

Thermo Scientific

Nalgene Fluorinated Products

What is Fluorination?

Fluorination is a process in which a Thermo Scientific™ Nalgene™ HDPE plastic container, and the complementary PP closure or other component are exposed to fluorine gas after molding under controlled temperature and pressure conditions. The fluorine substitutes with some hydrogen atoms in the polymer chain, creating a barrier and surface enhancement on the interior and exterior of the container and closure.

Fluorinated Product Benefits

- Improved barrier properties and reduced solvent absorption and permeation
- Enhanced long-term container performance
- Lower extractables
- Recyclable

Compliance with FDA Regulations

Nalgene fluorinated materials comply with the following requirements of the Food Additives Amendment of the U.S. Federal Food, Drug and Cosmetic Act.

- FLPE (fluorinated high-density polyethylene) 21CFR 177.1520 and 21CFR 177.1615
- FLPP (fluorinated polypropylene) 21CFR 177.1520

Cleaning

Wash product before using for the first time. To prevent scratching of the plastic, observe the following precautions:

- Use a warm, mild detergent solution
- DO NOT use brushes, abrasive cleanser or paper towels

If using a labware washing machine:

- DO NOT use a machine that is equipped with brushes
- In a machine with high-pressure water spray, place the containers in a basket and protect them with a screen or cover similar to that used in test tube baskets. (Nalgene autoclaving baskets (Cat. No. 6917) are recommended). Otherwise, the water pressure may cause the containers to tumble and scratch the fluorinated surfaces.
- If placed on spindles, always weight and cover the containers. If the spindles are made of uncoated metal, a section of PVC tubing (such as Nalgene 180; Cat. No. 8000) placed over them will cushion and protect the containers.
- Air dry if possible

General Class of Chemical	Containers		Closures	
	HDPE	FLPE	PP	FLPP
Acids, Dilute or weak	E	E	E	E
Acids, Strong or concentrated	G	G	G	G
Alcohols, Aliphatic	E	E	E	E
Alcohols, Aromatic	G	E*	G	G
Aldehydes, Aliphatic	G	G	G	G
Aldehydes, Aromatic	F	G*	E	E
Bases/Alkali/Amines, Aliphatic	G	F	G	G
Bases/Alkali/Amines, Aromatic	F	N	G	G
Bases/Alkali/Amines, Dilute or weak	E	F	E	G
Bases/Alkali/Amines, Strong or concentrated	E	N	E	F
Esters, Aliphatic	G	E*	G	G
Esters, Aromatic	G	G	G	G
Ethers, Aliphatic	F	G*	N	N
Ethers, Aromatic	F	E*	N	N
Hydrocarbons, Aliphatic	G	E*	G	G
Hydrocarbons, Aromatic	N	E*	N	N
Hydrocarbons, Halogenated	N	G*	F	F
Ketones Aromatic	N	E*	N	N
Ketones, Aliphatic	F	G*	G	G
Oils and Greases	G	E*	G	G
Oxidizers, Dilute or weak	G	G	G	G
Oxidizers, Strong or concentrated	F	F	F	F

HDPE - High Density Polyethylene
FLPE - Fluorinated High Density Polyethylene

PP - Polypropylene

FLPP - fluorinated polypropylene

*Increased HDPE chemical resistance due to fluorination

E = Excellent

G = Good

F = Fair

Temperature Limits

FLPE products withstand temperature limits from -100°C to +120°C

FLPP products withstand temperature limits from 0°C to +135°C

As with any plastic container, NEVER put fluorinated containers in a flame or on a hot plate.

Warning

Spigoted carboys not for use with flammable liquids.

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