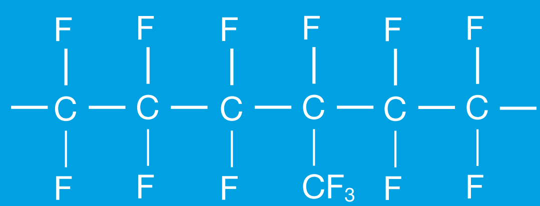
PRODUCT INFORMATION

(except for U.S.A)

NEOFLON™ FEP PELLETS

Introduction:

NEOFLON FEP is a copolymer of tetrafluoroethylene and hexafluoropropylene. NEOFLON FEP consists of carbon atoms and fluorine atoms, as does PTFE, and has the following molecular structure in which one of the fluorine atoms bonded to the carbon atoms on the main chain is replaced by a trifluoromethyl radical ($-CF_3$), as compared with the structure of PTFE.



NEOFLON FEP has a lower melt viscosity than PTFE and can be processed like other thermoplastic resins by the melt flow processes of extrusion, transfer, injection, and compression molding. Because the bonding energy between its carbon and fluorine atoms is so high, and the molecule is completely filled with fluorine atoms, NEOFLON FEP fluorocarbon polymer has excellent thermal, electrical and chemical stability. Therefore, it shows high performance in electrical, chemical and medical applications in temperatures ranging from extremely low to extremely high (–200°C~+200°C).

1. NEOFLON FEP Grades

NEOFLON FEP molding materials are supplied as pellets, melt flow processes of extrusion, transfer, and compression moldings.
Table 1 shows NEOFLON FEP grades. Table 2 shows the colors of NEOFLON FEP pellets.

Table 1 Grades of NEOFLON FEP

Property	NP-101	NP-20	NP-120	NP-30	NP-40
Apparent density (g/ml)	approx.1.2	approx.1.2	approx.1.2	approx.1.2	approx.1.2
Melt viscosity* (poise) (380°C)	$(1.6\sim2.0)\times10^4$	$(5.0\sim10.0)\times10^4$	$(5.0\sim10.0)\times10^4$	$(12\sim22)\times10^4$	$(25\sim26)\times10^4$
Melt flow rate (g/10min) (372°C, 5000g load)	24	6.5	6.5	2.9	1.3
Processing methods	Extrusion	Extrusion	Extrusion	Extrusion	Extrusion Transfer Compression
Uses		Wire and cable coatings, films, tubes, small parts	Wire and cable coatings, films, tubes, small parts	Wire and cable coating, tubes	Film and sheets, tubes, pipe and valve linings, sleeves

Note: *Measured by flow tester at 380°C, under a load of 0.7 MPa
(Nozzle size 2mm in dia., 8mm in length)
NP-20,30,40,101,120 are registered by UL specifications.(UL E 52460)

Table 2 Colors of NEOFLON FEP Colored Pellets

Color	Product No.	Color	Product No.
Black	NP-20BK	Green	NP-20GN
White	NP-20WH	Gray	NP-20GY
Yellow	NP-20YL	Dark brown	NP-20CL
Red	NP-20RD	Violet	NP-20VL
Blue	NP-20BU	Orange	NP-20OR

2. NEOFLON FEP Features

NEOFLON FEP fluorocarbon polymer is a high performance material and is almost equally comparable with PTFE in both chemical and electrical properties.
In addition, it possesses excellent melt flow processability.

1) Thermal stability
Superior reliability and retention of its properties in a wide thermal range from cryogenic temperature to high temperature.
(–200~+200°C)

2) Chemical inertness
Most exposure conditions including heat, weather, light and moisture.

3) Non-sticking property
The lowest critical surface energy of any plastics; an excellent water and oil repellent for non-stick and mold release use.

4) Electrical reliability
A low dielectric constant and dissipation factor and high dielectric strength over a wide range of frequencies and temperatures.

5) Long-term weather resistance
Excellent resistance to ozone, sunlight and weather.

6) High transparency
Transparent with good transmittance of ultraviolet rays and visible rays; the lowest refractive index of any plastics; characterized by very low light reflection.

7) Flame resistance
Will not burn in atmosphere.
(Oxygen index > 95%)

3. NEOFLON FEP Properties

3-1 Physical properties

Table 3 NEOFLON FEP Physical Properties

Property	Test method	NEOFLON FEP	PTFE
Specific gravity	ASTM D 792	2.14~2.17	2.13~2.22
Refractive index	ASTM D 542	1.338	1.35
Water absorption (%)	ASTM D 570	<0.01	<0.00
Contact angle (for water, in degrees)		114	110

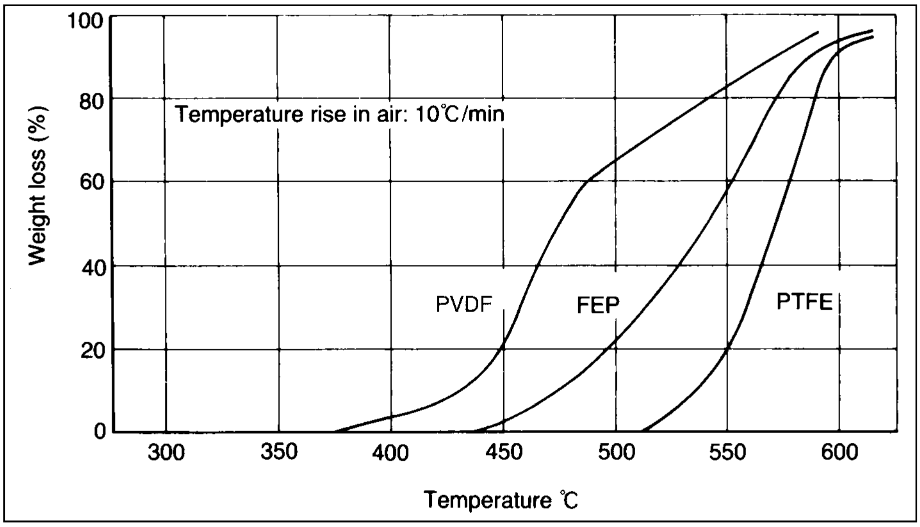
3-2 Thermal properties

Table 4 NEOFLON FEP Thermal Properties

Property	Test method	NEOFLON FEP	PTFE
Melt viscosity at 380°C (poise)		$(1.5\sim60)\times10^{4}$	$10^{11}\sim10^{12}$
Specific heat (J/kg·°C)		1.2×10^{3}	1.0×10^{3}
Melting point (°C)	D. S. C	265~275	327
Thermal conductivity (W/m·°C)	ASTM C 177	0.2	0.23
Thermal expansion (1/°C)	ASTM D 696 (-50°C~+100°C)	$(8\sim15)\times10^{-5}$	$(11\sim14)\times10^{-5}$

Figure 1 shows the results of thermal gravity analysis (TGA) comparing NEOFLON FEP with PTFE and NEOFLON PVDF.

Figure 1 Results of Thermal Gravity Analysis (TGA)



NEOFLON FEP does not show a weight loss due to pyrolysis until the temperature reaches 420°C.

