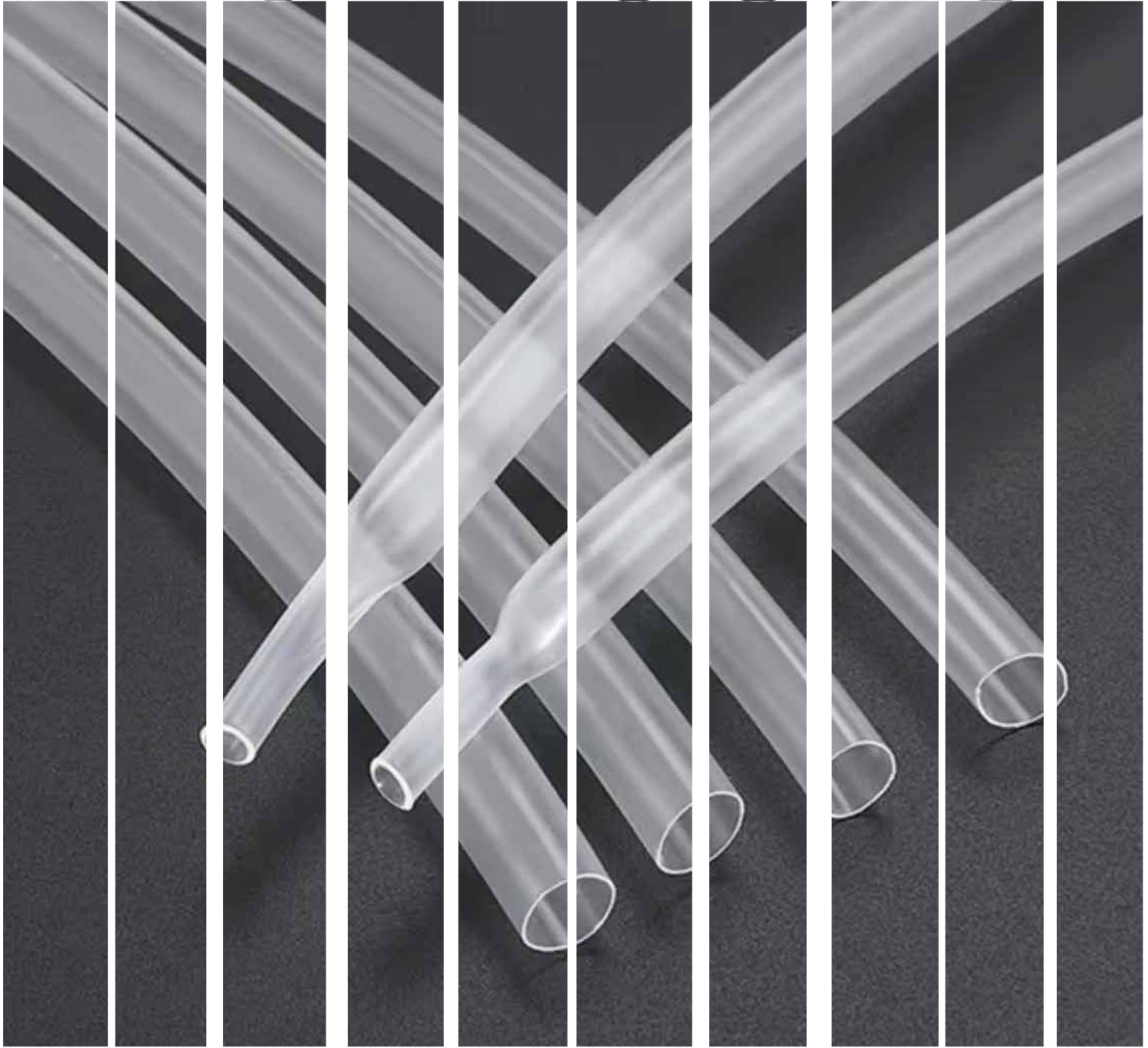


Techyours⁺ High-Performance Fluoropolymer Heat Shrink Tubing Catalogue

Complete Global Engineering Edition

Powered by Everflon™ Premium Resins

TECHYOURS⁺





Shrink Beyond Limits.

1. Brand Overview & Core Value

Techyours+ specializes in the engineering, synthesis, and precision extrusion of high-performance fluoropolymer heat shrink tubing. Our product family is engineered to fulfill mission-critical demands in industrial systems requiring extreme temperature thresholds, permanent chemical inertness, a near-zero coefficient of friction, and superior dielectric insulation properties. Serving industries ranging from semiconductor wafer fabrication and biomedical device manufacturing to aerospace flight-control wiring, deep-well energy exploration, and precision chemical processing, Techyours+ provides an unyielding, high-integrity barrier against aggressive chemical media, high-voltage breakdown, and extreme thermal stress.

