Mold our passion into shape

chukoh

CHUKOH CHEMICAL INDUSTRIES,LTD.

Head Office	ATT New Tower 10F, 2-11-7, Akasaka, Minato-ku, Tokyo TEL +81-(0)3-6230-4414 / FAX +81-(0)3-6230-4413
Fukuoka Office	Otemon Pine Building, 5F, 1-1-12, Otemon, Chuo-ku, Fukuoka TEL +81-(0)92-724-1414 / FAX +81-(0)92-724-1413
Tokyo Branch	ATT New Tower 10F, 2-11-7, Akasaka, Minato-ku, Tokyo TEL +81-(0)3-6230-4411 / FAX +81-(0)3-6230-4412
Nagoya Branch	Nishiki Park Building, 10F, 2-4-3, Nishiki, Naka-ku, Nagoya TEL +81-(0)52-229-1511 / FAX +81-(0)52-229-1512
Osaka Branch	Nissay Shin-Osaka Building, 16F,3-4-30, Miyahara, Yodogawa-ku, Osaka TEL +81-(0)6-6398-6714 / FAX +81-(0)6-6398-6712
Fukuoka Branch	Otemon Pine Building, 5F, 1-1-12, Otemon, Chuo-ku, Fukuoka TEL +81-(0)92-724-1411 / FAX +81-(0)92-724-1412
A&E Dept. (export sales)	ATT New Tower 10F, 2-11-7, Akasaka, Minato-ku, Tokyo TEL +81-(0)3-6230-4424/+81-(0)3-6230-4417 / FAX +81-(0)3-6230-4446
Chukoh Chemical (Shanghai) Trading, Ltd.	Room 2806 Shanghai International Trade Center 2201, West Yan An Road, Changning District, Shanghai TEL +86-21-6235-1160 / FAX +86-21-6235-1140
Chukoh Chemical (Thailand) Co., Ltd.	One FYI Center, unit 1/1002, 10th Floor, 2525 Rama 4 Road, Khlongtoei, Khlongtoei, Bangkok 10110 Thailand TEL +66-(0)2-011-7144 / FAX +66-(0)2-011-7147

Corporate site

Japanese　Chinese　Thai

Caution

- Do not use for medical applications or other usages involving a contact with human body.
- Observe the related laws and regulations for disposal. Do not incinerate in any case.
- Do not use at the temperature exceeding the maximum service temperature.
- Please read the catalogue and product safety data sheet (SDS) on our website to maintain the original functions of product and ensure safe use.

Contact Information

For inquiries on our products in general, please send e-mail to us. Please feel free to contact us.

support@chukoh.co.jp

Introduction of catalogues by product:

We provide catalogues by product and leaflets with more details than the general catalogue. Please download from our website or feel free to contact support @chu-koh.co.jp.

About RoHS Directive compliant products:

We aim to make all of our products compliant to RoHS Directive.
You can download certificate of non-use of RoHS directive substances from this QR code.

www.chukoh.com

OCT/1/2018　DC(5)

CHUKOH FLO™ Products General Catalogue

Chukoh Chemical Industries,Ltd.

AIMING TO CREATE A FUTURE!

Since the foundation, we have been devoting particular attention to fluoroplastics which is a polymeric material with unique characteristics, and striving for research and development thereof. As a result, we have successfully combined fluoroplastics with other materials and commercialized highly value-added products made from fluoroplastics.

Meanwhile, fluoroplastics has been increasing its possibilities and is expected to be used for new applications in many industries, including electricity, communication, machinery, foodstuffs, construction, and medical care. Further, based on the technical assets we have accumulated on fluoroplastics, we have entered new fields using high-performance plastics including silicone and super engineering plastics.

In keeping with our slogan, "Develop new products and open new fields," we will commit ourselves to the development of products in close cooperation with customers and strive to satisfy industrial needs, which are becoming increasingly diversified and sophisticated.

Heat resistance / Low temperature resistance

Continuous use possible at high temperature

Fluoroplastics have high heat resistance and low temperature resistance. That means it can be used in a wide range of temperature.

Insulation

Excellent electrical insulation

Fluoroplastics have high electrical insulation properties. They give outstanding performances as high frequency insulation material and insulation coating.

Chemical resistance

Resistant to chemicals

The stable molecular structure of the fluoroplastic material is not affected by most of the commonly used chemicals and solvents. It can be safely used even under chemical environment.

Lowest friction

Highest slippage

Fluoroplastics having the lowest dynamic friction coefficient among all solid materials show the least slippage

Non-stick property

Non-stick properties provide easy release

Fluoroplastic materials have unique non-stick surface characteristic that allows easy release.

Weatherability

Resistant to ultraviolet resistance

Fluoroplastics are substantially free of effects of visible light, ultraviolet ray or moisture. Suitable for long-time outdoor use.

CHUKOH FLO™ SKYTOP™

Japan's first permanent architectural faburic developed by Chukoh for membrane structures. It is a composite material produced by impregnating and sintering fluoroplastic on glass cloth (B yarn) by a unique method developed by Chukoh. Various types and grades are available according to the design and size of membrane structures.

Primary applications

Stadium / terminal / station platform / shopping street arcade / shopping center / swimming pool / tennis court / aquarium / gymnasium / exhibition hall / meeting place / factory / warehouse / etc.

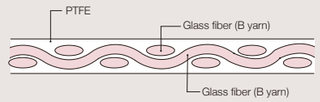
Characteristics

- SKYTOP™ for structural materials is qualified by the Minister of Land, Infrastructure and Transport as the designated building material provided in Item2, Article 37 of the Building Standard Law.
- SKYTOP is also qualified by the same Minister as the noncombustible material provided in Item 9, Article 2 of the same Law.
- Excellent in durability and weather resistance.
- Excellent translucency that allows ample sunlight into inner space.
- Hard to attract dust or dirt, which keeps good appearance for long.

Main grades

- FGT-1000: for large-scale structures
- FGT-800: for medium to large-scale structures
- FGT-600: for small to medium-scale structures
- FGT-250 series: for interior ceiling material

■ The structures of SKYTOP (cross-section)



For more information

Suvarnabhumi International Airport / Thailand

Tokyu Line Motosumiyoshi Station / Kanagawa Prefecture

Shizuoka Soccer Stadium, ECOPA stand shed / Shizuoka Prefecture

Kanaya Kindergarten / Fukushima Prefecture

■ General characteristics

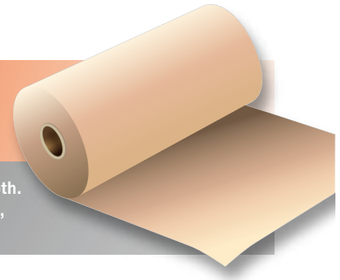
Item		Unit	Structural material			Interior material			Test method
			FGT-1000	FGT-800	FGT-600	FGT-250	FGT-250A	FGT-250B	
Thickness (median)		mm	1.00	0.80	0.60	0.35	0.40	0.23	JIS K 6404-2-3
Mass (median)		g/m²	1700	1300	1000	470	600	250	JIS K 6404-2-2
Tensile strength (minimum)	Warp	N/3cm	5500	4410	3680	2400	2058	1176	JIS L 1096 (Cut-strip method)
	Fill		5000	3528	2940	1800	1568	980	
Elongation at break (median)	Warp	%	6.0	5.0	5.0	4.0	3.0	—	JIS L 1096 (Non-contact extensometer method)
	Fill		12.0	10.0	10.0	5.0	4.0	—	
Peel strength (minimum)	Warp	N	400	294	225	190	127	59	JIS L 1096 (Trapezoid method)
	Fill		450	294	225	120	98	59	
Visible light transmission after bleaching (median)		%	10	12	15	19	18	40	JIS R 3106 (Spectrophotometer)
Visible light reflectance after bleaching (median)		%	82	80	78	78	78	60	JIS R 3106 (Spectrophotometer)
Ventilation measure (median)		cm³/cm²·s	—	—	—	8	—	10	JIS L 1096 (Fragile method)
Sound absorption (median)		NRC	—	—	—	0.45	—	0.45	JIS A 1409 (Reverberation room method)

* Values shown above are not standard values but measured values.

■ Comparison of general characteristics between SKYTOP™ and other bilding materials

Building material	Mass	Strength	Elongation	Flexibility	Weatherability	Incombustibility	Heat resistance	Chemical resistance	Self-cleaning property	Translucency	Cost performance
FGT	○	○	○	◎	◎	○	◎	◎	◎	○	△
Polycarbonate sheet	△	○	△	×	○	○	○	△	△	○	○
Color steel plate	△	◎	×	○	○	◎	◎	○	△	×	○
Sheet glass (float)	×	○	×	×	◎	○	○	◎	△	◎	△

CHUKOH FLO™ Fabrics / Silicone Fabrics

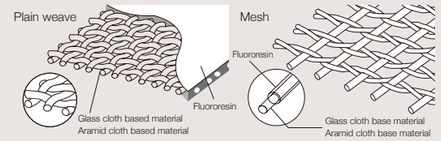


These are composite materials of fluororesin or silicone resin on industrial cloth such as glass cloth or aramid cloth. We further fabricate these composite materials to offer our products in a wide variety of fields including chemical, machinery, electric, telecommunication and construction fields.

Main applications release sheets / insulating materials / conveyor belts / sliding materials / heat seal release materials / etc.

Maximum service temperature
- Glass cloth based fabric: +260°C
- Aramid cloth based fabric: +200°C

■ **Structures**



For more information

G type fabric

This is a high-performance composite material obtained by impregnating and sintering fluororesin dispersion onto a glass cloth. This product has both mechanical strength of glass cloth and excellent characteristics of fluororesin. We also offer colored items.

Characteristics
- It has excellent non-stick property, highest slippage, heat resistance and chemical resistance.
- It has excellent electric property with outstanding dielectric characteristic and dielectric breakdown strength.

A type fabric / K type fabric

This is a high-performance composite material obtained by impregnating and sintering fluororesin dispersion onto a Para-Aramid cloth.

Characteristics
- Basic properties are similar to those of G-type.
- This product has superior mechanical strength and vapor resistance, in particular, to G type fabric.

Antistatic type fabric

This is a high-performance material added antistatic effect. You can use this for any application where you have a static electricity problem.