3-3 Flame resistance

NEOFLON FEP is incombustible (as is PTFE). It produces less smoke than NEOFLON ETFE or NEOFLON PVDF.

Table 5 Combustibility of NEOFLON FEP

	NEOFLON FEP	NEOFLON ETFE	NEOFLON PVDF
Oxygen index (vol.%)	>95	31	43
UL 94 flame class	94V-0	94V-0	94V-0
Heat of combustion (J/g)	7,700	15,620	18,380

Note: NEOFLON FEP NP-20, 21, 30, 40, 100, 101, 120 and NEOFLON ETFE EP-521, 541 are recognized by Underwriters Laboratories Inc.

3-4 Mechanical properties

Table 6 NEOFLON FEP Mechanical Properties

Property	Test method	NEOFLON FEP	PTFE
Tensile strength (MPa)	JIS K 6891	19.6~34.3	24.5~49.0
Elongation (%)	JIS K 6891	300~400	300~500
Tensile modulus (MPa)	ASTM D 638	$(4.4\sim5.4)\times10^2$	$(4.9\sim5.9)\times10^2$
Flexural strength	ASTM D 790	No break	No break
Flexural modulus (MPa)	ASTM D 790	$(5.4\sim6.4)\times10^2$	$(4.9\sim5.9)\times10^2$
Compressive strength			
1% deformation (MPa)	ASTM D 695	3.9~4.9	4.9~5.9
25% deformation (MPa)	ASTM D 695	27.5~30.4	29.4
Compressive modulus (MPa)	ASTM D 695	$(4.4\sim5.4)\times10^2$	$(4.9\sim5.9)\times10^2$
Hardness (shore)	Durometer	D55~D65	D50~D60
Deformation under load* (%)	ASTM D 621		
Creep	25°C, 13.7MPa	2.5~3.5	9.0~10.0
	100°C, 6.9MPa	4.5~5.5	4.5~5.5
Total deformation	25°C, 13.7MPa	8.0~9.0	14.5~15.5
	100°C, 6.9MPa	12.0~14.0	14.0~15.0

Note: *shows the loading time of 24 hours.

The mechanical properties of NEOFLON FEP are basically the same as those of PTFE. Being a thermoplastic, NEOFLON FEP shows changes in its mechanical properties depending upon temperature, but can be used in temperatures ranging from 200°C to −200°C. (However, it is recommended that you check before using at high temperatures, as this material may not perform well under certain environmental conditions.)
Figures 2, 3 and 4 show the relationship between tensile strength and temperature; elongation and temperature; and tensile modulus and temperature.

Figure 2 Tensile Strength vs. Temperature

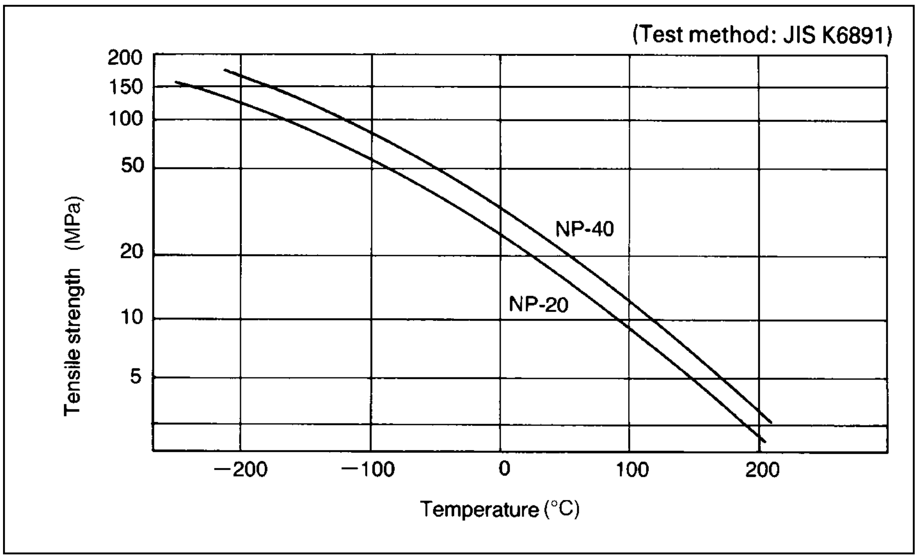


Figure 3 Elongation vs. Temperature

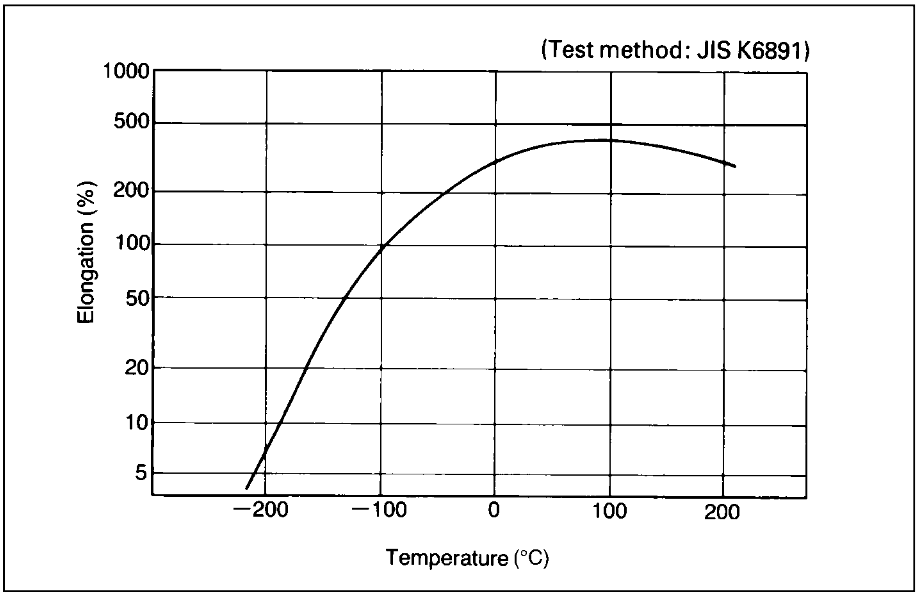
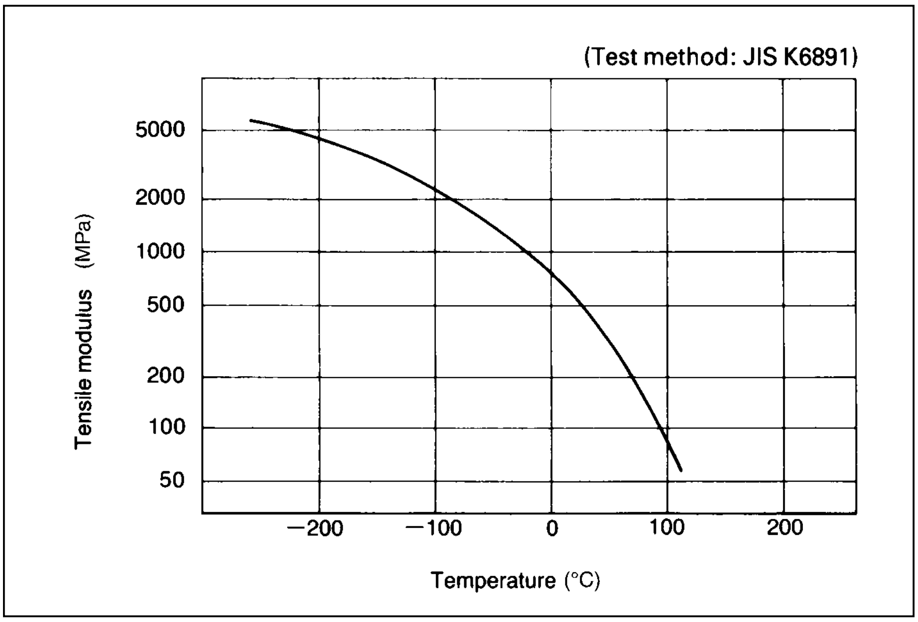