2. Quick Material Selection Guide

Use this high-speed technical reference matrix to cross-match project operating environments with the corresponding Techyours+ material line:

Product Line	Continuous Operating Temp	Recommended Shrink Temp	Available Shrink Ratios	Core Market Applications & Key Advantages
Techyours+ PTFE	260°C (500°F)	330°C - 340°C	2:1, 4:1	Gold standard for high-dielectric shielding; highest temperature threshold & lowest friction coefficient.
Techyours+ FEP	200°C (392°F)	180°C - 210°C	1.3:1, 1.6:1	Optically clear and highly flexible. Safest for applications requiring routine, post-installation visual validation.
Techyours+ PFA	260°C (500°F)	200°C - 210°C	1.3:1, 1.6:1	Ultra-pure formulation with minimal trace metal-ion extractables. Best choice for semiconductor fluid loops.
Techyours+ ETFE	150°C (302°F)	140°C - 150°C	1.5:1, 2:1	Superior mechanical toughness, abrasion resistance, and radiation tolerance. Preferred in aerospace flight harnesses.

3. Detailed Product Profiles

Techyours+ PTFE Heat Shrink Tubing

The Original Fluoropolymer for Maximum Thermal Shielding & High-Voltage Isolation.

- **Target Applications:** Micro-catheter and medical guide wire encapsulation, high-frequency coaxial RF connector shielding, heavy-duty automotive engine terminal protection, and high-temperature sensor splicing.
- **Key Engineering Features:**
 - Maximum continuous service temperature capabilities up to 260°C (500°F).
 - Excellent dielectric breakdown voltage to secure electrical systems under continuous voltage fluctuations.
 - Universally inert to almost all known industrial solvents, organic chemicals, strong acids, and corrosive alkalis.

Techyours+ FEP Heat Shrink Tubing

Engineered for Ultra-High Purity (UHP) Systems Demanding Simultaneous High-Temperature and High-Pressure Endurance.

- **Target Applications:** Shatterproof protective containment jackets for industrial fluorescent lamps, cleanroom-grade lithium battery pack bundling, and insulation of heat-sensitive sensors or flexible plastic sub-assemblies.
- **Key Engineering Features:**
 - High transparency indexes enable 100% post-shrink visual inspections of covered parts or welds.
 - Ultra-smooth, non-stick interior and exterior walls actively repel particulate buildup and fluid dragging.
 - Outstanding UV radiation and outdoor environmental weathering longevity without discoloration or cracking.

Techyours+ PFA Heat Shrink Tubing

Engineered for Ultra-High Purity (UHP) Systems Demanding Simultaneous High-Temperature and High-Pressure Endurance.

- **Target Applications:** Semiconductor wet-bench equipment plumbing, aggressive chemical analysis probes, pharmaceutical clean fluid transfer systems, and oil & gas pipeline sensor tracking.
- **Key Engineering**
 - Combines the excellent thermal limits of PTFE with melt-processable structural stability.
 - Ultra-low metal-ion extractables and trace contaminant leaching, preventing process contamination.
 - Maintains superior mechanical tensile strength and creep resistance under sustained thermal loads.

Techyours+ ETFE Heat Shrink Tubing

A Structural Fluoropolymer Formulated for Heavy-Duty Physical Wear, High Stiffness, and Impact Resistance.

- **Target Applications:** Ruggedized heavy industrial wire harnesses, aerospace avionics and flight-control cabling, and down-hole drilling telemetry line protection.
- **Key Engineering Features:**
 - Industry-leading resistance to continuous physical abrasion, tearing, impact, and structural crushing.
 - High structural stiffness coupled with reliable chemical stability against oils, fuels, and hydraulic media.
 - Highly tolerant of ionizing gamma radiation and extreme environmental exposure.

4. Technical Dimensional Specification Tables

A. Techyours⁺ PTFE Specifications (AWG Size & 2:1 Standard Wall Profile)

Note: PTFE shrinks at 2:1 and 4:1 ratios. The table below outlines our internationally standard 2:1 Standard Wall dimensions.

