



PYRON[®]



TAKES THE HEAT![™]



ZOLTEK 

 Toray Group

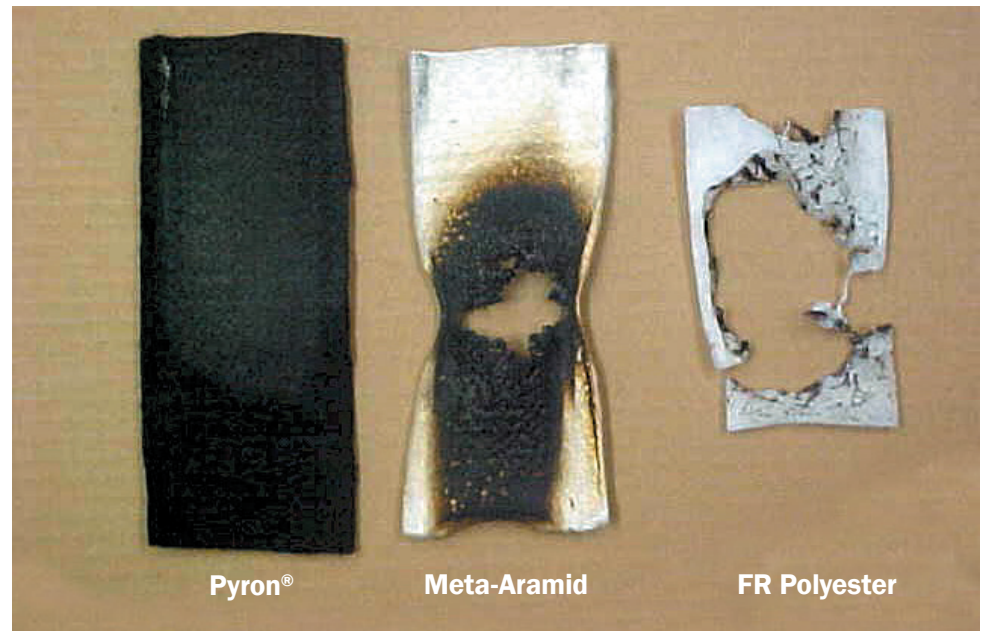
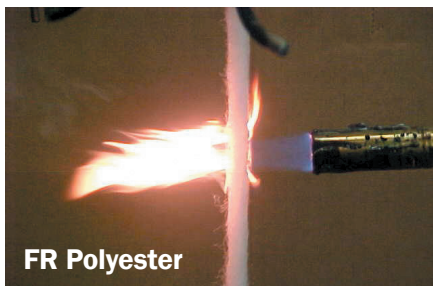
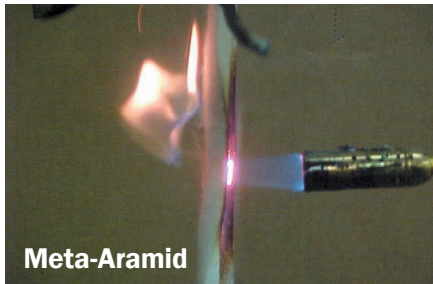
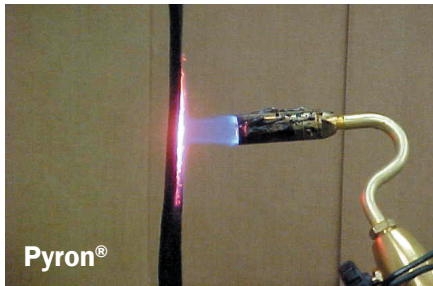
PYRON®

Pyron® is a registered tradename for oxidized polyacrylonitrile fibers produced by Zoltek. PAN fiber is processed through a high temperature oven to stabilize its molecular structure. Zoltek has produced our oxidized Pyron® technical fibers for over 20 years, allowing us to fine tune our process and become the largest oxidized PAN fiber producer in the world.

Pyron® is inherently flame resistant, making it an effective heat-blocking and fire barrier material.