Characteristics
- Basic properties are similar to those of G-type.
- We can offer black or gray colored product depending on the application.

■ **Explanation of product code**

e.g.) **F G F - 4 0 0 - 3**

Abbreviation	Base material	Appearance	Resin impregnation level	Cloth structure	Total thickness
F: Fabric H: Super fabric	G: Glass cloth A /K: Aramid cloth	F: Natural B: Black C: Gray Y: Blue	3: Below the standard 4: Standard 5: Above the standard	00: Plain weave 10: Mesh	Indication ×25/1000 (mm)

Super fabric

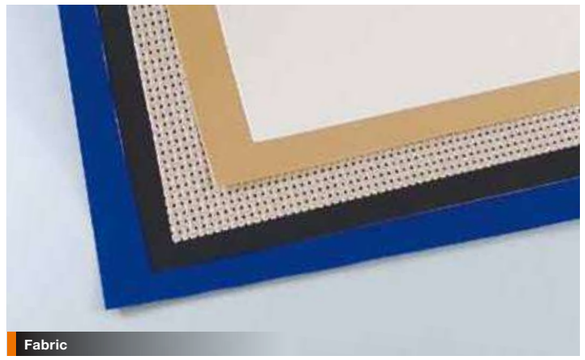
This fabric has superior anti-penetration property, durability and the highest slippage characteristic to G type fabric.

Characteristics
- Especially, it has excellent non-stick property and releasing ability.
- It has excellent anti-penetration and gas barrier properties.

MS fabric

This fabric has the enhanced release effect by forming a special resin layer on the surface of G type fabric.

Characteristics
- Especially, it has excellent non-stick property and releasing ability.



Fabric

Silicone fabric

This is a composite material made by silicone resin coating on glass or nylon based cloth. Especially, it has heat resistance and releasing ability. As it is flexible, it can be sewn.

Characteristics release sheet / heat seal releasing materials / insulating materials / airbags / heater covers / etc.

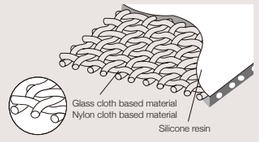
Maximum service temperature
- Glass cloth based material: +200°C
- Nylon cloth based material: +150°C

■ **Explanation of product code**

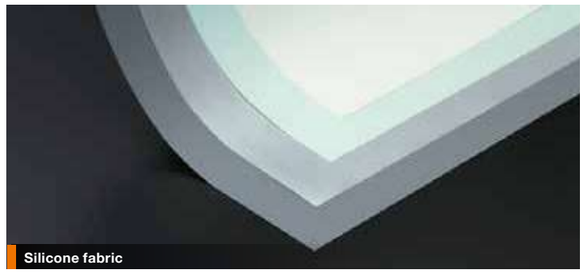
e.g.) **F G S - 6 004 W N**

Base material	Coating specification	Top coating	Base coating color
G: Glass cloth N: Nylon cloth	5: One side coating 6: Both side coating 7: One side fluororesin / One side silicone resin	N: None T: One side W: Both sides	N: Natural W: White E: Green A: Gray/Silver

■ **Structure**



For more information



Silicone fabric

Typical dimensions and properties

Grade		Product code	Total thickness (mm)	Maximum width (mm)	Standard width (mm)	Mass (g/m²)	Tensile strength (N/cm) Warp	Tensile strength (N/cm) Fill	Tear strength (N) Warp	Tear strength (N) Fill	Breakdown voltage substrate only (kV)	Volume resistivity (Ω·cm)	Surface resistivity (Ω)	FSA of Japan
G type fabric	Natural / plain	FGF-400-2	0.045	1040	300, 600, 1040	70	60	50	4	4	1.0	10^{15}	10^{14}	○
		FGF-500-2	0.050		1040	100	65	50	4	4	1.5			○
		FGF-400-3	0.075		300, 600, 1000	130	150	130	7	5	3.8			○
		FGF-500-3	0.080			165	150	130	6	4	4.9			○
		FGF-300-4	0.095		300, 600, 1040	135	240	140	20	7	–			○
		FGF-400-4	0.095		300, 600, 1000	175	290	160	13	5	4.3			○
		FGF-500-4	0.100			215	290	160	10	5	5.0			○
		FGF-300-6	0.110	1550		170	300	280	20	12	–			○
		FGF-400-6	0.115			230	280	250	9	9	4.4			○
		FGF-500-6	0.125			265	280	250	9	9	4.5			○
		FGF-300-8	0.155	1040		190	310	310	40	40	–			○
		FGF-400-8	0.160			265	330	310	20	20	3.5			○
		FGF-500-8	0.170			320	330	310	16	16	4.8			○
		FGF-400-10	0.230	2100		425	500	410	35	31	5.9			○
		FGF-500-10	0.240	2300		500	500	410	30	30	6.2			○
		FGF-400-14	0.330	1800	1000	485	710	540	80	65	5.1			○
		FGF-500-14	0.350			580	710	540	62	51	5.3			○
		FGF-400-22	0.540	2500		700	1000	690	175	140	5.6			○
		FGF-501-21	0.580	3200	2300	1125	820	650	150	95	6.0			○
		FGF-400-35	0.915	2500	2500	1220	1190	1050	220	190	7.1			○
	Natural / mesh	FGF-410-18	0.550	1550	1000	485	600	840	–	–	–	–	–	○
		FGF-410-20	0.750	2000	1020	630	1230	830						○
		FGF-410-30	0.950	3800	1070	510	480	580						○
	Antistatic (black) / plain	FGB-500-3	0.080	1040	1040	150	160	130	9	7	–	10^{8}	10^{8}	–
		FGB-500-6	0.130	1550	1040	255	300	250	12	12				–
		FGB-500-10	0.245	2300	1000	485	470	450	43	40				○
	Antistatic (black) / mesh	FGB-207-6-1	0.110	1040	1040	125	190	190	74	55	–	–	–	–
		FGB-410-30	0.950	3800	3800	520	440	550	–	–				–
	Antistatic (gray) / plain	FGC-500-10	0.240	1040	1040	500	490	410	26	25	–	10^{8}	10^{8}	–
	Colored (blue) / plain	FGY-500-10 Blue	0.245	1000	1000	485	440	340	22	20	5.2			○
A type fabric	Natural / plain	FAF-500-6	0.125	1000	1000	170	610	480	79	53	3.9	10^{15}	10^{14}	○
		FAF-500-8	0.175			240	840	700	180	170	4.5			○
		FAF-500-12	0.310			440	1800	1400	420	400	5.1			○
	Natural / mesh	FAF-410-30	1.100	2100	2100	415	1100	1200	–	–	–	–	–	○
K type fabric	Natural / plain	FKF-500-12	0.330	2000	2000	505	1330	1330	180	230	5.4	10^{15}	10^{14}	○
Super fabric	Natural / plain	HGF-500-3	0.115	1000	1000	180	190	150	12	9	4.0			○
		HGF-500-6	0.140			230	310	230	25	16	6.0			○
		HGF-500-10	0.230			410	480	430	35	17	6.6			○
MS fabric	Natural / plain	MS-053	0.080	1040	1040	165	140	110	6	5	5.1			○
		MS-056	0.125			265	280	270	11	12	4.7			○
		MS-038	0.165	1000	1000	275	320	310	23	27	3.2			○
Test method			–	–	–	–	JIS L 1096 (Cut-strip method)		JIS L 1096 (Trapezoidal method)		JIS C 2110-1	JIS K 6911		*1

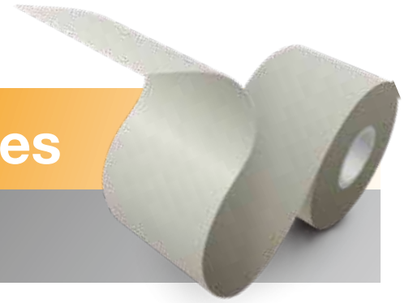
* Values shown in this table represent measurements and do not constitute guaranteed values. * Please consult us separately for the dimensions other than above.
*1 Specified Standard of Japan for food equipments and packages: General specification test for plastic equipments by the general requirement notification No.20 of Ministry of welfare 1982 (as of March 2018)

Typical dimensions and properties

Grade		Product code	Total thickness (mm)	Standard width (before cutting edge) (mm)	Mass (g/m²)	Tensile strength (N/m²) Warp	Tensile strength (N/m²) Fill	Peel strength (N) Warp	Peel strength (N) Fill	Breakdown voltage substrate only (kV)	Volume resistivity (Ω·cm)	Surface resistivity (Ω)	FSA of Japan
Both side silicon	Green / nylon plain weave	FNS-6002NE	0.33	1400 (1560)	260	630	570	340	390	3.4	10^{15}		○
	Natural / glass plain weave	FGS-6004WN	0.14	1000 (1100)	180	350	290	20	20	4.8			–
One side silicon	Silver / glass plain weave	FGS-6014NA	0.18	1200 (1280)	270	260	210	96	79	2.4	10^{14}	10^{14}	–
		FGS-5014NA	0.18	1200 (1280)	230	230	180	81	76	2.6	–		–
	Natural / G type fabric	FGS-7001	0.35	950 (1040)	600	580	490	26	25	7.0	10^{15}		○
Test method			–	–	–	ISO-13934-1		ISO 13937-2		JIS C 2110-1	JIS K 6911		*2

* Values shown in this table represent measurements and do not constitute guaranteed values. * Please consult us separately for the dimensions other than above. * It is normally offered as “before cutting edges”.
*2 Specified Standard of Japan for food equipments and packages: General specification test for rubber equipments (exclusive of feeding equipments) by the general requirement notification No.370 of Ministry of welfare 1954 (as of March 2018)

CHUKOH FLO™ Adhesive Tapes



This tape product is made and processed by applying adhesive to fabric, fluoroplastic film, silicone resin and other products manufactured by us.

Main applications

Lining of chutes and hoppers/Covering of drier rolls used for nonwoven cloth and paper/Covering for pressure-bonded heat seals/Insulating spacers/Wrapping of wiring connections/etc.

Characteristics

- The surface of fluoroplastic tape has excellent non-stick property, lowest friction and chemical resistance.
- It can be used in a wide temperature range.
- It has excellent electric insulation.
- We also manufacture adhesive tapes of silicone and polyimide.

