PCTFE - POLYCHLOROTRIFLUOROETHYLENE

Chlorine and fluorine in the molecule of this unique fluoropolymer contribute to its high compressive strength, low deformation under load and stability within a wide thermal range.

PCTFE was developed and manufactured by the 3M Company under the brand name of Kel-F®. In 1995, the 3M Company discontinued manufacturing the resin and sold the rights. The actual Kel-F® product is no longer available in the marketplace.
Gapi supplies PCTFE grade M-400H, which meets the following classifications.

SPECIFICATIONS RELATIVE TO PCTFE GRADE M-400H INCLUDE:

ASTM D 1430-89 Type 1 Grade 2
ASTM D 1430-95 Type 1 Grade 3

ASTM D 1430-17 Group 1, Class 1, Grade 3
ASTM D 7211-13 (section 8.9)
ASTM 7194-12 (Section 8.10)
FDA Compliant per 21 CFR177.1380

L-P 385C
(cancelled October 6th, 1988, replaced with ASTM D 1430)

PRODUCT BENEFITS:

Dimensionally stable, rigid, resistant to cold flow
Very low gas permeation and outgassing
Near zero moisture absorption
Excellent chemical resistance
High compressive strength
Low deformation under load
Non-flammable
Useful temperature range: -204°C to +193°C
FDA Compliant
Radiation Resistance

TYPICAL APPLICATIONS:

Cryogenic and chemical processing components
Seals and gaskets
Aerospace valve seats, pump parts, impellers, diaphragms and plugs
Laboratory instruments
Nuclear service/high radiation exposure
Liquid oxygen and liquid nitrogen valve linings

PCTFE - DATA SHEET

PROPERTY	ASTM METHOD	GRADE UNIT	GRADE M-400H
MECHANICAL/PHYSICAL			
Zero Strength Time	D-1430	seconds	301-450
Specific Gravity	D-792	cm^3	2.11-2.17
Water Absorption, 24 hr.	D-570	%	0
Tensile Strength 23°C	D-638	MPa	33.5-39.4
Elongation 23°C	D-638	%	100-250
Compressive Strength at 0.2% offset 23°C	D-695	MPa	36 - 41
Compressive Strength at 1% strain 23°C	D-695	MPa	10.8 – 12.8
Impact Strength Notched Izod 23°C	D-256	J/m	133 - 186
Flexural Strength	D-790	MPa	66 - 71
Durometer Hardness, Shore D	D-2240	D	85-95
Deformation Under Load, 25°C, 24 hrs/70 kg	D-621	%	≤0.2
THERMAL			
Melting Point	D-1430	°C	210-212
Deflection Temperature (66 psi)	D-648	°C	126
Maximum Service Temperature		°C	193
Thermal Conductivity	C-177	W/m-K	2.50
Thermal Expansion (+30°C to -30°C)	D-696	cm/cm/°C	$7.0x10^{-5}$
Thermal Expansion (-30°C to -100°C)	D-696	cm/cm/°C	$5.1x10^{-5}$
Flammability	D-635		Non-flammable
ELECTRICAL			
Surface Resistivity, 100% R.H.	D-257	ohm-cm	$1x10^{15}$
Volume Resistivity, 50% R.H.	D-257	ohm-cm	$2x10^{17}$
Dielectric Strength (4 mil film)	D-149	Volts/mil	3000
Dielectric Strength (68 mil film)	D-149	Volts/mil	500
Dielectric Constant, 23°C, 10^3 Hz	D-150		2.6
Dissipation Factor, 23°C, 10^3 Hz	D-150		0.02
Arc Resistance	D-495	seconds	360

REACH COMPLIANCE

July 2023

It has been confirmed with upstream suppliers that any substances requiring registration have been registered and are fully compliant. Furthermore, we have been assured that Substances of Very High Concern (SVHC) >0.1%w/w are not present in the products we process from the neat resins listed below. This statement includes the additions to the REACH SVHC list on 23 January 2024. There are now 240 chemicals on the SVHC list

Please note, however, we do not routinely analyse our products for substances not purposely added.

Products offerings manufactured using the following resins are covered by this statement*:

Daikin Neoflon® PCTFE Grade M-400H

*Please contact us for REACH information on products listed above that contain colourants/additives or products not listed.

The Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS/RoHS2) Directives

The EU Parliament and Council Directives:

EU Directive 76/769/EEC (amended with EU Directive 2003/11/EC)
EU Directive 2005/53/EC (amended with EU Directive 2005/525/EC)
EU Directive 2002/95/EC, EU Directive 2002/96/EC, & 2011/65/EU

We do not use Polybrominated Biphenyls (PBBS) or Polybrominated Diphenyl Ethers (PBDEs), including pentabromodiphenyl ether (pentaBDE) with CAS #32534-81-9 or octabromodiphenyl ether (octaBDE) with CAS #32536-52-0, as intentional ingredients in the manufacture of CTFE, PFA, FEP, ETFE, ECTFE, PVDF, PEI, PEEK and PBT. To the best of our knowledge, none of our upstream suppliers use these substances in the manufacture of their products. However, please note that we do not routinely analyse our products not purposely added.

In addition to the RoHS/RoHS2 restrictions, the European Directives and Coalition of Northeastern Governors (CONEG 1194) have model legislation, which encourages waste reduction. These discourage the use of compounds of Lead, Cadmium, Mercury, Hexavalent, Chromium, or their compounds as intentional ingredients of CTFE, PFA, FEP, ETFE, ECTFE, PVDF, PEI, PEEK and PBT. To the best of our knowledge, none of our upstream suppliers use these substances in the manufacture of their products. However, please note that we do not routinely analyse our products not purposely added.