SIDE BY SIDE COMPARISON

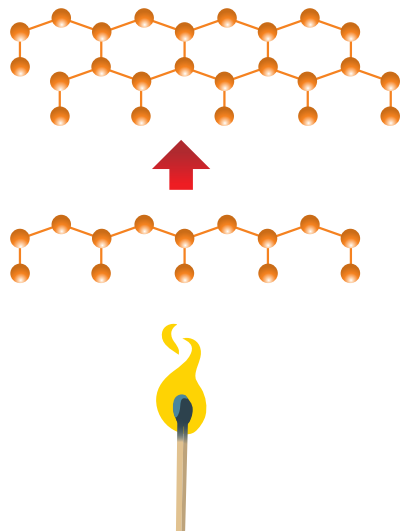
In a comparison test, after 30 seconds in a 1250°C flame, the Pyron® product retains its appearance, hand and textile characteristics.



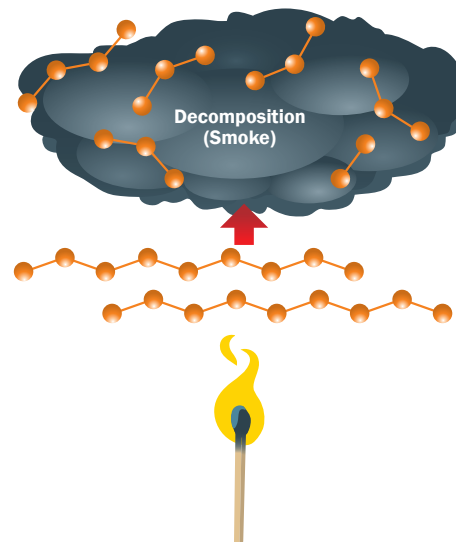
Pyron® does not burn*, melt or drip, it chars without shrinking, self-extinguishes, and remains supple after flame exposure.

* In standard ambient air conditions.

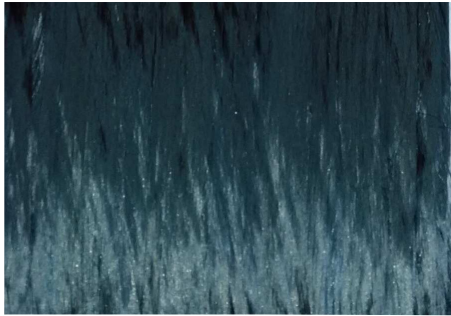
Molecules of Pyron® fibers form stable char structures



Molecules of most fibers decompose when the heat limit is exceeded



PYRON® PRODUCT FORMS



CONTINUOUS TOW

Pyron® continuous tow fibers are oxidized/stabilized PAN fibers which exhibit excellent resistance to chemicals and solvents and are electrically nonconductive. Pyron® continuous tow is suitable for stretch breaking into yarn, cutting into flock, crimping & cutting into staple fibers for nonwovens or yarn spinning.

MATERIAL PROPERTY	STANDARD DENSITY			HIGH DENSITY	
Density	1.37 g/cm ³ (0.0495 lb/in ³)			1.40 g/cm ³ (0.0506 lbs/in ³)	
LOI	~45%			~55%	
Fineness	1.7 dTex	2.2 dTex	5.0 dTex	1.7 dTex	2.2 dTex
Tensile Strength	18.5-23 cN/tex (2.1 - 2.6 gpd) 240 -300 MPa (34,800 psi)				
Filament Count	300K				
Elongation to Break	22% - 28%				

STRETCH-BROKEN YARNS

Pyron® stretch-broken yarns are oxidized/stabilized PAN fibers (OPAN). Yarns produced with Pyron® are knitted or woven into fabrics used in high-performance racewear apparel, industrial fire blocking blankets or high-temperature belting applications.



WORSTED COUNT	PLIES	DENIER	DECITEX	YIELD	TURNS PER INCH & "TWIST"
1/27	1	295 g/9000 m	328 g/10 km	30,486 m/kg (15,120 yds/lb)	10.0 - "Z"
2/27	2	590 g/9000 m	655 g/10 km	15,243 m/kg (7,560 yds/lb)	6.0 - "S"
1/10	1	797 g/9000 m	885 g/10 km	11,291 m/kg (5,600 yds/lb)	6.0 - "Z" or "S"
2/10	2	1,595 g/9000 m	1,770 g/10 km	5,645 m/kg (2,800 yds/lb)	5.0 - "S"
1/5	1	1,595 g/9000 m	1,770 g/10 km	5,645 m/kg (2,800 yds/lb)	6.0 - "Z"
2/5	2	3,190 g/9000 m	3,541 g/10 km	2,823 m/kg (1,400 yds/lb)	2.2 - "S"

STAPLE FIBERS

Pyron® Staple Fibers are oxidized/stabilized PAN fibers (OPAN) that are available in three denier sizes and various cut lengths, Pyron® staple fibers produce the highest quality nonwoven fabrics and the finest spun yarns on the market today.

