



YOUR PARTNER FOR FLUOROPOLYMER PRODUCTS



Since more than 40 years Optinova Group is manufacturing tubes and profiles from fluoropolymers such as PTFE, FEP, PFA, PVdF, ETFE and E-CTFE for industrial and medical applications as well as Thermoplastic Polymers and Elastomers such as PU, TPEA, PE, PA and PP, mainly for medical applications.

Our factories in Finland, Thailand and the US are known for excellent and consistent quality of our products. We are specialized in both the production of very small dimensions up to larger industrial sizes based on our customer requirements.

Look and experience our commitment to high quality products and superior service for yourself!

PRODUCTION

QUALITY AND CONSISTENCY

The Optinova Group has manufactured fluoropolymer tubes and profiles since 1971 and has production sites in Åland (Finland), Thailand and the US. Our distribution companies located in Uppsala, Sweden, Danbury, USA (CT), Bangkok, Shanghai, Mumbai and Germany have a number of standard fluoropolymer tubes in stock. In other countries, Optinova collaborates with several principal agents, which makes us a world-wide supplier. Our products conform to FDA as well as other food grade standards, like EU10/2011, GB4806.6 and Mercosur GMC 56-92 and meet the requirements of RoHS regulations, as well as REACH directives. If requested, products with UL224 approval and products made from raw materials with USP Class VI approval can be supplied. Optinova is certified according to ISO 9001, ISO 14001, ISO 13485. Tubes for medical applications are manufactured in clean rooms according to ISO 14644-1 Class 7 and 8. Furthermore, Optinova Finland is also approved according to NSF/ANSI standard 51 for the production of tubes from PTFE, PFA and FEP for use with food equipment materials.



PRODUCTS PORTFOLIO

TOP PRODUCTS FOR SPECIALTY APPLICATIONS

Optinova only manufactures products from high-quality fluoropolymers such as PTFE, FEP, PFA, PVdF, ETFE, E-CTFE. These fluoropolymers are generally associated with trademarks such as Teflon®, Tefzel®, Kynar®, Solef®, Neoflon®, Fluon®, etc.

Prominent properties of these fluoropolymers are:

- Excellent chemical resistance
- Temperature resistance from -200 °C to +260 °C
- Corrosion resistance
- Low friction coefficient
- Electrical insulating properties
- No water absorption
- UV resistance
- Non-flammable (UL94 V-0)
- High purity (no contaminating aromatic solvents)
- Physiologically non-hazardous, non-toxic

Our products are designed to conform to strict environmental requirements while offering the highest possible degree of purity and stability.



YOUR REQUEST IS OUR CHALLENGE

Optinova has a wide range of products: From miniature tubes starting with an inside diameter of 0.10 mm to industrial tubes with an inside diameter of 115 mm. Wall thicknesses are available from 0.05 mm to 5 mm.

Of course, we also supply AWG sizes according to ASTM and UL. The standard tube is natural-colored. If requested, we also supply colored, bicolored and striped tubes. Our customers can choose from 10 colors. Ring markings are available if required. We can print your specified text on the tubes produced for you with both ink jet and laser technology depending on tubing material.

Our product range includes tube assembly, multi-lumen tubing, co-extruded tubing, molded tubing and tube sections, PTFE heat shrinkable tubing (2:1 and 4:1 shrink ratio) and PFA and FEP heat shrinkable tubing (1.3:1 and 1.6:1 shrink ratio), as well as high performance packing cord made of expanded PTFE and Coltex PTFE-sealing tape with and without an adhesive strip, approved by BAM and DVGW.

YOUR ADVANTAGES WITH OPTINOVA

Because we have our own production facilities, we can address special customer requests and make customized products. This is even possible in small volumes.

Try us!