Figure 4 Tensile Modulus vs. Temperature



3-5 Chemical properties

NEOFLON FEP was immersed in the following chemicals, and the results of chemical absorption are shown in Figure 5 and Table 7.
Usually, the durability of a substance can be largely determined by observing its weight change due to chemical absorption, as is shown in Figure 5.
Figure 5 and Table 7 indicate that NEOFLON FEP can be used with all of these chemicals as its absorption is less than 3mg/cm^2.

Table 8 shows the weight change of NEOFLON FEP measured while immersed in various chemicals in comparison with those of PTFE and NEOFLON PVDF. NEOFLON FEP was found to be slightly influenced by chlorinated solvents, but uneffected by other organic solvents,

(Immersion chemicals)
Sulfuric acid (98%), Hydrochloric acid (36%), Nitric acid (60%), Caustic soda (50%), Aqueous ammonia (28%) Toluene, Diethyl amine, Chloroform, and Acetone.
(Immersion conditions)
50 days at 95°C.

Figure 5 Chemical Absorption Curves

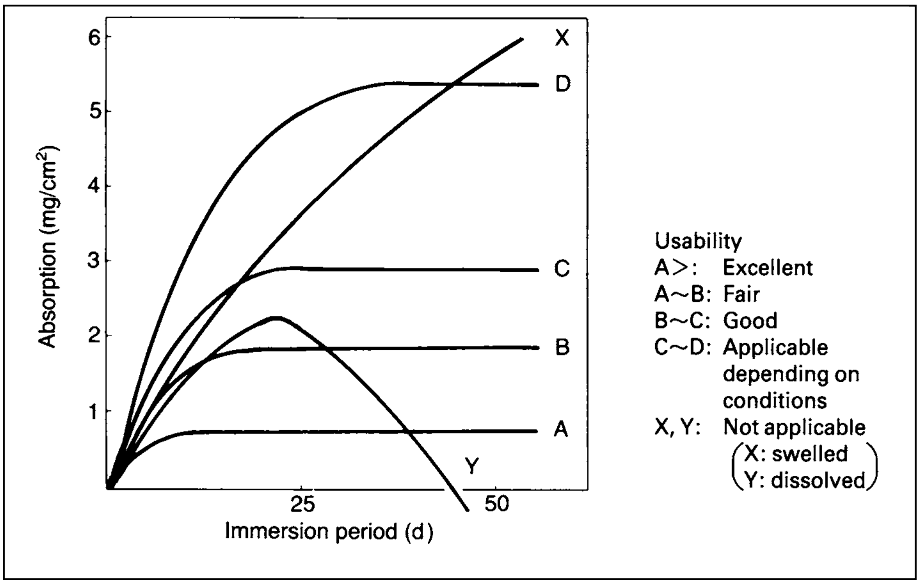


Table 7 Practical Usage Based on Chemical Absorption

	NEOFLON FEP	NEOFLON ETFE	NEOFLON PVDF
A> A~B	Sulfuric acid, Hydrochloric acid, Nitric acid, Caustic soda, Aqueousammonia, Toluene, Dietlylamine, and Acetone.	Sulfuric acid, Hydrochloric acid, Caustic soda	Hydrochloric acid
B~C	Chloroform		
C~D		Aqueous ammonia, Acetone, Toluene, Diethyl amine	Chloroform
X, Y		Nitric acid, Chloroform	Sulfuric acid, Nitric acid, Caustic soda, Aqueous ammonia, Toluene, Diethyl amine and Acetone.

Table 8 Weight Change of NEOFLON FEP

Chemicals	Weight change (%)		
	NEOFLON FEP	PTFE	NEOFLON PVDF
Hydrochloric acid (35%)	0.0	0.0	+0.3
Sulfuric acid (98%)	0.0	0.0	+0.2
Nitric acid (60%)	−0.1	0.0	+1.4
Hydrofluoric acid (50%)	0.0	0.0	0.0
Chromic acid (50%)	0.0	0.0	0.0
Acetic acid (50%)	0.0	0.0	0.0
Acetic anhydride	+0.1	+0.1	Partly dissolved
Caustic soda (50%)	0.0	0.0	0.0
Aqueous ammonia (28%)	0.0	0.0	-0.1
Sodium chloride (30%)	0.0	0.0	0.0
Potash bichromate (10%)	0.0	0.0	0.0
Methyl alcohol	0.0	0.0	+2.2
Ethyl alcohol	0.0	0.0	+1.7
Acetone	+0.2	+0.2	Dissolved
Carbon tetrachloride	+2.2	+2.3	+1.7
Chloroform	+1.1	+0.9	+4.0
Trichloroethylene	+1.1	+0.8	+3.4
Toluene	+0.3	+0.3	+2.2
Xylene	+0.3	+0.4	+1.8
Benzene	+0.4	+0.3	+2.5
n-Hexane	+0.5	+0.6	0.0
Methyl ethyl Ketone	+0.3	+0.2	Dissolved
Aniline	0.0	0.0	+4.0
Ethyl acetic acid	+0.3	+0.2	Dissolved
Ether	+0.3	+0.1	+1.6
Dioxan	+0.3	+0.4	Dissolved
Diethyl amine	+0.6	+0.4	Decomposed
Formaldehyde	0.0	0.0	0.7
Phenol	0.0	0.0	+1.3

Test conditions: Immersed in chemicals at 80~90°C for one week, with the exception of hydrochloric acid which was maintained at room temperature.

3-6 Electrical properties

NEOFLON FEP shows excellent dielectrical properties over a wide range of frequencies and temperatures.
NEOFLON FEP produces no electroconductive track, even if its surface is damaged due to arcing.