■ UL standard certification (UL File No.E105318)

Chukoh Flo ™ Adhesive Tape AGF-100 FR, ASF-110 FR, ASF-121FR, ASF-116T FR, ASF-118A FR, API-114A FR, and ACH-5001 FR are UL standard certified.

For more information

Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Chukoh Chemical industries, LTD.

■ Typical dimensions and properties

Product code	Base material	Total thickness (mm)	Standard width (mm)	Maximum width (mm)	Length (m)	Tensile strength (N/25mm)	Elongation (%)	Adhesion 180° peel test (N/25mm)	Breakdown voltage/ substrate only (kV)	Maximum service temperature (°C)	FSA of Japan *1
ASF-110FR	PTFE film	0.08	10・13・19・25・30・38・50・100・150・200・250・300	420	10	70	180	7	10	200	○
		0.13				160		8	15		
		0.18	13・19・25・30・38・50・100・150・200・250・300			250		9	18		
		0.23				340		10	21		
ASB-110	PTFE film with antistatic treatment	0.13	13・25・38・50	450	10	70	340	8	—	200	○
ASB-121		0.08	13・25・50	350	10	70	130	6	—	200	—
ASF-115 (MX)	High-strength, low-stretch PTFE film	0.10	38・50	250	33	135	40	7	11	200	○
ASF-116T FR	Super-thin reinforced PTFE film	0.04	5・10・20	40	5	40	110	3	5	200	○
ASF-118A FR	PTFE film with special reinforcement	0.10	34・38・50	80	33	220	70	7	10	250	○
ASF-121FR	PTFE film	0.08	10・13・19・25・30・38・50	350	10	90	150	7	9	200	○
		0.13		420		160	220	9	13		
		0.18	13・19・25・30・38・50			250		10	16		
		0.23				300		10	18		
ASF-119T	Embossed PTFE film	0.35	25・50	400	10	—	—	8	12	200	○
AFA-113A	PFA film	0.10	50	300	10	50	400	6	10	200	○
AGF-100FR	PTFE + Glass cloth	0.13	10・13・19・25・30・38・50・100・150・200・250・300	560	10	360	—	9	6	200	○
		0.15				540		13	5		
		0.18		450		540		11	6		
		0.30	13・19・25・50			1220		14	6		
AGF-100A		0.13	13・19・25・30・38・50・100	560	10	360	—	10	6	250	○
		0.15	13・19・25・38・50			540		10	5		
		0.18		450		540		11	6		
		0.30				1220		12	6		
AGF-101	PTFE + Glass cloth	0.24	25・30・50・60	450	10	1000	—	13	8	200	○
AGF-102	PTFE + Glass cloth	0.13	38 Uncoated part 20 (mm) 50 Uncoated part 20 (mm)	50	10	380	—	9	—	200 (Adhesive part)	○
AGF-103T	PTFE with special treatment + Glass cloth	0.13	19・25・50	560	10	360	—	9	5	250	○
		0.18	25・50			700	—	11	7		
AGF-400-3	PTFE + Glass cloth	0.12	1000	1000	10	400	—	10	5	200	○
AGF-500-3		0.13				400		11			○
AGF-500-4		0.15				600		12			○
AGF-400-6		0.17				730		13			○
AGF-500-6		0.18				730		13			○
AGF-400-10		0.29				1200		14			○
AGF-500-10		0.30				1200		14			○
AGB-100	PTFE with antistatic treatment + Glass cloth	0.13	13・25・38・50	450	10	400	—	11	—	200	○
		0.18	13・25・50・100			730		13			
AGB-500-3	PTFE with antistatic treatment + Glass cloth	0.13	1000	1000	10	400	—	11	—	200	—
AGB-500-6		0.18				730	—	13	—		—
AGB-207-6-1	Breathable fabric (PTFE + Glass cloth)	0.11	480	480	1	450	—	1.8	—	80	—
ACH-6000	Embossed silicon + film	0.70	50・100	400	10・25	—	—	5	11	130	○
ACH-6100	Silicone + Glass cloth	0.28	25・50	350	25	790	—	3	8	200	○
API-114A FR	Polyimide film (one side)	0.06	13・19・25	450	10	125	35	6	7	250	—
		0.08			20	240		7	10		—
API-214A	Polyimide film (both sides)	0.085	25・50	450	10	125	35	5	8	250	—
ACH-5201A	Polyester film	0.055	25・50	450	33	80	50	7	6	130	—
ACH-5001FR	High-strength glass cloth	0.20	13・19・25・38・50・100	500	10	700	—	10	6	200	—
AUE-112B	Ultrahigh molecular weight polyethylene film	0.18	19・25・50	500	40	210	350	10	19	80	○
		0.30	25・50		20	400	360	10	25		
		0.55				740	390	10	34		

■ The "FR" suffix

In response to being certified for the UL standard, the "FR" suffix was added to the names of a number of products on July 1, 2009. These products remain the same as previous products as no changes have been made to their specifications, quality, or manufacturing processes.

For more detailed information

* Values shown in this table represent measurements and do not constitute guaranteed values.
* Please consult us separately for the dimensions other than above.
*1 Specified Standard of Japan for food equipments and packages:
General specification test for plastic equipments by the general requirement notification No.20 of Ministry of welfare 1982 (as of March 2018)

CHUKOH FLO™ Belts

The belt products are manufactured by using our fabrics, etc. as the base material and processing them into an endless belt shape. By applying excellent properties of fluororesin, such as heat resistance and non-adhesive characteristic, they are used in manufacturing process of a wide range of fields.
We can offer you a wide variety of our belt products according to your needs. * The continuous service temperature varies depending on the condition.

Characteristics
- The belt surface has excellent non-stick characteristics and highest slippage.
- It is also excellent in dimensional stability, non-flammability and heat resistance.
- Various joint methods are available according to the applications.
- True tracking is available to prevent the belt from meandering.

Maximum service temperature
- G type belt: +260°C
- Super belt: +260°C
- A type belt: +200°C
- R type belt: +180°C (It varies depending on the rubber base material to be selected.)

For more detailed information

For more information

G type belt

This is the standard type which is used in the most applications. Upon your request, we can manufacture antistatic or seamless type belts.

Base material Fluororesin impregnated glass cloth

Main applications Food manufacturing / plastic film manufacturing / rubber product manufacturing / ceramic product manufacturing / heat seal process / adhesive applying process / UV drying process / food thawing process / etc.


G type belt

Super belt

Anti-penetration property and non-stick property of this belt have been remarkably improved from those of conventional belts. This is especially suitable for usage where a large amount of oils and fats are used.

Base material Fluororesin impregnated glass cloth + special treatment

Main applications Conveyor belts for pizza dough making / hamburger steak, biscuit, fried dumpling baking


Super belt

A type belt / K type belt

The bending fatigue resistance and vapor resistance are superior to the G type.

Base material Fluororesin impregnated Para-Aramid cloth

Main applications Conveyor belts for steam cookers / drying belts for woven or nonwoven cloths, etc.


A type belt / K type belt

R type belt

This is a unique belt, of which rubber material surface is vulcanized, and fluororesin film or fabric is laminated thereto. Therefore, fluororesin properties have been added to the strength and flexibility of the rubber belt. You can select color and material compositions from a wide variety according to your applications.

Base material
- Fluororesin film + Rubber base material
- G type fabric + Rubber base material

Rubber base material Nitrile rubber (NBR) / Isobutylene-Isoprene rubber (IIR) / Chloroprene rubber (CR) / Acrylic rubber (ACM)

Main applications Belts for food conveyance / rubber and resin conveyance / appearance inspection / metal detector / industrial material weighing machine, etc.


R type belt

* We can also manufacture belts without using fluororesin.

CHUKOH FLO™ Copper clad laminates

The products have been made by the method that electrolytic copper foil is fused on one or both sides of laminated Fabrics or fluoroplastic films. They are used as a substrate of printed circuit board, especially for high-frequency band use and also for other applications. You can select from a wide variety of types according to the required properties.

Main applications Satellite communications / satellite broadcasting / next generation mobile phone and other mobile communication systems / non-stop Electronic Toll Collection (ETC) system and Automated Highway System (AHS) of the ITS (Intelligent Transportation System) / Wireless Local Loop (WLL) / CPU / measurement instruments / artificial satellite mounted devices, etc.

Characteristics
- This product has excellent heat resistance.
- A stable dielectric constant is ensured in a wide frequency band range.
- An extremely low dielectric tangent is ensured in a high frequency band range.

■ **UL Standard certification (UL File No.E78936)**
CHUKOH FLO™ Copper-clad laminates, CGP-500A and CGS-500A, have been certified by the UL Standard.

For more information

CGP-500 series

This is our standard grade copper-clad laminated board using fluororesin impregnated glass cloth. It has excellent peel strength, low water absorption, through-hole processability and high dimensional stability and mechanical strength.

CGA-500 series

This is a copper-clad laminated board using fluororesin impregnated glass cloth containing special inorganic filler. While maintaining excellent high frequency characteristics, this product can be applied for mass production.

CGS-500 series

This is a copper-clad laminated board using fluororesin impregnated glass cloth and fluororesin sheet. This product has improved dielectric constant and dielectric tangent compared to the CGP-500 series.

CGH-500 series

This is a copper-clad laminated board using fluororesin impregnated glass cloth containing special inorganic filler. As the dielectric constant is equivalent to the general purpose board and the dielectric tangent is lower, a Cupper clad laminated board with lower loss can be obtained in the same design.

CGN-500 series

This is a copper-clad laminated board using fluororesin impregnated glass cloth. The dielectric loss has been reduced to less than a half of that of CGP-500 series and this product shows an excellent performance with 20 GHz or over.

CGK-500 series

This is a copper-clad laminated board using fluororesin impregnated glass cloth containing special inorganic filler. Due to the high dielectric constant, smaller and lighter high-performance circuit with lower loss can be obtained.

CGD-500 series

This is a copper-clad laminated board using fluororesin impregnated glass cloth. The transmission loss is extremely low in a millimeter-wave band and ensures high peel strength when a profile free copper foil is used.