Size Designation (AWG / Inch)	Minimum Expanded I.D.	Maximum Recovered I.D.	Nominal Recovered Wall	Standard Packaging Formats	Stock Colors Available
AWG 24	1.27 mm / 0.050"	0.69 mm / 0.027"	0.30 mm / 0.012"	122m Spool or 1.22m Cut	Natural, Black, Red
AWG 20	2.16 mm / 0.085"	1.14 mm / 0.045"	0.41 mm / 0.016"	122m Spool or 1.22m Cut	Natural, Black, Red
AWG 16	3.81 mm / 0.150"	1.91 mm / 0.075"	0.41 mm / 0.016"	91m Spool or 1.22m Cut	Natural, Black, Red
AWG 12	5.33 mm / 0.210"	2.79 mm / 0.110"	0.41 mm / 0.016"	61m Spool or 1.22m Cut	Natural, Black
AWG 8	8.38 mm / 0.330"	4.32 mm / 0.170"	0.51 mm / 0.020"	61m Spool or 1.22m Cut	Natural, Black
1/4"	6.35 mm / 0.250"	3.18 mm / 0.125"	0.51 mm / 0.020"	30m Spool or 1.22m Cut	Natural, Black
1/2"	12.70 mm / 0.500"	6.35 mm / 0.250"	0.51 mm / 0.020"	30m Spool or 1.22m Cut	Natural, Black
1"	25.40 mm / 1.000"	12.70 mm / 0.500"	0.89 mm / 0.035	30m Spool or 1.22m Cut	Natural, Black

B. Techyours⁺ FEP & PFA Specifications (Metric / Inch 1.3:1 & 1.6:1 High Clarity Series)

Note: Due to melt-processable physics, standard FEP/PFA tubes feature precision-targeted lower shrink ratios.

Model Number	Minimum Expanded I.D.	Maximum Recovered I.D.	Nominal Recovered Wall	Standard Packaging Formats	Stock Colors Available
TY-FP-032	1.00 mm / 0.039"	0.60 mm / 0.024"	0.20 mm / 0.008"	200m Spool	Natural, Black, Red
TY-FP-063	2.00 mm / 0.079"	1.40 mm / 0.055"	0.25 mm / 0.010"	200m Spool	Natural, Black, Red
TY-FP-125	3.50 mm / 0.138"	2.40 mm / 0.094"	0.25 mm / 0.010"	100m Spool or 1.22m Cut	Natural, Black, Red
TY-FP-250	7.00 mm / 0.276"	4.80 mm / 0.189"	0.30 mm / 0.012"	100m Spool or 1.22m Cut	Natural, Black
TY-FP-500	14.00 mm / 0.551"	9.60 mm / 0.378"	0.38 mm / 0.015"	50m Spool or 1.22m Cut	Natural, Black
TY-FP-1000	14.00 mm / 0.551"	19.20 mm / 0.756"	0.64 mm / 0.025"	25m Spool or 1.22m Cut	Natural, Black

C. Techyours⁺ ETFE Spezifikationen (Metrisch / Zoll 2:1 Hohe mechanische Festigkeit)

Model Number	Minimum Expanded I.D.	Maximum Recovered I.D.	Nominal Recovered Wall	Standard Packaging Formats	Stock Colors Available
TY-ET-040	1.02 mm / 0.040"	0.51 mm / 0.020"	0.25 mm / 0.010"	150m Spool	Natural, Black, Red
TY-ET-093	2.36 mm / 0.093"	1.17 mm / 0.046"	0.30 mm / 0.012"	150m Spool	Natural, Black, Red
TY-ET-187	4.75 mm / 0.187"	2.36 mm / 0.093"	0.30 mm / 0.012"	100m Spool or 1.22m Cut	Natural, Black, Red
TY-ET-250	6.35 mm / 0.250"	3.18 mm / 0.125"	0.33 mm / 0.013"	100m Spool or 1.22m Cut	Natural, Black
TY-ET-500	12.70 mm / 0.500"	6.35 mm / 0.250"	0.41 mm / 0.016"	50m Spool or 1.22m Cut	Natural, Black

5. Color Palette & Packaging Configurations

Master Color Configurations

Natural / Transparent

Retains the native molecular pigment matrix for zero contaminant addition: PTFE (translucent milky-white), FEP (water-clear transparent), PFA (high crystalline clear), and ETFE (telltale slight blue tint). Ideal for medical and microfluidic oversight.

Standard Industrial Colors

Offered in Black, Red, Blue, Yellow, and Green. Blended using high-temperature, inert inorganic color pigments to ensure 0% color bleeding or carbonization at maximum heating ranges.

Custom Color Matching

Precise matching utilizing specified Pantone or RAL codes can be formulated via our laboratory compounding team (Subject to batch Minimum Order Quantities (MOQ)).

Global Packaging Formats

- ***Continuous Spools / Reels:*** Best suited for automated machine cut-and-strip systems, assembly lines, and endless structural tube-wrapping setups.
- ***Cut-to-Length Straight Sleeves:*** Standardized at 1.0-meter or 1.22-meter (4 ft) rigid tubes. Custom sub-cutting (e.g., precise 20mm, 45mm pieces for medical component manufacturing or terminals) is available upon request.
- ***Double-Bagged Cleanroom Packaging:*** Cleaned and double-sealed inside a Class 10,000 (ISO 7) cleanroom into dual anti-static vacuum packs. Guaranteed free of ambient dust, oils, lint, or fingerprint contaminants for immediate cleanroom introduction.