Figure 6 Dielectric Constant vs. Temperature

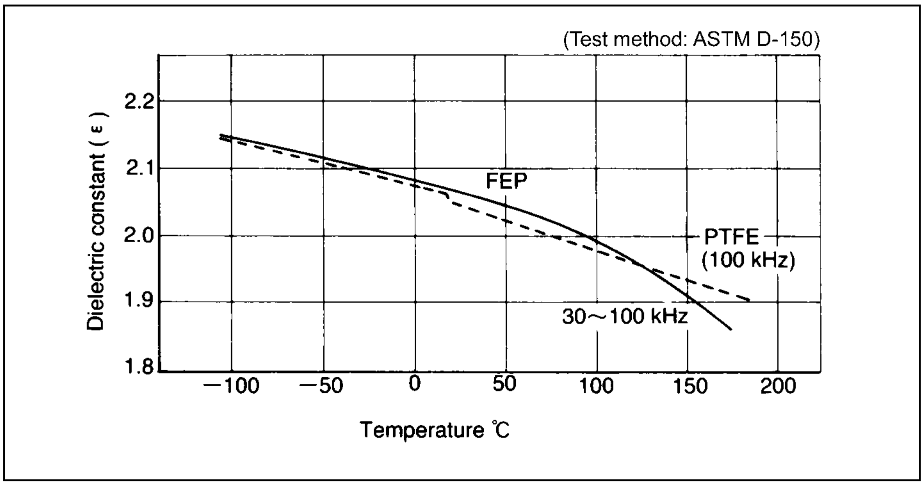


Figure 7 Dissipation Factor vs. Temperature

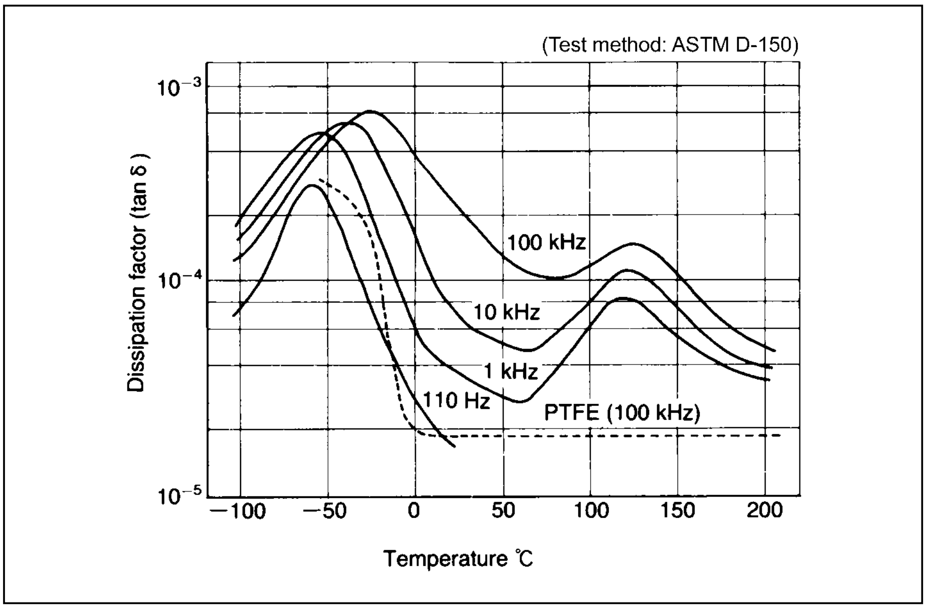


Figure 8 Volume Resistivity vs. Temperature

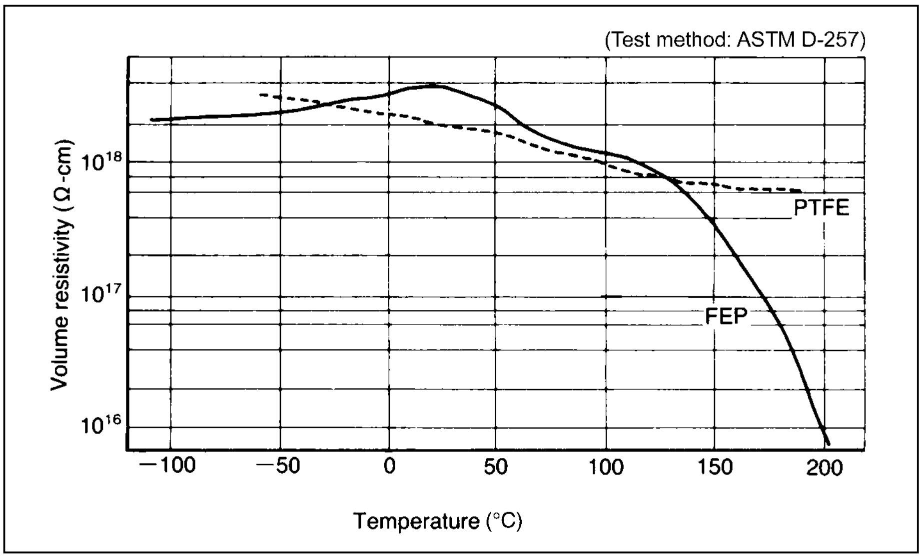
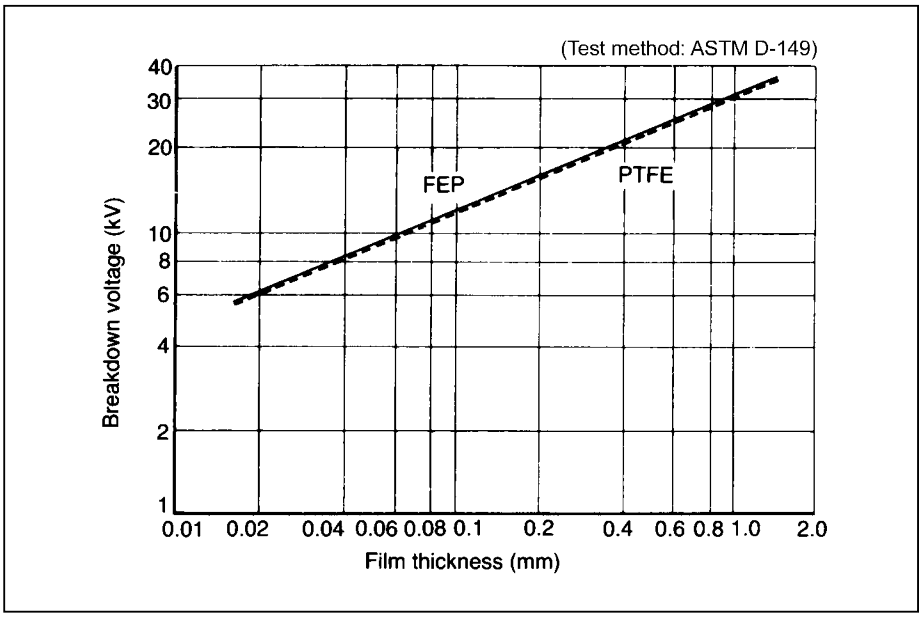
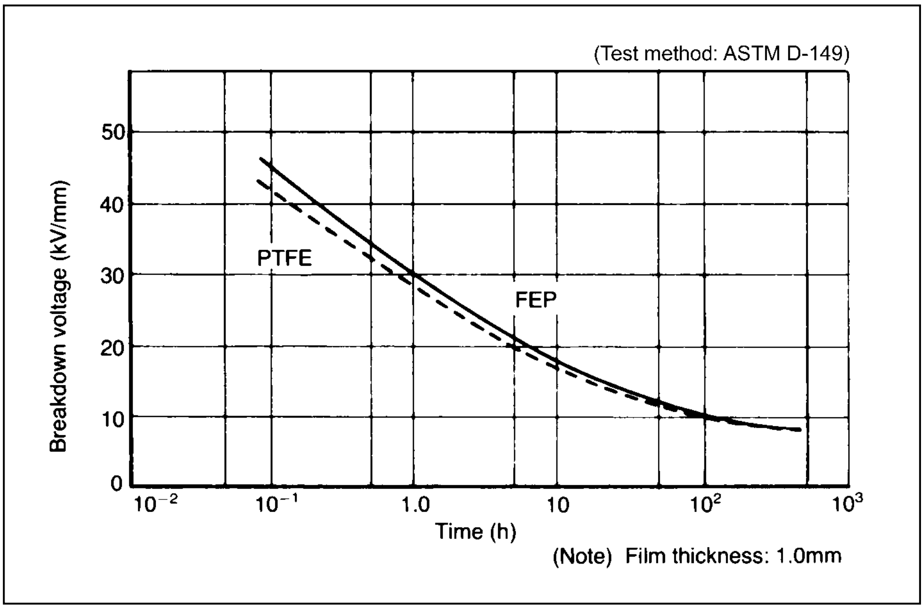