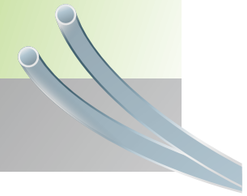
General characteristics

Test item	Unit	Test condition	CGP-500A	CGS-500A	CGN-500	CGD-500	CGA-500	CGH-500	CGK-500	Test method
Specific gravity	—	A	2.2	2.2	2.2	2.2	2.3	2.3	2.4	—
Linear expansion coefficient	ppm /°C	-60～150 °C	21	40	25	120	20	15	13	—
Peel strength*1	kN/m	A	3.0	1.0	1.0	1.20	1.5	1.5	1.5	JIS-C 6481
		200°C atmosphere	1.5	0.5	0.5	—	1.0	1.0	1.2	—
Bending strength	N /mm²	A	120	50	100	—	60	120	240	JIS-C 6481
Volume resistivity	Ω･cm	A	10^{15}	10^{15}	10^{15}	5×10^{16}	10^{15}	10^{15}	10^{13}	
		C-96 /40 /90	10^{14}	10^{14}	10^{14}	1×10^{16}	10^{14}	10^{14}	10^{13}	
Surface resistivity	Ω	A	10^{14}	10^{14}	10^{14}	6×10^{16}	10^{14}	10^{14}	10^{12}	
		C-96 /40 /90	10^{14}	10^{13}	10^{13}	4×10^{12}	10^{14}	10^{14}	10^{12}	
Insulation resistance	Ω	A	10^{13}	10^{13}	10^{14}	1×10^{15}	10^{13}	10^{13}	10^{11}	
		D-2 /100	10^{13}	10^{13}	10^{12}	1×10^{14}	10^{10}	10^{12}	10^{10}	
Relative dielectric constant	—	*2	2.6	2.15	2.3	2.28	3.0	3.45	5.0	Disk Resonator Method
Dielectric tangent	—		0.0018	0.0010	0.0008	0.0015	0.0030	0.0027	0.0040	
Water absorption	%	E-24/50+D-24/23	0.01	0.01	0.01	0.005	0.02	0.02	0.04	JIS-C 6481
Chemical resistance	—	—	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
Flammability	—	—	Incombustible	Incombustible	Incombustible	Incombustible	Incombustible	Incombustible	Incombustible	

*1 Peel strength is the measured value of 1 oz. (0.35mm) copper foil. *2 Sample thickness / measured frequency : CGP:1.6mm/12GHz, CGS:0.8mm/12GHz, CGN:0.8mm/10GHz, CGD:0.12mm/12GHz, CGA:0.54mm/12GHz, CGH:1.6mm/9GHz, CGK:1.6mm/8GHz

* Values shown in this table represent measurements and do not constitute guaranteed values.

CHUKOH FLO™ Spaghetti Tube



This is a tube product with a thin wall made by molding of fluororesin of various types.
Due to its excellent heat resistance, non-adhesive characteristics, chemical resistance, electric insulation, etc., this is used in a wide range of industrial areas.

Main applications
Chemical plants / semiconductor manufacturing equipment and devices / food manufacturing equipment and devices / laboratory instruments / automobile parts / transfer tubes for chemicals, fuels, oils and steam / insulating coatings

Maximum service temperature
- PTFE tube: +260°C
- PFA tube: +260°C
- FEP tube: +200°C
- ETFE tube: +150°C

■ **UL standard certification (UL File No.E71017)**

We can also offer UL Standard certified CHUKOH FLO™ Spaghetti Tubes (PTFE).

For more information

PTFE tube

This is a tube made by extrusion molding of fluororesin PTFE.
We also manufacture colored tubes (made-to-order).

PFA tube

This is a highly transparent tube formed by melt- extrusion of fluororesin PFA. Especially for semiconductor manufacturing equipment and devices, we manufacture high purity PFA tubes that have excellent inner surface smoothness and low ion elution.

FEP tube

This is a highly transparent tube formed by melt-extrusion of fluororesin FEP. Basically, it has almost the same characteristics as those of PFA.

* This is a made-to-order product.

ETFE tube

This is a highly transparent tube formed by melt-extrusion of fluororesin ETFE. It has excellent mechanical characteristics.

* This is a made-to-order product.

PTFE tube

PFA tube

PTFE tube outer diameter tolerance (mm)

Type A		Type B		Type C	
Outer diameter	Dimension tolerance	Outer diameter	Dimension tolerance	Outer diameter	Dimension tolerance
0.65～1.10	+0.13, -0.12	0.65～2.00	±0.05	0.65～2.00	±0.03
1.11～1.50	±0.15				
1.51～3.00	+0.18, -0.17	2.01～5.30	±0.10	2.01～3.60	±0.05
3.01～4.00	±0.30				
4.01～13.00	±0.35	5.31～10.00	±0.20	3.61～6.00	+0.08, -0.07
				6.01～8.00	±0.10
				8.01～10.00	±0.15
13.01～16.00	±0.40	10.01～15.00	±0.30	10.01～15.00	±0.25
		15.01～16.00	+0.38, -0.37	15.01～21.50	±0.35
16.01～23.00	±0.50	16.01～23.00	±0.45	21.51～23.00	±0.40
23.01～30.00	±0.70	23.01～30.00	±0.60		
30.01～40.00	±0.80	30.01～40.00	±0.70		
40.01～54.00	±1.30	40.01～54.00	±1.00		
54.01～60.00	±1.60				

* Please consult us separately for the delivery date and minimum lot.

PTFE tube wall thickness tolerance (mm)

Type A		Type B		Type C	
Wall thickness	Dimension tolerance	Wall thickness	Dimension tolerance	Wall thickness	Dimension tolerance
0.15～0.19	±0.05	0.15～0.19	±0.04	0.15～0.28	+0.03, -0.02
0.20～0.49	±0.08	0.20～0.45	±0.05	0.29～0.36	±0.03
		0.46～0.75	±0.06	0.37～0.80	±0.04
0.50～1.00	±0.11	0.76～1.20	±0.10		
1.01～1.50	±0.15			0.81～1.20	±0.05
1.51～1.75	±0.20	1.21～1.60	+0.13, -0.12	1.21～1.75	±0.10
		1.61～1.75	±0.15		
1.76～2.50	±0.25	1.76～2.50	±0.20	1.76～2.50	±0.15
2.51～3.00	±0.30	2.51～3.00	±0.25	2.51～3.00	±0.20

* Please consult us separately for the delivery date and minimum lot.

Typical dimensions and properties

* Please consult us separately for the items other than PTFE / PFA tubes.

PTFE tube TUF-100 series

Product code	Inner diameter × Outer diameter (mm)	Wall thickness (mm)	Room temperature burst pressure (MPa)	Normal pressure (room temperature) (MPa) (Burst pressure × 1/3)	Bending radius (mm)	Standard length (m)
TUF-100	0.5×1	0.25	9.8	3.3	—	10
	0.5×1.5	0.5	19.6	6.5	2	
	0.5×2	0.75	29.4	9.8	—	
	1×1.5	0.25	4.9	1.6	—	
	1×2	0.5	9.8	3.3	3	10・50
	1×3	1.0	19.6	6.5	4	10
	1.5×2.5	0.5	6.5	2.2	4	
	2×3	0.5	4.9	1.6	7	10・50
	2×4	1.0	9.8	3.3	8	
	2×5	1.5	14.7	4.9	8	10
	2.5×3.5	0.5	3.9	1.3	10	
	3×4	0.5	3.3	1.1	15	10・50
	3×5	1.0	6.5	2.2	13	
	3×6	1.5	9.8	3.3	14	10
	4×5	0.5	2.5	0.8	26	10・50
	4×6	1.0	4.9	1.6	18	10・20・30・50・100
	4×7	1.5	7.4	2.5	21	10
	5×6	0.5	2.0	0.7	41	10・50
	5×7	1.0	3.9	1.3	25	
	5×8	1.5	5.9	2.0	27	10
	6×7	0.5	1.6	0.5	60	
	6×8	1.0	3.3	1.1	32	10・20・50・100
	6×9	1.5	4.9	1.6	34	10
	7×8	0.5	1.4	0.5	82	
	7×9	1.0	2.8	0.9	40	10・50
	7×10	1.5	4.2	1.4	40	10
	8×9	0.5	1.2	0.4	108	
	8×10	1.0	2.5	0.8	49	10・50
	8×11	1.5	3.7	1.2	47	10
	9×10	0.5	1.1	0.4	138	
	9×11	1.0	2.2	0.7	59	10・50
	9×12	1.5	3.3	1.1	54	10
	10×11	0.5	1.0	0.3	171	
	10×12	1.0	2.0	0.7	69	10・50
	11×12	0.5	0.9	0.3	208	10
	11×13	1.0	1.8	0.6	81	
	12×13	0.5	0.8	0.3	249	
	12×14	1.0	1.6	0.5	93	10・50
	12×15	1.5	2.5	0.8	77	10
	13×15	1.0	1.5	0.5	106	
	13×16	1.5	2.3	0.8	84	
	14×16	1.0	1.4	0.5	120	
	15×17	1.0	1.3	0.4	135	
	15×18	1.5	2.0	0.7	100	
	16×18	1.0	1.2	0.4	151	
	16×19	1.5	1.8	0.6	108	
	17×19	1.0	1.2	0.4	167	
	18×20	1.0	1.1	0.4	184	
	18×21	1.5	1.6	0.5	125	
	19×21	1.0	1.0	0.3	202	
	19×22	1.5	1.6	0.5	134	
	20×23	1.5	1.5	0.5	142	
	25×28	1.5	1.2	0.4	189	
	1.58×3.18	0.8	9.9	3.3	—	
	4.35×6.35	1.0	4.5	1.5	20	
	6.35×9.53	1.59	4.9	1.6	—	

PTFE tube AWG size

Product code	Inner diameter × Outer diameter (mm)	Wall thickness (mm)	Bending radius (mm)	Standard length (m)
AWG-30	0.30×0.76	0.23	2	10
AWG-28	0.38×0.84			
AWG-26	0.46×0.92			
AWG-24	0.56×1.06	0.25	4	
AWG-22	0.68×1.18		5	
AWG-20	0.86×1.46	0.30	6	10・50
AWG-19	0.96×1.56			10
AWG-18	1.07×1.67			10・50
AWG-17	1.19×1.79		7	
AWG-16	1.35×1.95			
AWG-15	1.50×2.10			10
AWG-14	1.68×2.28		8	
AWG-13	1.93×2.53		12	
AWG-12	2.16×2.76		14	
AWG-11	2.41×3.01			
AWG-10	2.69×3.29		18	
AWG-9	3.00×3.72	0.36	25	
AWG-8	3.38×4.10		30	10・50
AWG-7	3.76×4.48		40	10
AWG-6	4.22×4.94		50	
AWG-5	4.72×5.44		60	
AWG-4	5.28×6.00		110	
AWG-3	5.94×6.66		180	
AWG-2	6.68×7.40		180	
AWG-1	7.47×8.19		300	
AWG-0	8.38×9.10			

* AWG is the name of American wire gauge standards.