MATERIAL PROPERTY	STANDARD DENSITY					HIGH DENSITY		
Density	1.37 g/cm ³ (0.0495 lb/in ³)					1.40 g/cm ³ (0.0506 lbs/in ³)		
LOI	~45%					~55%		
Fineness	1.7 dTex 1.5 denier		2.2 dTex 2.0 denier		5.0 dTex 4.5 denier	1.7 dTex 1.5 denier		2.2 dTex 2.0 denier
Length	50 mm 2.0 in	60 mm 2.4 in	74 mm 2.9 in	80 mm 3.1 in	100 mm 3.9 in	50 mm 2.0 in	60 mm 2.4 in	74 mm 2.9 in
Staple Crimp Level	>7.6 per inch (>3.0 per cm)							
Moisture Content	13 +/-3%							
Elongation to Break	22% - 28%							





FABRICS

Pyron® fabrics are created from Pyron® yarn and have a high LOI value, good strength properties, an ability to be laminated with adhesives and are suitable for cut and sew applications.

	PLAIN WEAVE - PW03				PLAIN WEAVE - PW06	
	SI		US		SI	US
Areal Weight	190 g/m ²		5.6 oz/yd ²		359 g/m ²	10.6 oz/yd ²
Warp and Fill	142 x 142 per 10 cm		36 x 36 per in		94.5 x 94.5 per 10 cm	24 x 24 per in
Width	61 cm	99 cm	24 in	39 in	135 cm	53 in
Roll Length	91 m	150 m	100 yds	164 yds	45 m	50 yds
Thickness	.43 mm		.017 in		.73 mm	.029 in
Yarn Input	2/27 Worsted Count				2/10 Worsted Count	
Construction	Plain Weave					

	SATIN WEAVE - SW08		KNIT FABRIC - KF07	
	SI	US	SI	US
Areal Weight	471 g/m ²	13.9 oz/yd ²	424 g/m ²	12.5 oz/yd ²
Warp and Fill	126 x 126 per cm	32 x 32 per in	N/A	N/A
Width	129 cm	51 in	66 cm unslit	26 in
Roll Length	45 m	50 yds	35 m	39 yds
Thickness	1.2 mm	.047 in	1.4 mm	.055 in
Yarn Input	2/10 Worsted Count		2/10 Worsted Count	
Construction	8 Harness Satin		Single Knit Tubular	

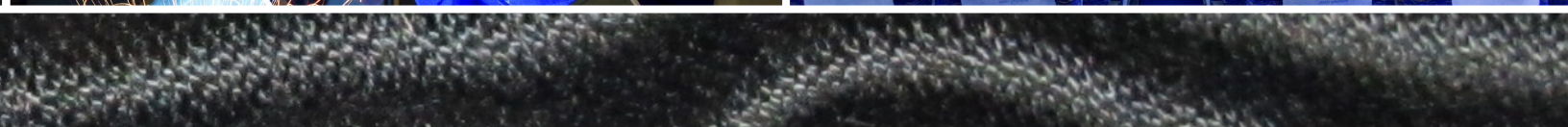


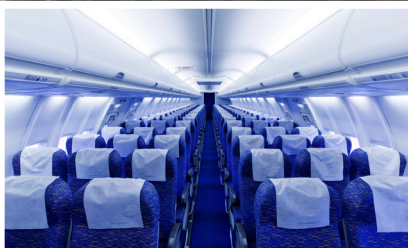
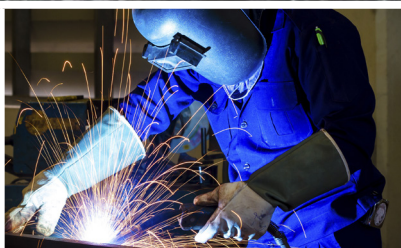
FELTS

Pyron® Felts are produced from Pyron® oxidized PAN fibers. They act as superior thermal, fire, and spark barriers, and can be blended with other strengthening fibers, such as aramids. They are often used for thermal/acoustical insulation in aerospace, as a fire-resistant barrier in automotive, or as a heat and fire-resistant barrier for a variety of other high-temperature industrial applications.