Figure 9 Breakdown Voltage vs. Film Thickness



(Note) Conditions of measurement: 2 pieces of 25mm dia. flat plate electrode, in silicone oil, 25 ± 1°C, 60 Hz

Figure 10 Breakdown Voltage vs. Time



3-7 Optical properties

Figure 11 NEOFLON FEP Light Transmittance

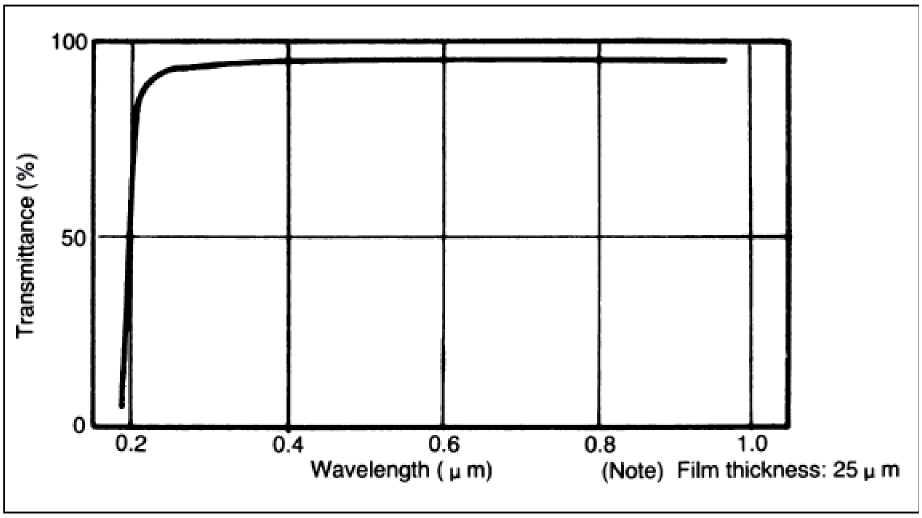
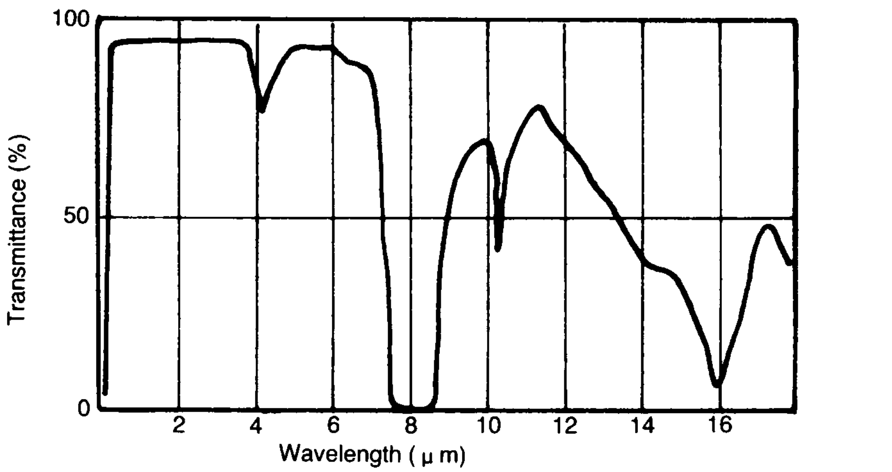


Figure 12 NEOFLON FEP Light Transmittance



(Note) Film thickness: 25 μ m

3-8 Gas permeability

Gas permeability of NEOFLON FEP film is shown in Figure 13 and Table 9, and is compared with other plastic films in Figure 14.

Table 9 Gas Permeability of NEOFLON FEP Film

(Test method: ASTM D-1434, JIS Z0208)

Gas	Gas permeability*		
	NEOFLON FEP	PTFE	Low density polyethylene
Nitrogen	1.2×10^{-8}	1.1×10^{-8}	0.74×10^{-8}
Oxygen	3.7×10^{-8}	3.2×10^{-8}	2.2×10^{-8}
Carbon dioxide	9.7×10^{-8}	8.9×10^{-8}	9.6×10^{-8}
Methane	0.66×10^{-8}	—	2.2×10^{-8}
Ethane	0.33×10^{-8}	—	5.2×10^{-8}
Propane	0.11×10^{-8}	—	7.2×10^{-8}
Ethylene	0.48×10^{-8}	—	—