PFA tube (millimeter-size)

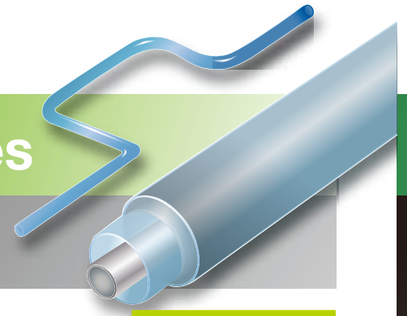
Product code	Inner diameter × Outer diameter (mm)	Wall thickness (mm)	Outer diameter tolerance (mm)	Wall thickness tolerance (mm)	Room temperature burst pressure (MPa)	Normal pressure (room temperature) (MPa) (Burst pressure × 1/3)	Bendin radius (mm)	Standard length (m)
TUF-200	2×3	0.5	±0.1	±0.05	—	—	10	—
	2×4	1.0		±0.1	—	—	14	10・30・50・100
	3×4	0.5		±0.05	4.9	1.6	20	10
	4×6	1.0		±0.1	6.9	2.3	20	10・20・30・50・100
	6×8	1.0			4.7	1.5	40	
	8×10	1.0			3.6	1.2	65	
	10×12	1.0			2.9	0.9	110	
	16×19	1.5	±0.15	±0.15	2.6	0.8	160	—
	22×25	1.5	±0.2		2.0	0.6	290	—

PFA tube (inch-size)

Product code	Inner diameter × Outer diameter (mm)	Outer diameter (inch)	Wall thickness (mm)	Outer diameter tolerance (mm)	Wall thickness tolerance (mm)	Room temperature burst pressure (MPa)	Normal pressure (room temperature) (MPa) (Burst pressure × 1/3)	Bending radius (mm)	Standard length (m)
TUF-200	2.18×3.18	1/8	0.50	±0.10	±0.05	6.4	2.1	12	—
	3.15×4.75	3/16	0.80		±0.08	6.7	2.2	20	—
	3.95×6.35	1/4	1.20		±0.12	7.9	2.6		10・30・50・100
	4.35×6.35		1.00		±0.10	7.2	2.4	20	10・20・50・100
	6.35×9.53	3/8	1.59		±0.16	6.7	2.2	30	10・30・50・100
	7.53×9.53		1.00		±0.10	4.3	1.4	60	10・30・50
	9.53×12.7	1/2	1.59			4.6	1.5	60	10・20・30・50・100
	15.87×19.05	3/4	1.59	±0.15	±0.16	2.8	0.9	160	10・20・100
	22.2×25.4	1	1.60	±0.20		2	0.6	290	10・30

* Values shown in this table represent measurements and do not constitute guaranteed values.
* The burst pressure value is a value at room temperature (25 °C). It is approximately 1/2 at 100 °C and approximately 1/4 at 200 °C.
* Please consult us separately for UL Standard certified PTFE tubes.
* The tolerance of the standard TUF-100 series is that of the Type A size shown in the left table.

CHUKOH FLO™ Processed Tubes



We perform processing of fluororesin tubes by our original molding method.
You can select from various dimensions and standards.

Main applications Semiconductor manufacturing equipment and devices / optical equipment / chemical-resistant piping for electric and electronic applications, and laboratory applications

For more information

Heat shrinkable tube

Snakle hose

Heat shrinkable tube (PTFE / PFA / FEP)

The characteristics of fluororesin can be given to the surface of the material to be coated (PTFE / PFA / FEP) by thermal shrinkage.

Heat shrinkable tube (PTFE / PFA / FEP)

Processed tubes

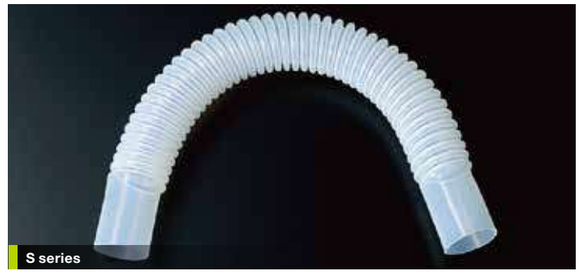
Flared processing, three-dimensional bend processing and other processing according to your needs.

Processed tubes

Snakle hose: S series

This is a PTFE hose molded in a spiral shape.
Due to its flexibility, the product has less liquid accumulation.

* We offer PFA hose I series molded into a continuous independent bellow shape.



S series

Typical dimensions for PTFE heat shrinkable tube TKF series

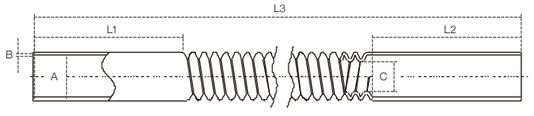
Product code	Pre-shrinkage inner diameter (mm)	After shrinkage diameter (mm)	Wall thickness (mm)	Cut length (m)	Standard items
TKF-100-2	2.0	1.2	0.5	1	○
TKF-100-4	4.0	2.2			○
TKF-100-6	6.0	3.2			○
TKF-100-8	8.0	4.2			○
TKF-100-10	10.0	5.2			○
TKF-100-12	12.0	6.2			○
TKF-100-14	14.0	7.2			○
TKF-100-16	16.0	8.2			○
TKF-100-18	18.0	9.2			○
TKF-100-20	20.0	10.3			○
TKF-100-22	22.0	11.3			○
TKF-100-24	24.0	12.3			—
TKF-100-26	26.0	13.3			—
TKF-100-28	28.0	14.3			—

* After shrinkage inner diameter is not a guaranteed value, as the value is measured at 330 °C after heating in an electric furnace.
* Please consult us separately for the products with wall thickness / cut length other than those described in the table above.
* The wall thickness is measured after shrinkage.

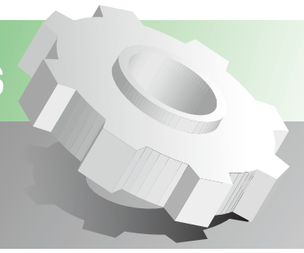
Snakle hose S series (PTFE type)

Nominal dimensions (mm)	Processing range for inner diameter of straight part A (mm)	Wall thickness (mm)	Effective inner diameter C (mm)	Bending radius (mm)	Burst pressure (MPa)	Length L1, L2 (mm)	Overall length L3 (m)
4×7	4.5～6.0	0.5	4.0	10	1.5	15～30	10
5×8.5	5.5～8.0		5.0	14	1.1		
7×11	7.5～10.0		7.0	16	0.8	15～35	
9×13	9.5～12.0		9.0	18	0.6	15～40	
11×16.5	11.5～14.5		11.0	20	0.5		

* The effective inner diameter is a reference value.
* As the burst pressure and bending radius measurements were obtained at room temperature, these values are not standard values.
* Please consult us separately for the dimensions other than above.



CHUKOH FLO™ Injection molding products



In addition to fluororesin, we perform injection molding of high-performance engineering plastics with excellent characteristics. Also, since we perform in-house production of molds, we can make quick response. There are a wide range of applications such as semiconductor, automobile, laboratory apparatus and OA equipment applications.

An example of materials we actually use
Fluororesin: PFA/PVDF/ETFE
High-performance resin: PEEK/PSU/PPS/4-6PA/PEI
General-purpose resin: PP/PE/PC/PVC

Main applications Conveyor equipment for thin plate items / driving gears for rotary shaft, etc.

For more information

Injection molding products

Plastic conveyor rollers

Plastic conveyor rollers

Since rollers can be jointed each other, original conveyor parts with number of rollers arranged can be manufactured. Please consult us separately for sizes, materials and other details.

Plastic roller

Spur gear

Helical gear

Injection molding products

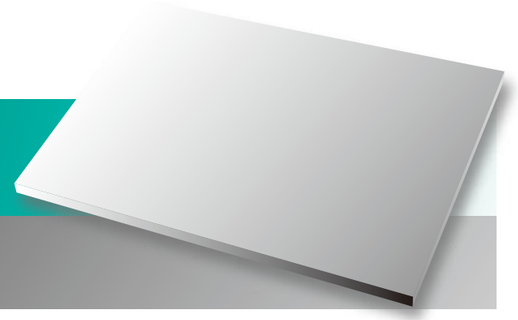
It is an injection molding product of high-performance plastics such as fluororesin.
As an extremely high clean level is required for semiconductor related products, all the processes from molding to inspection and packing are controlled in the clean room.

Laboratory items

Fitting

Manufacturing in the clean room

PTFE processing materials and Films



PTFE is processed into sheets, rods, pipes and films.
You can select from various dimensions and standards.

Main applications	Semiconductor manufacturing equipment and devices / optical equipment / release sheets / chemical-resistant piping for electric and electronic applications, and laboratory applications.
Maximum service temperature	● +260°C

■ UL standard certification
(UL File No.E496281)

CHUKOH FLO™ Skived tape MSF-100: The tape with the thickness between 0.05 mm and 1.00 mm is a UL Standard certified product.

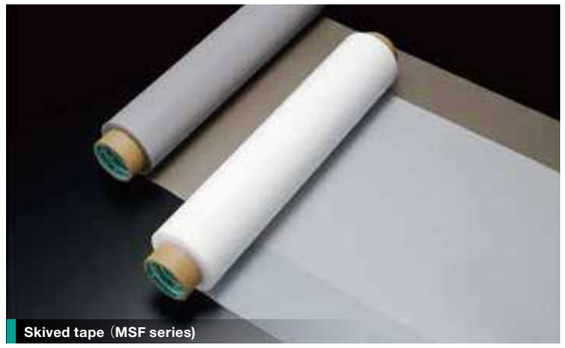
For more information

Skived tape

Processing material

Skived tape MSF-100

This product is made by skiving and processing PTFE into a thin film. There are a wide variety of width and thickness. It is used for releasing at ACF pressure bonding, electric insulation, and sliding applications in OA equipment.