The European Commission's Restriction of Hazardous or RoHS3 Regulation for Directive EU 2015/863

The EU Directive 2015/863 of 31 March 2015 is amending Anex II to Directive 2011/65/EU additionally restricting the use of DEHP, BBP, DBP, and DIPB in Electrical and electronic equipment and becomes effective on 22 July 2019.

Directive EU 2015/863 Substances

Bis (2-Ethylhexyl) phthalate (DEHP)
Benzyl butyl phthalate (BBP)
Dibutyl phthalate (DBP)
Diisobutyl phthalate (DIBP)

To the best of our knowledge, none of our upstream material suppliers use these substances in the manufacture of their products. However, please note we do not routinely analyse all our products for substances not purposely added.

EU PERSISTENT ORGANIC POLLUTANTS DECLARATION

July 2023

It has been confirmed with upstream suppliers that Daikin Neoflon® PCTFE Grade M-400H does not intentionally have added (which means deliberate use in the formulation of a product or subpart where its continued presence is desired to provide a specific characteristic, appearance, or quality) materials that are contained on the Eu Persistent Organic Pollutants (POPS) list from the regulation EU No. 2019/1021 of the European Parliament of the Council 20 June 2019.

CONFLICT MATERIALS

We declare that in the production of “PCTFE products” we do not use or intentionally add conflict minerals such as: (Gold, Tin, Tungsten, Tantalum), from the Democratic Republic of Congo.

Even though we do not have any analytical data, we do not have any reason to suspect their presence.

USP CLASS VI

We confirm that our PCTFE products Daikin M-400H meet the USP VI requirements.

PFOA

We confirm that our PCTFE M400H does use PFOA in the manufacturing process.

TOXIC RELEASE INVENTORY PROGRAM

24th May 2022

We confirm to the best of our knowledge that our PCTFE M-400H does not contain:

(i) Intentionally added (which means deliberate use in the formulation of a product or subpart where its continued presence is desired to provide a specific characteristic, appearance, or quality) material:

New compounds added to the Toxics Release Inventory (TRI) Program (specifically, list of PFAS) as amended by section 7321 of the NDAA for 2020. (https://www.epa.gov/toxics-release-inventory-tri-program/list-pfas-added-tri-ndaa) that would exceed either the de minimis levels or the reporting level set by EPA as part of this action (https://www.epa.gov/toxics-release-inventory-tri-program/addition-certain-pfas-tri-national-defense-authorization-act).

This certification is valid only as of its date with no duty to amend or update as future events occur.

RUSSIAN SANCTIONS REGULATION STATEMENT

20th November 2023

Gapi Limited hereby declare and certify that we do not import or export this product from Russia, Belarus or the Ukraine.

If you have any questions concerning Gapi Limited's position on the Russian Sanctions for any material you purchase from our Company, the please contact us on 01709 379 681

PFAS STATEMENT

9th May 2024

Per and poly fluoro-alkyl substances (PFAS) are a class of materials that includes thousands of chemicals and polymers, all of which contain a carbon atom surrounded by fluorine atoms. This structural definition established by the Organisation for Economic Cooperation and Development (OECD), is being used by many regulatory bodies around the world in proposed regulations to restrict or ban PFAS on the market. Using this structural definition, al fluoropolymers are considered 100% PFAS.

The fluoropolymer manufacturers around the world, as well as processors and end users of fluoropolymers and fluoropolymer containing parts, are advocating for the exclusion of fluoropolymers from this class of materials since they have critical uses and not easily replaceable. Fluoropolymers are not mobile and not bioavailable.

You can follow advocacy efforts through the following links:

Performance Fluoropolymer Partnership (ACC)
https://fluoropolymerpartnership.com/

Fluoropolymer Producers Group (Plastics Europe)
https://fluoropolymer.eu/

PERSISTENT, BIOACCUMULATIVE & TOXIC (PBT) CHEMICALS UNDER TSCA SECTION 6(h)

14th May 2021

The United States Environmental Protection Agency (EPA) issued five final rules on 6th January 2021 to reduce exposures to certain chemicals that are persistent, bioaccumulative and toxic (PBT). The final rules were applicable to the following substances:

DeccaBDE	Decabromodiphenyl ether	CAS RN 1163-19-5
PIP (3:1)	Phenol, isopropylated phosphate (3:1)	CAS RN 68937-41-7
2,4,6-TTBP	2,4,6-Tris(tertbutyl)phenol	CAS RN 732-26-3
HCBD	Hexachlorobutadiene	CAS RN 87-68-3
PCTP	Pentachlorothiophenol	CAS RN 133-49-3

We confirm that we have checked our supply chain and to our knowledge, the substances listed above had not been intentionally added or used in manufacturing processes of the products listed below:

Daikin Neoflon® PCTFE Grade M-400H

BOVINE MATERIAL ANIMAL ORIGIN PCTFE IN RESPONSE TO BSE-TSE COMPLIANCE

7th January 2021

Gapi Limited hereby declare and certify that we have worked with our suppliers in undertaking a comprehensive investigation of our finished products, with respect to Chemical Family, Neoflon PCTFE. We confirm, no animal parts or animal bi-products are used in the manufacturing process of these products.
Please note that we do not investigate the contents of peripherals and/or package accessories.

If you have any questions concerning this for any material you purchase from our Company, the please contact us on 01709 379 681