*Temperature: 25°C Unit:cm^3(STP), cm/cm^2·s·atm

Figure 13 Coefficient of Gas Permeability vs. Temperature

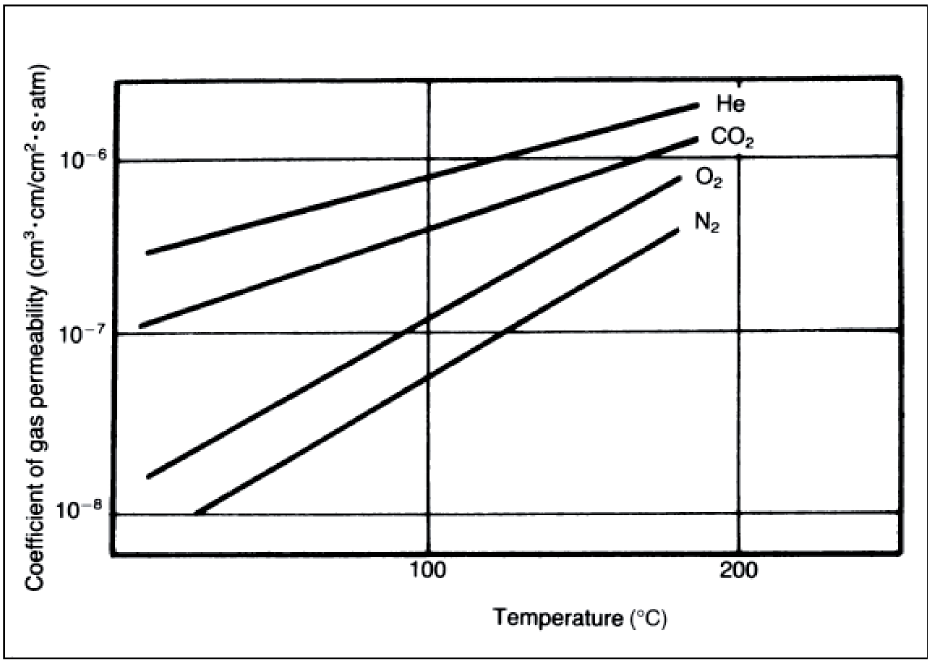
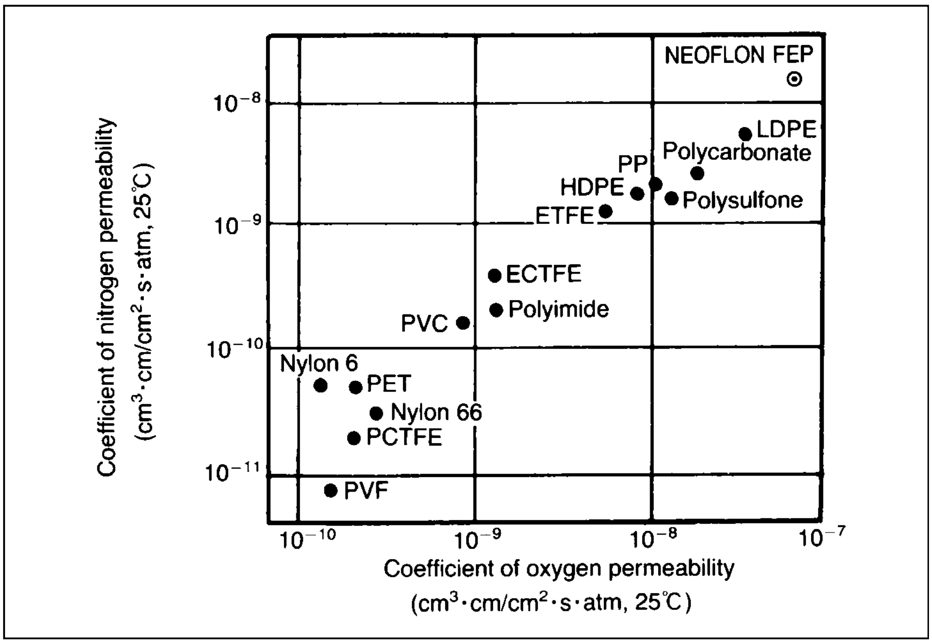


Figure 14 Oxygen and Nitrogen Permeability of Various Plastic Films



3-9 Non-stick property

NEOFLON FEP has small surface energy due to the close arrangement of fluorine atoms, and the same superior non-stick properties as PTFE.

Table 10 Surface Characteristics of Various Plastics and Metals

Surface tension of water = 72.7 mN/m(at 20°C)

	Contact angle with water (degree)	Critical surface tension (dyne/cm)
FEP	114	17.8
PTFE	110	18.5
PCTFE	84	31
PVDF	81	25
PVF	81	28
Paraffin	103	25~31
Silicone resin	100	25~31
Polyethylene	88	31
PVC	—	39
PVdC	—	40
Nylon	77	46
Glass	15	—
Copper	9.6	—
Aluminium	4.6	—

(Note) Critical surface tension: Surface tension of an imaginary liquid whose contact angle with a solid surface is 0°

3-10 Surface lubricating property

Table 11 NEOFLON FEP Coefficient of Static Friction

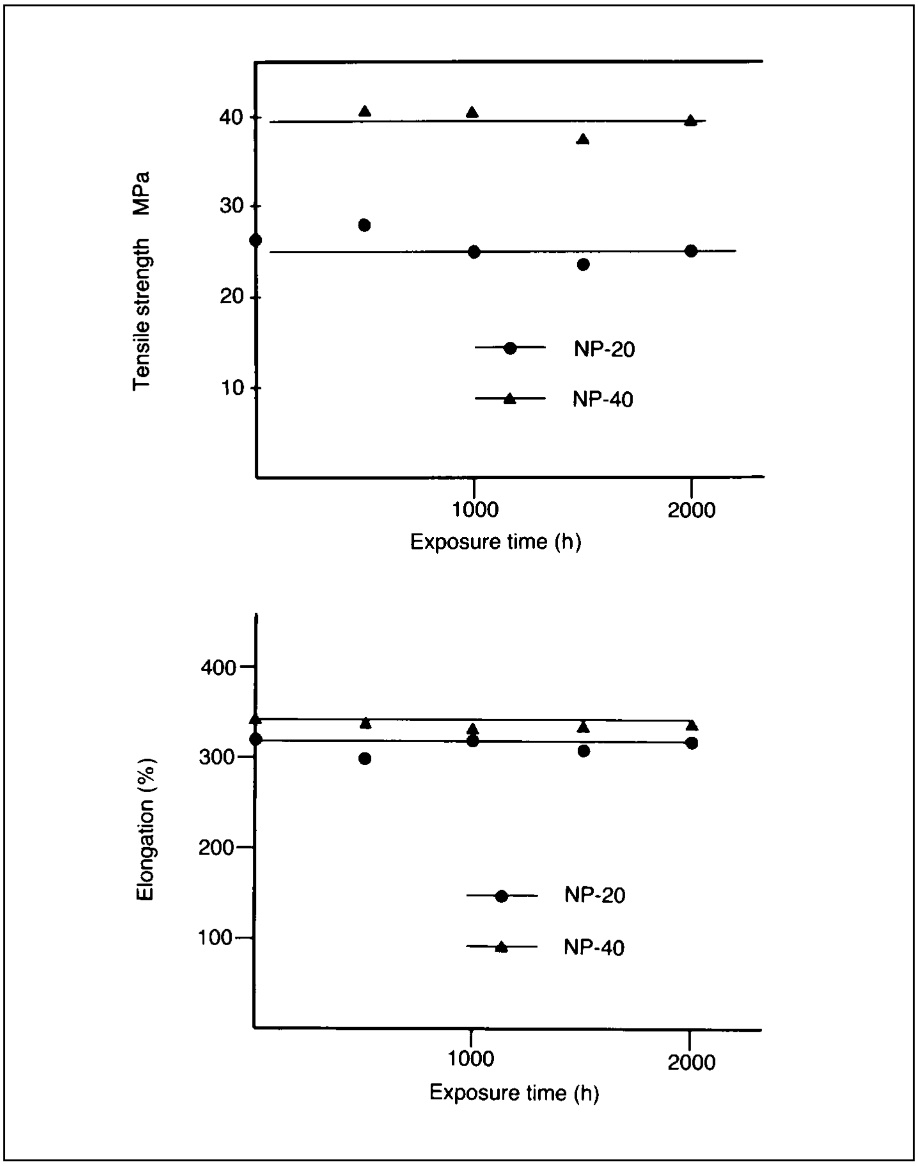
	Coefficient of static friction
NEOFLON FEP	0.05
NEOFLON PFA	0.05
NEOFLON ETFE	0.06
PTFE	0.02
Nylon 66	0.20
Polyacetal	0.14

3-11 Weather resistance

The change in the tensile property of NEOFLON FEP film resulting from the accelerated artificial exposure test is shown in Figure 15. This figure shows that there is absolutely no change after 2000 hours of exposure (equivalent to approximately ten years of outdoor exposure).