Skived tape（MSF series)

Typical dimensions for skived tape MSF-100

Thickness (mm)		Standard width (mm)	Tolerance of width (mm)		Length (m)
Dimension	Tolerance		300 or more Less than 360	360 or more 600 or less	
0.05	±0.01	50・100・300・500	+15 0	+20 0	10
0.08	±0.01	300			
0.10	±0.01	50・100・300・500			
0.13	±0.02	300			
0.20	±0.02	50・100・300・500			
0.30	±0.03	300・500			
0.40	±0.04	300			
0.50	±0.05	50・100・300・500			
0.80	±0.08	300・500			
1.00	±0.10	300			

* We can also manufacture products with the widths other than above (～ 1,000mm).

Skived tape MSF-100 one side (E)

This is the PTFE skived film that allows bonding with other materials by performing surface treatment on one side of MSF-100.

* Please consult us separately for dimensions and stock condition.

Skived tape MSF-200

This is the PTFE skived film that has improved strength and reduced flare and warpage during the processing by performing special treatment. * Please consult us separately for dimensions and stock condition.

Skived tape MSE-100

This is the PTFE skived film that has an embossed surface.
Due to its fine unevenness, the release characteristics have been improved compared to that of MSF-100. (Compared within our products) * Please consult us separately for dimensions and stock condition.

PTFE sheet

This is the PTFE material that is made by compression molding.
We offer sheets with the thickness from 1 to 55 mm.

PTFE sheet

Typical dimensions for PTFE sheets

Thickness (mm)	Size (mm)	Tolerance	
		Thickness (mm)	Size (mm)
1	1000×1000	+0.2, -0.1	+10, 0
1.5			
2			
3		+0.3, -0.15	
4			
5		+0.4, -0.2	
6			
7		+1.2, 0	
8			
10		+1.5, 0	
12			
15		+1.8, 0	
20		+2.7, 0	
25			
30			

* We have stocks for the dimensions described above.
* The products with the thickness between 1 mm and 6 mm are skived products.
* Products with other thicknesses (up to 60 mm) and sizes (300 × 300 mm, 500 × 500 mm) can also be manufactured. Please consult us for more details of specifications.

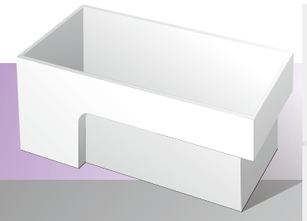
PTFE extrusion rod / PTFE extrusion pipe

This is the PTFE rod that is made by extruding and molding PTFE.
We can also manufacture pipe-shaped products.

PTFE pipe

PTFE extrusion rod

CHUKOH FLO™ PTFE special processing products



We can also offer various PTFE special processing products mainly by manufacturing of tanks with the PTFE properties.
We respond to your needs with our expertise technology.

Main applications	Semiconductor applications / washing tanks (silicon wafer, etc.) / temperature control washing tanks / chemical storage / mechanical processing parts such as packing, gasket and bearing

For more information

PTFE integrated tank

This is the PTFE tank that is manufactured by the isostatic molding method.
As it is made by integrated and seamless molding, there is no worry about leakage, etc.
As we also manufacture overflow tanks, single tanks and round tanks, you can select the size, shape and processing method according to your purpose.

Characteristics
- Seamless molding can be performed.
- The cost of molds is not required and cost performance is ensured.
- Various sizes and shapes are available.

PTFE integrated tank

Table of dimensions of overflow tanks

External dimension (mm)			Internal dimension (mm)			Overflow	Internal tank capacity
W	L	H	W1	L1	H1	OF	(L)
270	310	250	200	200	235	55	9.0
300	377	265	220	220	245	95	11.4
310	420	280	240	230	260	130	13.8
270	500	235	200	340	220	100	14.3
320	390	295	240	250	275	70	15.9
350	440	310	250	270	288	80	18.8
295	550	260	205	410	240	75	19.3
330	555	280	240	410	260	75	24.6
340	592	278	250	452	263	75	28.6
420	520	310	310	340	290	95	29.5
325	610	320	255	430	300	125	31.8
380	485	365	290	350	345	75	34.0
310	665	390	220	480	365	90	37.5
330	590	375	270	440	355	90	41.0
390	705	350	280	570	325	50	50.3
530	480	460	420	320	440	90	57.8
415	710	370	315	585	345	55	61.7
430	670	400	350	520	380	80	67.3
548	798	580	416	628	565	66	145.0

* Please consult us separately for the dimensions other than above.

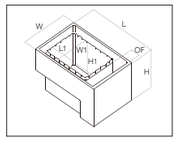
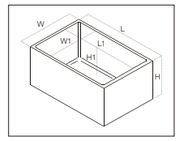


Table of dimensions of single tank

External dimension (mm)			Internal dimension (mm)			Side thickness	Bottom thickness	Capacity
W	L	H	W1	L1	H1	mm	mm	(L)
130	130	205	100	100	190	15	15	1.9
150	250	250	130	230	235	10	15	7.0
170	250	325	140	220	310	15	15	9.5
240	255	260	210	225	245	15	15	11.6
150	380	365	120	350	350	15	15	14.7
300	400	190	270	370	175	15	15	17.5
330	330	235	300	300	220	15	15	19.8
270	440	280	240	410	265	15	15	26.1
310	330	370	280	300	355	15	15	29.8
200	480	440	170	450	425	15	15	32.5
420	520	210	390	490	190	15	20	36.3
320	380	420	290	350	400	15	20	40.6
540	540	200	510	510	185	15	15	48.1
340	590	340	310	560	320	15	20	55.6
340	510	480	310	480	465	15	15	69.2
530	560	355	500	530	340	15	15	85.0
430	675	425	390	635	405	20	20	100.3
460	600	540	420	560	520	20	20	122.3
730	730	665	690	690	645	20	20	307.1

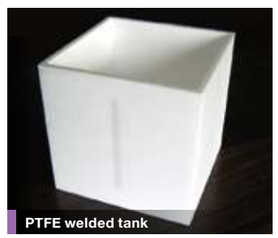
* Please consult us separately for the dimensions other than above.



PTFE welded tank

Custom-mode product to be manufactured by our experienced welders to the satisfaction of the customer. The maximum size we delivered is 2.0 m × 2.5 m × 0.2 m.

Characteristics
- We manufacture in a clean environment from welding to cleansing and packaging.
- With our original jigs and advanced technology, welding can be implemented even on a section where it is usually difficult to perform welding.
- Welders who obtain in-house qualification have advanced technique and perform welding.



PTFE welded tank

Machined products

Materials cut and processed into various shapes according to user specifications. They are used in various fields as parts having heat resistance, chemical resistance and non-stick characteristics.

Machined products

C-Porous™ PTFE porous products

This is the product that is made by giving a porous structure to PTFE with our original technology. As shown by the meaning of porous that it has “many” “pores”, it has both air permeability and water repellency while maintaining characteristics of fluororesin.

* C-Porous™ (C-Porous) is a collective designation of our fluororesin porous

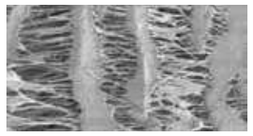
Main applications

- PTFE porous films: filters / waterproof breathable membrane / electric wire coatings / cable protection / heat insulation
- PTFE porous tubes: filters / oxygen sensors / bubbling / degassing / inlet-exhaust equipment
- PTFE thick porous tubes: chemical protection / heat insulation / piping protection

For more information

PTFE porous film

This porous film constitutes of 100% PTFE.
While it keeps air permeability due to the pores, it maintains waterproof and water repellent performance.
Combined products with nonwoven or glass cloth and punching processed products are also available.



Enlarged (×1,000) photo of porous

PTFE porous film

Product code	Shape	Size	Length (m)	Porosity (%)	Air permeability (sec/100cm³)	Waterproofness (kPa)
SEF-010	Film	0.1×100 (Thickness × Width)	10～	65	18	120
SEF-010HB		0.2×100 (Thickness × Width)		76	13	80

PTFE porous tube

This porous tube constitutes of 100% PTFE.
It has high water repellency and air permeability, and it can be changed by adjusting the porosity. We can also manufacture rod-shaped products and multi-lumen products.

PTFE porous tube

Product code	Shape	Size	Length (m)	Porosity (%)	Air permeability (sec/100cm³)	Waterproofness (kPa)
TEF-100	Tube	Φ1×Φ2	10	50	100	80
		Φ2×Φ3			60	
		Φ3×Φ4			130	

* Values shown in this table represent measurements and do not constitute guaranteed values. * Air permeability is measured by a JIS P8117 compliant Gurley air permeability tester.
* Oil-repellent type and nonwoven cloth composite type are also available. * We also offer some sizes other than those described above. Please consult us separately.

PTFE thick porous tube

This product is a thick porous tube.
By giving a porous structure to PTFE by expansion, it has excellent flexibility and heat insulating characteristics. We can manufacture in a complex shape and split processing is also available.

PTFE thick porous tube

Product code	Nominal dimensions	Inner diameter mm (Tolerance)	Outer diameter (mm)	Wall thickness (mm)	Length (mm)	Porosity (%)
TEF-100	Φ10.0×Φ17.0	10.0 (-0.7/+1.0)	17	3.5 (-0.5/+0.4)	500 (0/+100)	80 (±10)
	Φ13.7×Φ20.7	13.7 (-0.7/+1.0)	20.7			
	Φ20.0×Φ27.0	20.0 (-0.7/+1.0)	27			
	Φ26.4×Φ33.4	26.4 (-0.7/+1.0)	33.4			

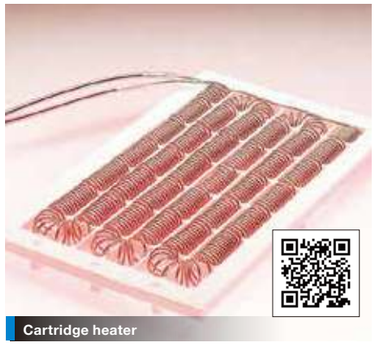
* Values shown in this table represent measurements and do not constitute guaranteed values.