6. Technical Installation & Processing Guidelines

To guarantee uniform wall coverage, eliminate surface creases, and maximize component longevity, operators must strictly adhere to the following procedural criteria.

A. Baking Equipment & Temperature Tuning Matrix

Because fluoropolymers possess high melting thresholds, standard plastic craft heat guns cannot generate full recovery. Technicians must deploy digitally-controlled industrial heat guns, vertical/horizontal convection ovens, or automated tunnel heaters.

- **Techyours+ PTFE:** Calibrate heat machinery to 330°C — 360°C (626°F — 680°F). Upon reaching crystalline transition, the tube turns from milky-white to completely clear. This clear state serves as the visual confirmation of full recovery. The material shifts back to translucent white once cooled.
- **Techyours+ FEP:** Calibrate heat machinery to 190°C — 220°C (374°F — 428°F). Precision digital thermostat feedback is vital to prevent material pooling or distortion.
- **Techyours+ PFA:** Calibrate heat machinery to 210°C — 240°C (410°F — 464°F). Maintain constant heat rotation to secure a highly clear glass finish.
- **Techyours+ ETFE:** Calibrate heat machinery to 160°C — 180°C (320°F — 356°F). ETFE reacts swiftly; monitor heat intervals carefully to prevent surface embrittlement.

B. Standard Operating Procedure (SOP) & Troubleshooting

- **Substrate Pre-Cleaning:** Completely strip all trace oils, fingerprints, rust preventatives, and moisture from the target mandrels or cables. Debris particles will form distinct localized bumps under tightly recovered fluoroplastic.
- **Core Preheating (Highly Recommended):** When encapsulating dense, solid metal bars or heavy shafts, preheat the metal substrate to 60°C - 100°C (140°F - 212°F). Cold metal acts as a heat sink, resulting in incomplete localized shrinkage.
- **Directional Heat Application (Prevent Air Pockets):**
 - Never bake both ends of a tube simultaneously. Doing so traps air volumes inside the center cavity, creating wrinkles or permanent bubbles.
 - Correct Protocol: Start heat application directly at the exact midpoint of the tube, continuously rotating the part while extending heat outward toward the margins. Alternatively, start at one edge and advance slowly down the tube while maintaining uniform rotation.
- **Longitudinal Change Compensation:** All fluoropolymers experience a linear reduction in length ranging between 5% and 10% during radial shrinking. Factor this margin into your cut lengths during material staging.
- **Shop Safety & Ventilation:** When baking PTFE above 300°C, trace amounts of microscopic fluorocarbon particulate vapors are discharged. Ensure that processing workstations feature active local exhaust ventilation hoods to maintain continuous clean airflow.

7. Global Compliance & Quality Certifications

Techyours+ products undergo strict quality control procedures to meet international regulatory frameworks across the semiconductor, medical, industrial, and automotive sectors.

- **Global Environmental Standards:** All product lines are SGS certified and fully compliant with EU RoHS 3.0 (Directive 2015/863/EU) and REACH regulations, ensuring absolute freedom from Substances of Very High Concern (SVHC).
- **Medical & Food Safety:** Raw materials fulfill FDA 21 CFR 177.1550 requirements for food contact compliance. Select medical-grade configurations are verified to USP Class VI standards for biocompatibility in interventional medical devices.
- **Flame Retardancy:** Naturally self-extinguishing with a high Limiting Oxygen Index (LOI > 95%). Rated and certified to the stringent UL 224 VW-1 flame-spread threshold.
- **Quality Management Systems:** Production lines operate strictly under the ISO 9001:2015 quality architecture. Complete lot and batch tracking systems provide 100% full traceability from raw polymer extrusion through to finalized expansion and shipping.

8. Ordering Code & Part Number Builder System

To expedite quotation generation, please format your RFQ utilizing our standardized engineering product codes:

Formula: [Brand] - [Material] - [Size Code] - [Color Code] - [Packaging Code]

Brand Code: Techyours+

Material Code: PT = PTFE, FE = FEP, PF = PFA, ET = ETFE

Size Code: Refer to column 1 in tables 4-A, 4-B, and 4-C (e.g., AWG16, 125, 063)

Color Code: NC = Natural Clear, BK = Black, RD = Red, BL = Blue, YL = Yellow, GR = Green

Packaging Code: SP = Continuous Spool, C1 = 1.22m Straight Cut, C2 = Custom Micro Cut Length

Configuration Example: Techyours+-PF-125-NC-SP

(Decodes to: Techyours Brand, PFA Material, Size 125 (3.5mm Expanded I.D.), Natural Clear, Supplied on Continuous Spools)

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