Figure 15 Results of Accelerated Articicial Exposure of NEOFLON FEP Sheet

(Sunshine carbon arc method)



4. NEOFLON FEP Processing

Since NEOFLON FEP have a comparatively low melt viscosity and good thermal stability at over its melting point, they can be processed like a thermoplastic resin by extrusion, transfer, injection, or compression molding.
NP-101 is suitable for high speed wire and cable coating.
NP-20 is used mainly as a wire and cable coating material.
NP-30, 120 are suitable for use with heavy wall wire insulation, tubes, and cable jacketing. NP-40 is suitable for films and sheets, tubes, pipe and valve linings, and sleeves. The selection guide for molding material is shown in Table 12.

Table 12 Selection Guide for NEOFLON FEP Molding Materials

Use	Grade				
	NP-101	NP-20	NP-120	NP-30	NP-40
Extrusion molding					
Wires and cable coating					
Thin wall type (0.1~0.17mm)	Good				
Thin wall type (0.17~0.3mm)		Good	Good		
Heavy wall type (0.3~0.5mm)			Good	Good	(Good)
Jacket			Good	Good	
Tubing and pipes					
Spaghetti tube	Good	Good	Good		
General purpose tubes		Good	Good	Good	
Heat shrinkable tubes					Good
Lined pipes					Good
Films and sheets					
≤250 µm thickness	Good	Good	Good		
250~2,400µm thickness					Good
Rods					Good
Mono-filaments	Good	Good	Good		
Transfer molding					
Pipe linings					Good
Valve linings					Good
Injection molding	Good				
Compression molding		Good	Good	Good	Good

The molding temperature should be determined in accordance with the best suited molding method for the shape and size of the object. Desirable temperature for processing NEOFLON FEP molding material is approximately 330~400°C.

Figure 16 shows the relationship between melt viscosity and temperature. Table 13 shows the critical shear rate of FEP as 360~400°C; if the shear rate exceeds the critical shear rate while NEOFLON FEP is being processed, melt fracture will result thus making the molding surface rough. Therefore, the molding method used must have a shear rate lower than the above mentioned critical shear rates.

Table 13 Critical Shear Rate of NEOFLON FEP

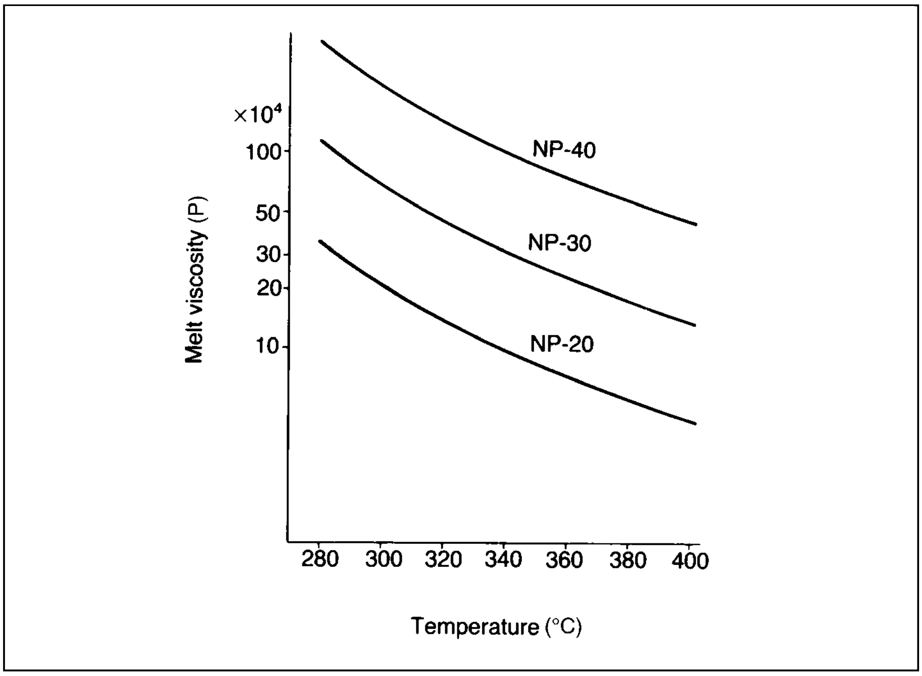
(360~400°C)

Grade	Critical shear rate (sec^{-1})
NP-101	60~130
NP-20	20~40
NP-120	20~40
NP-30	10~15
NP-40	1~5

[Caution]

Studies have indicated that NEOFLON FEP begins to degrade at 420°C and liberate HF, which is corrosive to metal surfaces.
Therefore, the resident time in extruders or other molding machines should be held to the minimum.
Care should be taken not to overheat NEOFLON FEP molding pellets during processing. In addition, adequate mechanical ventilation should be provided and personnel should be cautioned against inhaling the fumes liberated during processing. All surfaces of the molding machine that come in contact with melting FEP resin should be made of corrosion resistant materials.

Figure 16 Relationship between Melt Viscosity and Temperature



4-1 Extrusion molding

Table 14 NEOFLON FEP Processing Conditions for Wire and Cable Coating

	NP-101	NP-20	NP-30
Insulated wire size (mm)	TA 1/0.51 0.51×0.86	TA 1/0.7 0.7×1.4 White	TA 1/1.0 1.0×2.4 White
Extruder			
Barrel dia.(mm)	50	30	40
Screw L/D	32	22	20
Compression ratio	2.7	2.74	3.0
Aperture of die (mm)	4.7×7.9	7×13	11×24
Temperature (°C)			
Barrel (rear)	350	360	220
(center)	393	390	340
(front)	404	400	380
Adapter	404	400	380
Die head	404	410	380
Die	404	410	390
Screw speed (rpm)	25	30	12
Draw-down ratio (DDR)*	100	82	95.5
Insulating speed (m/min)	762	40	14

$$* \text{ DDR} = \frac{Da^2 - Db^2}{da^2 - db^2}$$

Table 15 NEOFLON FEP Processing Conditions for Tubing

	NP-20	NP-30	NP-40
Tubing size (outside dia. × inside dia.)	8×10mm	16×19mm	16×19mm
Extruder			
Barrel diameter (mm)	25	25	25
Screw L/D	19	19	19
Compression ratio	2.85	2.85	2.85
Aperture of die (outside dia. × inside dia.)	4.5×8.5	13×17	13×17
Temperature (°C)			
Barrel (rear)	320	320	330
(front)	350	370	380
Die head	360	380	400
Die	370	390	410
Screw speed (rpm)	12	12	12
Tubing speed (m/min)	0.25	0.14	0.08

