



## 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	UNIT	GRADE M-400H
<b>MECHANICAL/PHYSICAL</b>			
Zero Strength Time	D-1430	seconds	301-450
Specific Gravity	D-792	cm <sup>3</sup>	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
<b>THERMAL</b>			
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 <sup>-5</sup>
Thermal Expansion (-30°C to -100°C)	D-696	cm/cm/°C	5.1x10 <sup>-5</sup>
Flammability	D-635		Non-flammable
<b>ELECTRICAL</b>			
Surface Resistivity, 100% R.H.	D-257	ohm-cm	1x10 <sup>15</sup>
Volume Resistivity, 50% R.H.	D-257	ohm-cm	2x10 <sup>17</sup>
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 <sup>3</sup> Hz	D-150		2.6
Dissipation Factor, 23°C, 10 <sup>3</sup> Hz	D-150		0.02
Arc Resistance	D-495	seconds	360

## REACH COMPLIANCE

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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 14 June 2023. There are now 235 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 (RoHS3) Directive EU 2015/863

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The EU Directive 2015/863 of 31 March 2015 is amending Annex 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 raw 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.



## CONFLICT MATERIALS

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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

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



## PFOA

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



## TOXIC RELEASE INVENTORY PROGRAM

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24<sup>th</sup> 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

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20<sup>th</sup> 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