NO LIMITS — MULTIPLE USES FOR EVERY SITUATION

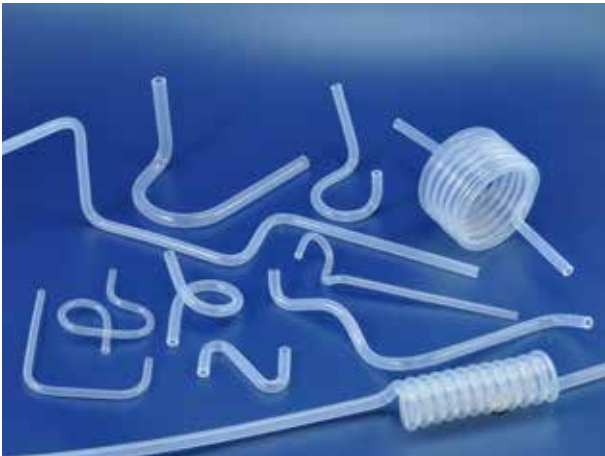
Fluoropolymer tubes from Optinova are helpful for the transport and collection of corrosive and chemical fluids or as a conduit. They can be used on their own, reinforced, covered or as liner for stable tubes or pipes. Below you can find application examples for these tubes.

APPLICATION

- **Plant and equipment engineering** (transport of oils, varnishes and resins)
- **Heat exchangers** (corrosion resistant, temperature resistant)
- **Chemical industry** (transport of aggressive substances)
- **Pharmaceutical and medical engineering, liquid chromatography** (hollow needles, single/multilumen catheters)
- **Food industry** (FDA approved, NFS/ANSI standard 51 – Food Equipment Materials)
- **Semi-conductor industry** (transport of chemical substances of highest purity, HP-PFA)
- **Electro technical industry** (wire and cable sleeves, AWG)
- **Mechanical applications** (sleeves for Bowden cables)
- **Vehicle construction** (cable protection)
- **Paper and textile industry** (roll covers)



A SELECTION FROM OUR PRODUCTS PORTFOLIO



FORMED PTFE, FEP, PFA AND PVdF TUBES

- Custom-made based on customer drawings
- Two- and three-dimensional geometric designs possible
- Allows exact, kink-free installation in devices – even for the smallest radii
- Saves time and installation costs



TUBES FOR THE FOOD INDUSTRY

Our production site in Finland was certified by NSF and has NSF/ANSI 51 approval for PTFE, FEP and PFA. NSF tubings are available in natural state or in certain colors. Materials and products are available as well acc. to other international standard as FDA, GB4806.6, EU10/2011 and Mercosur GMV 56-92.



PRINTING OF PTFE TUBES

- Ink printing without impairing the surface
- Improved traceability with individual print text according to customer requirements
- Text blocks consisting of alphanumeric characters and customer logos possible
- Other print possibilities include ring marking and inclusion of colored stripes



SPIRAL CUT TUBE MADE FROM PTFE, FEP, PFA, PVdF, ETFE

Spiral cut tubes are the perfect solution to bundle cables, which reduces abrasion and wear.

- Extendable and highly flexible
- UV resistant for outdoor applications
- Resistant to most chemicals and solvents
- Non-flammable
- Excellent dielectric properties
- Large selection of colors available

Flexibility and durability make it ideal for applications such as:

- Aerospace engineering
- Automotive
- Pharmaceutical and biological engineering
- Color coding of cables
- Fiber-glass technology
- Robotics

