

KEL-F[®]

PCTFE – POLYCHLOROTRIFLUOROETHYLENE
(COMMONLY REFERRED TO AS KEL-F[®])



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 to Daikin Industries Ltd. who now produces the resin under the brand name Neoflon[®] PCTFE. The actual Kel-F[®] product is no longer available in the marketplace.

Afton Plastics processes Daikin Neoflon[®] 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	AMS 3650C and 3645C
ASTM D 1430-95 Type 1 Grade 3	ASTM D 7211-06 (Section 8.9) and D 7194-05 (Section 8.10)
ASTM D 1430-03 Group 1, Class 1, Grade 3	L-P 385C (cancelled October 6 th , 1988, replaced with ASTM D 1430)
Mil-P-46036B (cancelled June 6 th , 1996, with no replacement)	

PRODUCT BENEFITS:

Dimensionally stable, rigid, resistant to cold flow	Low deformation under load
Very low gas permeation and outgassing	Non-flammable
Near zero moisture absorption	Useful temperature range: -400 Deg. F to +380 Deg. F
Excellent chemical resistance	FDA compliant
High compressive strength	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



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DAIKIN NEOFロン® PCTFE DATA SHEET¹



PROPERTY	ASTM METHOD	UNIT	GRADE	
			M-300P	M-400H
MECHANICAL/PHYSICAL				
Zero Strength Time	D-1430	seconds	200-300	301-450
Specific Gravity	D-792	g/cm ³	2.11-2.17	2.11-2.17
Water Absorption, 24 hr.	D-570	%	0	0
Tensile Strength, 23°C	D-638	psi	4,640-5,365	4,860-5,710
Elongation, 23°C	D-638	%	50-200	100-250
Compressive Strength, 23°C at 0.2% offset	D-695	psi	5,710-6,430	5,280-6,000
Compressive Strength, 23°C at 1% strain	D-695	psi	1,710-2,000	1,570-1,860
Impact Strength, 23°C, Notched Izod	D-256	ft-lb/in	2.5-3.5	2.5-3.5
Flexural Strength	D-790	psi	9,860-10,600	9,570-10,300
Durometer Hardness, Shore D	D-2240	D	85-95	85-95
Deformation Under Load, 25°C, 24 hrs/70 kg	D-621	%	≤ 0.2	≤ 0.2
THERMAL				
Melting Point	D-1430	°C	210-212	210-212
Deflection Temperature (66 psi)	D-648	°C	126	126
Maximum Service Temperature		°C	193	193
Thermal Conductivity		Btu/ft-hr-°F	1.45	1.45
Thermal Expansion (+30°C to -30°C)	D-696	cm/cm/°C	7.0 X 10 ⁻⁵	7.0 X 10 ⁻⁵
Thermal Expansion (-30°C to -100°C)	D-696	cm/cm/°C	5.1 X 10 ⁻⁵	5.1 X 10 ⁻⁵
Flammability	D-635		non-flammable	non-flammable
ELECTRICAL				
Surface Resistivity, 100% R.H.	D-257	ohm-sq	10 ¹⁵	10 ¹⁵
Volume Resistivity, 50% R.H.	D-257	ohm-cm	2 x 10 ¹⁷	2 x 10 ¹⁷
Dielectric Strength (68 mil film)	D-149	Volts/mil	500	500
Dielectric Constant, 23°C, 10 ³ Hz	D-150		2.6	2.6
Dissipation Factor, 23°C, 10 ³ Hz	D-150		0.02	0.02
Arc Resistance	D-495	seconds	360	360

¹ Information provided by Daikin America, Inc. Neoflon® is a registered trademark of Daikin Industries, Inc.
 Note: The data provided in this table are typical for the resins tested and do not represent product specifications.



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