Others

**We manufacture high-performance resin products including fluororesin for cleaning jigs, linings, coating, etc.
We offer products with the function / shape according to your needs.**

Bubbling sheet

This is a bubbling unit that is made by molding fluororesin porous material. The air generated from micron-order fine pores ensures effective stirring of chemicals and cleansing.

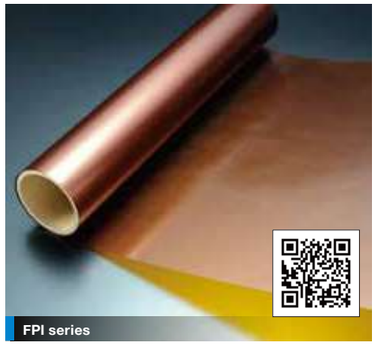


Cartridge heater

This is a cartridge heater made of 100% fluororesin except for the heating element. It is used for heating of chemicals. We can design the size, shape and heater capacity according to your needs.

Seal tape (JIS compliant products)

This is an unsintered PTFE tape that is used for sealing of various kinds of piping screws. As it is soft and self-adhesive, sealing work can be easily done. As it does not deteriorate in quality for a long period of time, removing work is also easy.



FPI series

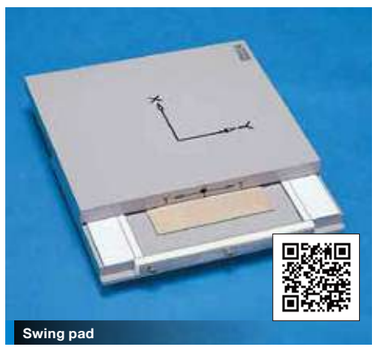
This is the product that is made by coating fluororesin onto a polyimide film. While maintaining dimensional stability equivalent to that of glass cloth coated products, it also ensures surface smoothness of film.

Braided hose

This is a pressure-resistant flexible hose made by braiding stainless wire to a PTFE hose. We can also manufacture with easy-to-mount metal fittings on the edge.

G type laminate

G type fabrics are laminated in many layers and shaped into various configurations. It has excellent electrical and mechanical characteristics and it is also completely self-lubricating.

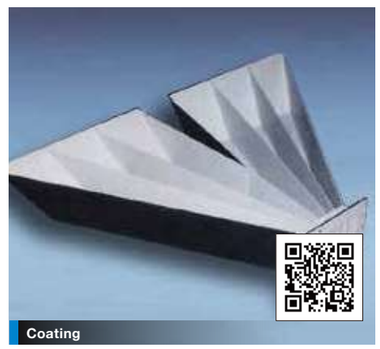


Swing pad

It is a bearing pad for civil engineering and construction with fabric, fluororesin sheet, etc. as the basic material. It has an excellent self-lubrication and low friction coefficient as a low-speed and high-load bearing pad.

Lining

This is a lining with excellent corrosion resistance. Various types of resin and production methods are available according to applications, including linings for pipes and large-sized tanks.



Coating

This is designed to provide characteristics of fluororesin on the base material surface by coating the fluororesin. We select and process the resin according to the usage.

General characteristics of fluororesin

General characteristics

	Characteristics	Unit	Test method			PTFE	PFA	FEP	PCTFE	ETFE	ECTFE	PVDF
Physical	Melting point	°C	JIS K6935	Conforming to ISO 12086	ASTM D4591	327	310	260	220	270	245	151-178
	Density	g/cm³	K7112	1183	D792	2.13-2.20	2.12-2.17	2.15-2.17	2.10-2.20	1.73-1.74	1.68-1.69	1.75-1.78
Mechanical	Tensile strength	MPa	K7162	527	D638	20-35	25-35	20-30	31-41	38-42	41-48	30-70
	Elongation	%	Same as above	Same as above	Same as above	200-400	300-350	250-330	80-250	300-400	200-300	20-370
	Compression strength	MPa (10% deformation)	K7181	604	D695	10-15	15-20	14-19	31-51	40-50	35-40	32-74
	Izod impact strength	J/m	K7110	180	D256	150-160	Not broken	Not broken	135-145	Not broken	Not broken	160-375
	Rockwell hardness	(R scale)	K7202	2039	D785	R20	R50	R50	R80	R50	R50	R93-116
	Shore hardness	(D scale)	K7215	2039	D2240	D50-55	D62-66	D60-65	D75-80	D67-78	D53-57	D64-79
	Flexural modulus	GPa	K7171	178	D790	0.53-0.58	0.54-0.64	0.55-0.67	1.25-1.79	0.90-1.20	0.66-0.69	0.60-1.99
	Tensile modulus	GPa	K7162	527	D638	0.40-0.60	0.31-0.35	0.32-0.36	1.03-2.10	0.70-0.85	1.55-1.70	0.37-2.58
	Coefficient of kinetic friction	(0.69MPa, 3m/min)	K6935		D1894	0.1	0.2	0.3	0.4	0.4	0.4	0.4
Thermal	Thermal conductivity	W/m·K	A1412	8302	C177	0.23	0.19	0.2	0.22	0.24	0.16	0.17
	Specific heat	10^3J/kg·K	K7123			1.0	1.0	1.2	0.9	2.0	2.0	1.2
	Linear expansion coefficient	10^{-5}/°C			D696	10	12	9	6	6	8	16
	Ball pressure temperature	°C	Conforming to the "Report on Registration System for the Pressure of Thermoplastic Resin Balls Used for Electric Appliances"			180	230	170	170	185	180	150
	Thermal distortion temperature	°C	K7191	75	D648							
		(1.81MPa)				55	47	50	90	74	77	100
		(0.45MPa)				120	74	72	126	104	116	156
	Maximum service temperature (continuous)	°C	K7226	2578		260	260	200	120	150	150	150
Electrical	Volume resistivity	Ω·cm (50%RH, 23°C)	K6911	IEC60093	D257	> 10^{18}	> 10^{18}	> 10^{18}	> 10^{18}	> 10^{17}	> 10^{15}	> 10^{15}
	Dielectric strength (at short-time)	MV/m (Thickness: 3.2 mm)	K6935	IEC60243	D149	19	20	22	22	16	20	11
	Relative dielectric constant	(60Hz)	K6935	IEC60250	D150	2.1	2.1	2.1	2.6	2.6	2.6	8.4
		(10^3Hz)				2.1	2.1	2.1	2.6	2.6	2.6	7.7
		(10^6Hz)				2.1	2.1	2.1	2.6	2.6	2.6	6.4
	Dielectric tangent	(60Hz)	K6935	IEC60250	D150	0.0002	0.0002	0.0002	0.0012	0.0006	0.0005	0.049
		(10^3Hz)				0.0002	0.0002	0.0002	0.025	0.0008	0.0015	0.018
		(10^6Hz)				0.0002	0.0003	0.0005	0.020	0.005	0.015	0.017
	ARC resistance	s			D495	> 300	> 300	> 300	> 300	75	18	60
Chemical resistance, and other properties	Water absorption	%(24h)	K7209	62	D570	0.01	0.01	0.01	0.01	0.03	0.01	0.03
	Combustibility	(Thickness: 3.2 mm)	K7140	1210	UL-94	V-0	V-0	V-0	V-0	V-0	V-0	V-0
	Limiting oxygen index		K6935	4589	D2863	> 95	> 95	> 95	> 95	32	60	43
	Influence of direct sunlight					N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: Parenthesized values represent test conditions
* The table above is extracted from "Fluoroplastics Handbook" by the Japan Fluoropolymers Industry Association.

Chemical resistance

Chemical resistance table

Chemical \ Resin	Concentration (%)	PTFE		PFA		FEP		ETFE		PVDF	
		Ordinary temperature	100°C	Ordinary temperature	100°C	Ordinary temperature	100°C	Ordinary temperature	100°C	Ordinary temperature	100°C
Acetone	100	◎	◎	◎	◎	◎	◎	◎	◎	×	—
Sulfurous acid gas	100	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Acetaldehyde	100	○	○	◎	◎	◎	◎	◎	◎	○	—
Ammonia water	28	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Ethanol	100	◎	◎	◎	◎	◎	◎	◎	◎	◎	—
Chlorine	—	○	○	◎	○	◎	○	◎	×	◎	×
Ammonium chloride	Saturation	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Calcium chloride	Saturation	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Hydrochloric acid	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	35	◎	◎	◎	◎	◎	◎	◎	◎	◎	○
Ozone	—	◎	◎	◎	◎	◎	◎	—	—	—	—
Sodium hydroxide	5	◎	◎	◎	◎	◎	◎	◎	◎	◎	○
	15	◎	◎	◎	◎	◎	◎	◎	◎	○	×
	30	◎	◎	◎	◎	◎	◎	◎	◎	—	—
	50	◎	◎	◎	◎	◎	◎	◎	◎	×	×
Formic acid	20	◎	◎	◎	◎	◎	◎	◎	○	◎	○
	60	◎	◎	◎	◎	◎	◎	◎	○	◎	×
Xylene	100	◎	◎	◎	◎	◎	◎	◎	○	◎	○
Glycerin	100	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Chloroform	100	○	○	◎	○	◎	○	◎	○	◎	—
Chromic acid	20	◎	◎	◎	◎	◎	◎	◎	◎	◎	○
	50	◎	◎	◎	◎	◎	◎	◎	○	◎	×
Acetic acid	50	◎	◎	◎	◎	◎	◎	◎	○	◎	○
	75	◎	◎	◎	○	◎	◎	◎	○	◎	×
Ethyl acetate	100	◎	◎	◎	◎	◎	◎	◎	◎	◎	—
Hypochlorous acid	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	50	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Oxalic acid	100	◎	◎	◎	◎	◎	◎	◎	○	◎	×
Bromine	—	◎	◎	◎	◎	◎	◎	◎	○	◎	×
Nitric acid	5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	20	◎	◎	◎	◎	◎	◎	◎	○	◎	○
	60	◎	◎	◎	○	◎	○	◎	○	◎	—
Aluminum nitrate	Saturation	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Ammonium nitrate	Saturation	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Sodium nitrate	Saturation	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Carbon tetrachloride	100	○	○	◎	◎	◎	◎	◎	◎	◎	—
Calcium hydroxide	30	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Ammonium carbonate	50	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Sodium carbonate	30	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Toluene	100	○	○	◎	◎	◎	◎	◎	○	◎	○
Trichloroethylene	100	◎	◎	◎	○	◎	○	◎	○	◎	○
Nitrobenzene	100	◎	◎	◎	○	◎	○	◎	○	○	×
Carbon disulfide	100	◎	◎	◎	◎	◎	◎	◎	◎	◎	—
Lactic acid	100	◎	◎	◎	◎	◎	◎	◎	○	◎	×
Benzene	100	◎	◎	◎	◎	◎	◎	◎	○	◎	○
Methanol	100	◎	◎	◎	◎	◎	◎	◎	◎	◎	—
Methyl ethyl ketone	100	◎	◎	◎	◎	◎	◎	◎	◎	○	—
Sulfuric acid	10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	50	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	90	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Ammonium sulfate	Saturation	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Phosphoric acid	50	◎	◎	◎	◎	◎	◎	◎	○	◎	◎
	80	◎	◎	◎	◎	◎	◎	◎	○	◎	◎