MATERIAL PROPERTY	FT0500-200		FT0575-095		FT1700-100		FT060-60	
	SI	US	SI	US	SI	US	SI	US
Areal Weight*	500 g/m ²	14.75 oz/yd ²	576 g/m ²	17 oz/yd ²	1700 g/m ²	50 oz/yd ²	205 g/m ²	6 oz/yd ²
Width	203 cm	80 in	94 cm	37 in	116.8 cm	46 in	152.5 cm	60 in
Roll Length	~105 linear meter	~115 linear yards	~47 linear meter	~51 linear yards	~60 linear meter	~66 linear yards	~50 linear meter	~55 linear yards
Thickness	4.2 mm	0.17 in	6.4 mm	0.25 in	12.7 mm	.5 in	2.0 mm	.08 in
Fiber Input	1.7 or 2.2 dTex							
Construction	Needlepunch							

*Custom weights upon request.





PYRON[®] **APPLICATIONS**

AIRCRAFT BRAKES

Zoltek's Pyron[®] fiber is the key component in the production of carbon aircraft brakes. Pyron[®] fiber is processed in conventional textile equipment and converted into carbon brakes through various manufacturing operations. In comparison to steel brakes, Pyron[®] based carbon brakes offer twice as many landings per overhaul, similar life-cycle costs, significant weight savings, higher energy absorption capability and the ability to handle up to 2000 °F during landings.



FIREBLOCKING LAYER FABRIC

Zoltek's Pyron[®] fiber is the key component in nonwoven fireblocking layer fabrics for aircraft, rail and marine seating. Pyron[®] can be blended with p-aramid and other FR fibers. Pyron[®] is the most cost effective fiber for this application and it contains no halogens, has outstanding flame resistance, and low toxic gas emission levels.

WELDING DRAPES AND HEAT INSULATING BLANKETS

Pyron[®] fiber is used in welding drapes, aprons and curtains and in thermal insulation blankets. It provides excellent resistance against sparks and does not shrink when exposed to high temperatures.



AUTOMOTIVE NOISE, HEAT AND VIBRATION LINERS

Pyron[®] fiber is blended with polyester fiber for use in nonwoven NHV liners for automotive applications requiring excellent heat and thermal aging resistance in the high temperature compartments of an automobile.

FLAME AND ELECTRIC ARC RESISTANT APPAREL

Pyron[®] fiber blends can be dyed to produce soft and comfortable FR and electric arc knit and woven apparel. Pyron based FR apparel has been UL certified to NFPA 2112 and ASTM F1506 Hazard Risk Category 2.



ACOUSTICAL, HEAT AND FLAME RESISTANT INSULATION

Pyron[®] fiber can be thermally-bonded and needlepunched to form nonwoven products.



Toray Group



SALES OFFICES

Zoltek Corporation (HQ)

3101 McKelvey Road
Bridgeton, MO 63044
T: 1-314-291-5110
F: 1-314-291-8536
E: sales@zoltek.com

Zoltek Europe

H-2537 Nyergesujfalu
Hungary
T: 36-33-536-021
E: europe-sales@zoltek.com

Zoltek China

E: china-sales@zoltek.com

Zoltek India

E: india-sales@zoltek.com

Zoltek Korea

E: korea-sales@zoltek.com

MANUFACTURING

St. Charles, Missouri

11 Research Park
St. Charles, MO 63304

St. Peters, Missouri

27 Guenther Blvd
St. Peters, MO 63376

Abilene, Texas

1221 Fulwiler Road
Abilene, TX 79603

Hungary

H-2537 Nyergesujfalu
Hungary

Mexico

KM. 3 Carretera a El Salto
45680 El Salto, Jalisco

Entec Composite Machines

2975 South 300 West
Salt Lake City, UT 84115

ABOUT ZOLTEK

Zoltek is on a mission to lead the commercialization of carbon fiber and to drive new energy forward through advanced technology and expanded capacity.

As the world's largest producer of oxidized and stabilized PAN fibers, Zoltek is dedicated to providing our customers with the highest level of quality and service required for critical safety applications.



Pyron® is a registered trademark of Zoltek Corporation

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