GENERAL SUMMARY OF PROPERTIES

PROPERTY	SPECIFICATION (ASTM)	UNIT	MATERIAL									
			PTFE	PFA	FEP	MFA	ETFE	ECTFE	PVDF	PEEK		
General	Continuous service temperature	Maximum	°C	260	260	200	240	150	150	150	250	
			°F	500	500	392	464	302	302	302	482	
	Chemical resistance	-	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Excellent		
Specific gravity	D 792	-	2.15	2.15	2.15	2.15	1.73	1.70	1.78	1.32		
Electrical	Dielectric constant	D 150 st 103 Hz	-	2.1	2.1	2.1	2.1	2.6	2.5	7.2	-	
		D 150 st 106 Hz	-	2.1	2.1	2.1	2.6	2.5	8.5	-		
		D 150 st 103 Hz	-	0.0002	0.0002	0.0001	0.0002	0.0008	0.0018	0.030	-	
	Dielectric dissipation factor	D 150 st 106 Hz	-	0.0002	0.0003	0.0008	0.0003	0.005	0.0012	9 x 10-2	-	
		D 149	Volt/mil	>1.400	2.000	2.000	2.000	2.000	2.000	1.600	>500	
	Dielectric strength (short term) 10 mils film	D 257	Ohm•cm	>1018	>1018	>1018	>1017	>1016	>1015	>1014	>10 ¹⁶	
Environmental	Water absorption	D 570	%	< 0.01	< 0.03	< 0.01	< 0.03	< 0.03	< 0.01	< 0.04	< 0.5	
	Weather resistance	-	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent		
	Oxygene index	D 2863	%	> 95	> 95	> 95	> 95	> 30	60	44	35	
	Flammability	UL 94	-	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	
Mechanical	Tensile strength	D 1708, D 638	psi	3.500	4.000	3.500	3.500	6.500	7.000	5.000	2.100	
		D 1708, D 638	%	300	300	300	300	200	200	150	50	
	Elongation	D 695	psi	3.500	2.200	2.200	2.200	7.000	7.000	11.600	17.100	
		D 256 st +23°C	Ft-LB/in	3.5	No Break	No Break	No Break	No Break	No Break	3-6		
	Compressive strength	D 790 st +23°C	psi	90.000	100.000	95.000	95.000	200.000	240.000	250.000	530.000	
		D 638	psi	80.000	40.000	50.000	40.000	120.000	240.000	200.000	20.000	
	Impact strength	D 2240	-	D-60	D-60	D-55	D-59	D-75	D-75	D-78	R-126	
		D 638	psi	80.000	40.000	50.000	40.000	120.000	240.000	200.000	20.000	
	Flexural Modulus	D 790 st +23°C	psi	90.000	100.000	95.000	95.000	200.000	240.000	250.000	530.000	
		D 638	psi	80.000	40.000	50.000	40.000	120.000	240.000	200.000	20.000	
Tensile Modulus	D 638	psi	80.000	40.000	50.000	40.000	120.000	240.000	200.000	20.000		
	D 2240	-	D-60	D-60	D-55	D-59	D-75	D-75	D-78	R-126		
Hardness	D 2240	-	D-60	D-60	D-55	D-59	D-75	D-75	D-78	R-126		
	D 2240	-	D-60	D-60	D-55	D-59	D-75	D-75	D-78	R-126		
Thermal	Melting point	-	°C	327	305	270	285	260	240	160	334	
		-	°F	620	581	518	545	500 °F	464	320	633	
	Thermal conductivity	C 177	BTU/hr/ft ² /°F/in	1.7	1.3	1.4	1.4	1.6	1.6	1.3	1.2	
		D 648	°C	1.7	1.3	1.4	1.4	1.6	1.6	1.3	1.2	
	Deflection temperature 66 psi	D 648	°C	122	74	59	65	104	104	113	141	
		264 psi	°F	55	48	57	50	71	71	113	141	
	Deflection temperature 264 psi	D 648	°F	252	166	138	149	220	220	235	285	
		264 psi	°F	131	118	134	122	160	160	235	285	

CAPABILITY HIGHLIGHTS

- PTFE + PFA Antistatic
- PTFE with Ceramic filler
- PTFE with stripes
- ePTFE tubing & profiles
- PTFE with printing
- Fabricated tubing
- NSF-approved tubing (PTFE, PFA + FEP)
- PTFE HS 2:1 & 4:1
- Single- & multilumen extrusions
- Beadings & monofilaments
- FEP HS
- Co-extrusion
- Secondary operations, tip-forming, etching, pressure testing, etc.