gloves during cleaning up work after a fire.

Further information : Protect from hydrogen fluoride fumes which react with water to form hydrofluoric acid. The solid polymer can only be burned with difficulty. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions : Refer to protective measures listed in sections "Handling and storage" and "Exposure controls/personal protection".

Environmental precautions

Environmental precautions : No special environmental precautions required.

Methods and materials for containment and cleaning up

Methods for cleaning up : There are no special clean-up or disposal requirements for household/industrial spills of this product.

Reference to other sections

Not relevant for article

Handling and storage

Precautions for safe handling

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Advice on safe handling : When opening containers, avoid breathing vapours that may be emanating. Avoid breathing dust. Avoid contamination of cigarettes or tobacco with dust from this material. Provide appropriate exhaust ventilation at dryers, machinery and at places where dust or volatiles can be generated. In case of insufficient ventilation, wear suitable respiratory equipment. For personal protection see section 8.

Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep in a cool, well-ventilated place. Avoid freezing temperatures. Avoid excessive heat. Keep away from direct sunlight. Protect from contamination.

Advice on common storage : Keep away from: Flammable materials Keep away from tobacco products.

Storage temperature : 10 - 30 °C

Other data : Stable under recommended storage conditions.

Specific end use(s)

Not relevant for article

Exposure controls/personal protection**Control parameters**

If sub-section is empty then no values are applicable.

Exposure controls

Engineering measures : When hot processing this material, use local and/or general exhaust ventilation to maintain the concentration of vapors and fumes below exposure limits.

Ensure adequate ventilation, especially in confined areas. Good general ventilation should be provided to keep dust concentrations below the exposure limits. Local exhaust ventilation should be employed to minimize airborne contamination.

Eye protection : Wear safety glasses with side shields.

Hand protection : Material: Gloves
When handling hot material, use heat resistant gloves. Protective gloves (Type : Kevlar® - heat resistant, use possible until worn out)



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- Skin and body protection** : If there is a potential for contact with hot/molten material wear heat resistant clothing and footwear.
- Hygiene measures** : Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing. Do not contaminate tobacco products. Wash hands before breaks and at the end of workday. General precaution for all plastics and elastomers: Do not breathe fumes evolved from hot polymer.
- Respiratory protection** : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Air purifying respirators may not provide adequate protection. In the case of hazardous fumes caused by overheating, wear self-contained breathing apparatus.

Physical and chemical properties

Information on basic physical and chemical properties

- Form** : film, membrane
- Colour** : natural colour
- Odour** : none
- Flash point** : does not flash
- Thermal decomposition** : 150 °C, Stable under normal conditions.
- Water solubility** : insoluble

Other information

Not relevant for article

Stability and reactivity

- Reactivity** : No decomposition if stored and applied as directed.
- Chemical stability** : The product is chemically stable.
- Possibility of hazardous reactions** : During drying, cleaning and moulding, small amounts of hazardous gases and/or particulate matter may be released. These may irritate eyes, nose and throat. Large molten masses may give off hazardous gases. Stable at normal temperatures and storage conditions.
- Conditions to avoid** : To avoid thermal decomposition, do not overheat. Abnormally long processing time or high temperatures can produce irritating and toxic fumes. Stable under normal conditions. Do not expose to temperatures above: : 150 °C



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Incompatible materials : Powdered metals
Finely divided aluminium
potent oxidizers like fluorine (F2)
and
related compounds

Hazardous decomposition products : Decomposes with heat.
Carbonyl fluoride
Hydrogen fluoride
Fluorinated hydrocarbons
acid fluorides
Sulphur oxides

Toxicological information

Information on toxicological effects

Acute inhalation toxicity

The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.

Ecological information

Toxicity

Not relevant for article

Persistence and degradability

Not relevant for article

Bioaccumulative potential

Not relevant for article

Mobility in soil

Not relevant for article

Results of PBT and vPvB assessment

Not relevant for article

Other adverse effects

Not relevant for article



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Disposal considerations

Waste treatment methods

- Product : Like most thermoplastic plastics the product can be recycled. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Can be landfilled, when in compliance with local regulations. Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

Other information

Other information This document is for information only, provided voluntarily and not subsequent to regulatory requirement.

Abbreviations and acronyms

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute toxicity estimate
CAS-No.	Chemical Abstracts Service number
CLP	Classification, Labelling and Packaging
EbC50	Concentration at which 50% reduction of biomass is observed
EC50	Median effective concentration
EN	European Norm
EPA	Environmental Protection Agency
ErC50	Concentration at which a 50% inhibition of growth rate is observed
EyC50	Concentration at which 50 % inhibition of yield is observed
IATA_C	International Air Transport Association (Cargo)
IBC	International Bulk Chemical Code
ICAO	International Civil Aviation Organization
ISO	International Standard Organization
IMDG	International Maritime Dangerous Goods
LC50	Median Lethal Concentration
LD50	Median Lethal Dose
LOEC	Lowest Observed Effect Concentration
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No observed adverse effect level
NOEC	No Observed Effect Concentration
NOEL	No Observed Effect Level
OECD	Organisation for Economic Co-operation and Development
OPPTS	Office of Prevention, Pesticides and Toxic Substances
PBT	Persistent, Bioaccumulative and Toxic
STEL	Short term exposure limit



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TWA
vPvB

Time Weighted Average (TWA):
very Persistent and very Bioaccumulative

Restrictions on use

Do not use Chemours materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from Chemours under a written contract that is consistent with Chemours policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your Chemours representative. You may also request a copy of the Chemours POLICY Regarding Medical Applications and Chemours CAUTION Regarding Medical Applications.

Further information

An Exposure Scenario (ES) is not required.

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Before use also read the following bulletin(s):, Guide for the Safe Handling of Fluoropolymer Resins published by PlasticsEurope., For further information contact the local Chemours office or nominated distributors.

Significant change from previous version is denoted with a double bar.

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