4-2 Injection molding

NEOFLON FEP has a high melt viscosity and requires a higher processing temperature compared to general thermoplastics. It is necessary to use a screw type injection molding machine with the shortest possible distance between the sprue and runner gate, and the temperature of the mold must reach 200~230°C. The following is an example of injection molding conditions:

a) Shape of molding:
   110 (L) × 30 (W) × 2 (T) mm
   60 (L) × 40 (W) × 3 (T) mm
   1 pc. each
b) Shape of gate:
   Sector (5 (L) × 8 (W) × 2 (T) mm
c) Injection molding machine:
   N-65,1.5 oz, product of the Japan Steel Works, Ltd.
   Cylinder: Type A, X aloy 306 30 mm in dia.
   Screw: 30 mm in dia., Cr plating
d) Molding conditions:
   Table 16 shows the molding conditions.
e) Shrinkage of molding: 4~6%

Table 16 Molding Conditions

	Conditions
Temperature of cylinder	
(under the hopper)	300°C
(center)	360~380°C
(front)	380~400°C
(nozzle)	380~400°C
Temperature of mold	200°C
Extrusion speed of screw	180rpm
Injection pressure	29.4~68.6 MPa
Back pressure	2.9 MPa
Holding time	20 s
Injection rate	9.5(scale)
Period of cooling	60 s
Cycle time	120 s/cycle

4-3 Compression molding

For compression molding of NEOFLON FEP pellets, the recommended wall thickness are:
Grade NP-20, 22 10mm or less
Grade NP-30, 40 10mm or more

Grades NP-20, NP-30 and NP-40 can be processed at 330~350°C. If the temperature reaches higher than 350°C, it is difficult to remove moldings, or the surface of the mold becomes corroded. Desirable molding pressure is 4.9 to 7.8 MPa. During cooling, this pressure should be maintained until the temperature of the mold decreases to approximately 200°C; otherwise, sink marks or voids may remain in the moldings.

4-4 Method of coloring

When it is necessary to color the FEP resin, use a colorant which is able to resist a temperature of 400°C or above. The dry-blend and master batch methods are available for coloring, and generally the master batch method provides an easier and better dispersion than the dry-blend method. Ten colors are available as master batch (color pellets), and the desired colored product may easily be obtained by the following rate of blending:

Color pellets	1
Natural pellets	5~10
(NP-20)	(by weight)

5. Application

Table 17 NEOFLON FEP Typical Applications

Molding	Major applications	Properties utilized
Wires and cable Coatings	Cables for industrial use Wiring for electronic appliances Flat cables Electric wires for aircraft	Electrical properties flame resistance High temperature resistance Low temperature resistance
Electronic parts Electric parts	Bobbins Terminals Sockets, connectors	Electrical properties flame resistance High temperature resistance
Pipes Tubes	Piping material Heat exchangers	High temperature resistance Low temperature resistance
Parts for chemical equipment	Automobile cable casings Valves Parts for pumps, gaskets, linings, Scientific instruments Instruments employing semiconductors	Corrosion resistance Non-stick properties
Films Sheets	Adhesive agents of PTFE Electrets Protective material for outdoors Releasing agents Sheet linings	High weather resistance High temperature resistance Low temperature resistance Non-stick properties Heat seal properties Corrosion resistance Electrical properties
Shrinkable tubes	Roll covers Electric insulating material	High temperature resistance Non-stick properties Corrosion resistance Electrical properties flame resistance
Monofilaments	Screens Filters Demisters	High temperature resistance Corrosion resistance Weatherability flame resistance

6. Packaging of NEOFLON FEP Molding Materials

Table 18 Packaging of NEOFLON FEP Molding Materials

Product No.	Color	Weighgt (kg/package)
NEOFLON FEP Molding Materials	Natural color	25 (Bag)
NEOFLON FEP colored pellets (NP-20)	White, red, orange, yellow, green, blue, violet, brown gray, black	10

Caution on handling

The following points should be followed to ensure safety when handling NEOFLON FEP:

WARNING: VAPORS HARMFUL IF INHALED.

The work area should be adequately ventilated at all times, because HF, COF_2 begin to be produced at approximately above 205°C and the volume increases at approximately 360°C. If FEP is incinerated, the acidic gases must be removed by alkaline scrubbing techniques.

- Personnel should be cautioned against inhaling the fumes liberated during processing and provided with suitable protective equipment.
- Smoking should be prohibited in work areas, since smoking fluoropolymer contaminated tobacco may result in inhalation of decomposed gas. Do not bring tobacco in the work area.
- Avoid breathing dust and contact with eyes.
- Wash hands and face after handing.
- Waste generated during processing should be treated by waste treatment specialists and/or licensed waste contactor disposed of in accordance with federal, state and local waste disposal regulations.
- Read the „Material Safety Date Sheet“ before use.

- DAIKIN INDUSTRIES, LTD. and DAIKIN AMERICA.INC. have obtained the ISO 14001 (*1) certification which is an International Standard concerning the environmental management system. DAIKIN INDUSTRIES, LTD has obtained the ISO 9001 (*2) and DAIKIN AMERICA. INC has obtained the ISO 9002 (*3).

*1. ISO 14001 is a standard established by the ISO (International Organization for Standardization) which applies to environmental preservation activities. Activities, products and services of our fuorochemicals plant have been certified as being environmentally sound by an internationally recognized certification body.

*2. ISO 9001-2000 is a certification system for quality control established by the ISO which certifies our quality control system concerning our products.

*3. ISO 9002-1994 is a plant certification system for quality control established by the ISO which certifies our quality control system concerning manufacture and inspection of the products manufactured at our plant (division).

IMPORTANT NOTICE: The information contained herein is based on technical data and tests we believe to be reliable and is intended for use by persons having technical knowledge and skill, solely at their own discretion and risk. Since conditions of use are outside of our control, we assume no responsibility for results obtained or damages incurred through application of the data given; and the publication of the information herein shall not be understood as permission or recommendation for the use of our fluorocarbon compounds in violation of any patent or otherwise. We only warrant that the product conforms to description and specification, and our only obligation shall be to replace goods shown to be defective or refund the original purchase price thereof.

MEDICAL USE: This product is not specifically designed or manufactured for use in implantable medical and/or dental devices. We have not tested it for such application and will only sell it for such use pursuant to contract containing specific terms and conditions required by us.

DAIKIN INDUSTRIES, LTD.
Umeda Center Bldg., 2-4-12,
Nakazaki-Nishi, Kita-ku,
Osaka 530-8323,
Japan
Phone: +81-6-6374-9300
Fax: +81-6-6373-4281

www.daikinchemicals.com

DAIKIN AMERICA, INC.
20 Olympic Drive
Orangeburg, NY 10962,
U.S.A.
Phone: +1-845-365-9500
Toll-Free: +1-800-365-9570
Fax: +1-845-365-9598

www.daikin-america.com

DAIKIN CHEMICAL EUROPE GmbH
Am Wehrhahn 50
40211 Düsseldorf,
Germany
Phone: +49-211-179225-0
Fax: +49-211-1640732

www.daikinchem.de

10/19 EG-61m DCEPN