◎…Excellent ○…Can be used depending on the condition ×…Not available —…No data

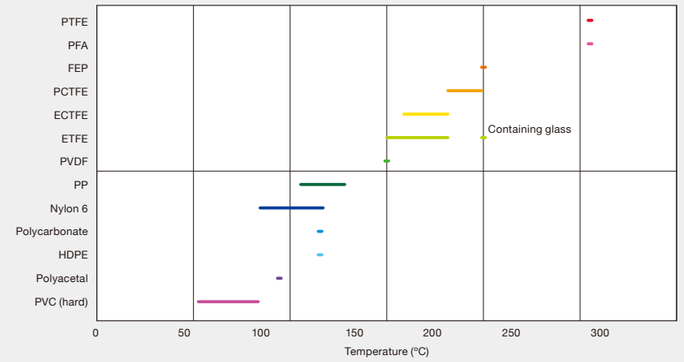
- Reference : Dictionary of Polymer technology
- Although the chemicals listed in the table are chemically inactive (it is clear that it does not cause any chemical reaction), it may cause a problem when it is subject to physical action such as permeation due to temperature, pressure, or chemical concentration.
- As the descriptions in the table are used only for "reference" and do not "guarantee" the product, please perform sufficient tests in the same environment and ensure that no problem is caused prior to the use.

Comparison of properties between Fluoroplastics and other plastics

Comparison of Properties between Fluoroplastics and Other Plastics*1

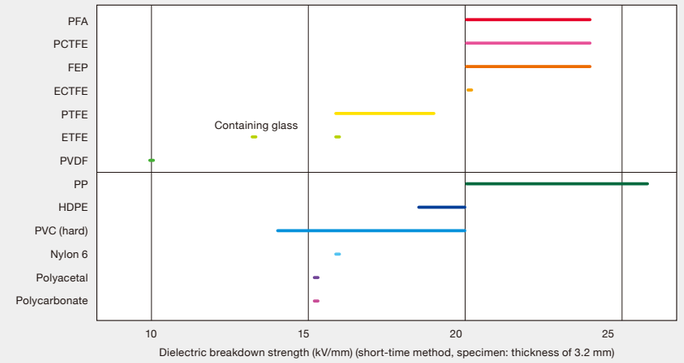
Continuous Service Temperature (not loaded)

- Fluoroplastics are in the top group among plastics on this property.
- In particular PTFE and PFA are the highest at 260 °C.



Dielectric breakdown strength

- As the values are generally high, it is an excellent insulating material.
- PVDF has a slightly low value.
- Addition of other substances makes the value lower. (e.g.: glass)



Surface wettability of various plastics*1

Name	Water contact angle (degree)	Adhesion energy (N/m)
FEP	115	0.042
PTFE	114	0.043
PFA	The same level as FEP and PTFE	
Silicone resin	90～110	0.048～0.073
Paraffin	105～106	0.053～0.054
Polyethylene	88	0.075
Polyamide	77	0.098
Phenol resin	60	0.109

Friction coefficient data

Test piece (material)	Measurement result	
	Static friction coefficient (μS)	Dynamic friction coefficient (μD)
PTFE plate	0.11	0.09
G fabric	0.15	0.14
A fabric	0.15	0.13
Polyurethane	0.82	0.70
PVC plate	0.31	0.33
Nylon plate	0.17	0.15
Polyacetal plate	0.20	0.16
Silicone rubber	7.96	7.89
SS steel plate	0.24	0.20

*1 The data described above are partially cited from “Handbook on Fluoropolymers” of the Japan Fluoropolymers Industry Association.”

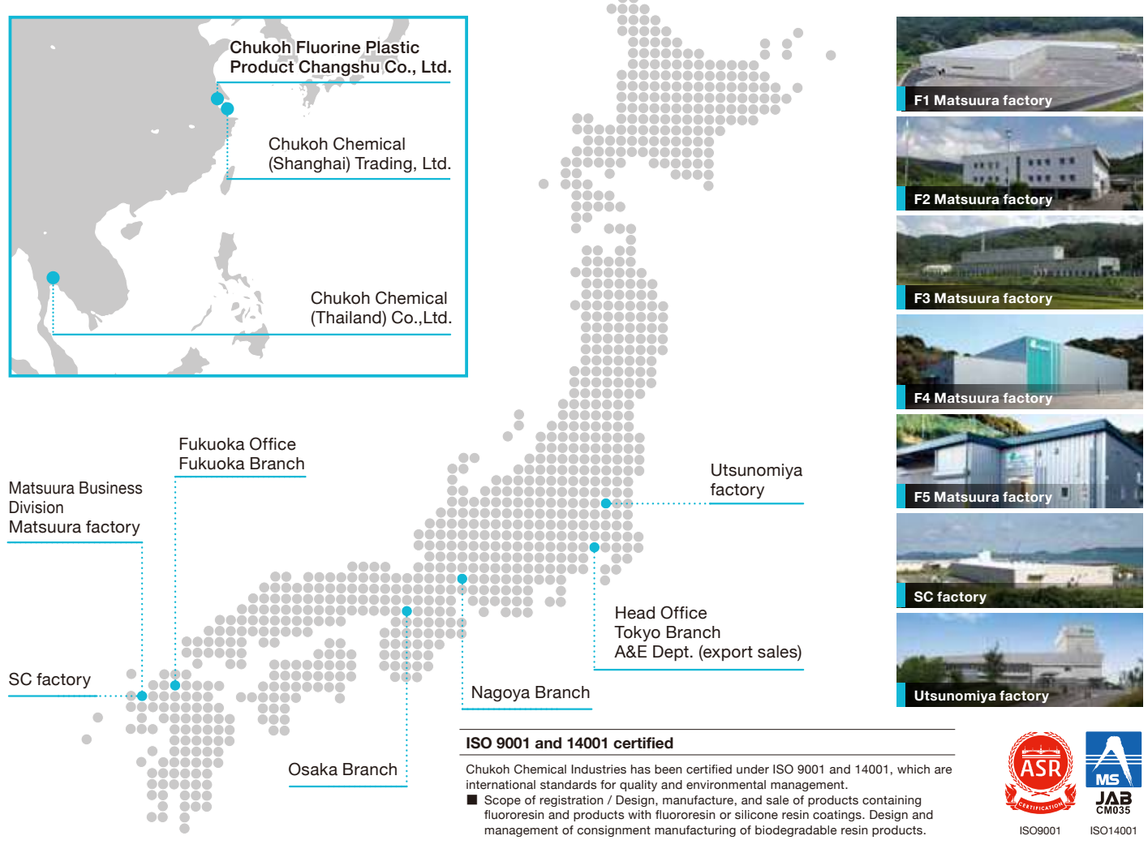
* The numerical values were measured by us in accordance with the JIS K7125 and they are not a guaranteed value.

HISTORY and DEVELOPMENT

- **1963** Established Chukoh Fibers Company Ltd. on March 29 and changed the company name to Dodge Fibers Company of Japan on the same day.
- **1964** Constructed a plant in Matsuura City, Nagasaki Prefecture and started full-scale production of fluororesin products.
- **1977** Changed the company mane to Chukoh Chemical Industries Ltd.
- **1985** Launched the development of bio-degradable plastic products (Amity™).
- **1991** Completed the Matsuura factory No.2 for exclusive production of fabrics (F3 Matsuura factory)
- **1998** Completed the Utsunomiya factory in Kanuma City, Tochigi Prefecture (for tubes and extrusion and molding products).
- **2004** Established SC (Specialty Coating) Division and started the automobile side-curtain airbag product business.
- **2007** Completed the SC factory.
  Achieved the sales exceeding 10 billion yen for the first time.
- **2008** Established Chukoh Membrane Corporation (for selling TiO2 coated fluoropolymer membrane products).
- **2009** Established Chukoh Belt Corporation.
  (For selling, installation, maintenance of fluoropolymer belts)
- **2010** Completed a plant for the exclusive production of adhesive tapes (F4 Matsuura factory).
- **2011** Established Chukoh Chemical (Shanghai) Trading, Ltd. (our subsidiary company for sales in China).
  Established Chukoh Chemical Fluorine Plastic Product Changshu Co., Ltd.
  (our subsidiary company for manufacturing in China).
  Established a representative office in Bangkok, Thailand.
- **2014** Established Chukoh Chemical (Thailand) Co., Ltd.
  (our subsidiary company for sales in Thailand and ASEAN)
  Received Grand Prize of the 48th Good Company Award.
- **2015** Received 2015 Regional Vitalization Company Award
  (Award by Minister for Internal Affairs and Communications).
- **2018** Scheduled to complete F1 Matsuura factory.

More...

OFFICES



ISO 9001 and 14001 certified

Chukoh Chemical Industries has been certified under ISO 9001 and 14001, which are international standards for quality and environmental management.

■ Scope of registration / Design, manufacture, and sale of products containing fluororesin and products with fluororesin or silicone resin coatings. Design and management of consignment manufacturing of biodegradable resin products.

ISO9001 ISO14001