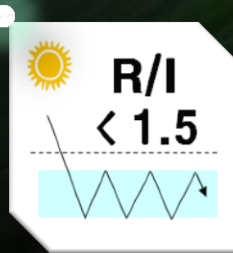
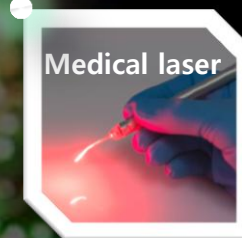


FOSPIA

Optical Solution Provider

Low Refractive Index Polymer Cladding Resins



Polymer Cladding Resin

Refractive Index

Characteristics

Original

PFOA Free Standard

High **Adhesion**

High **Adhesion & Modulus**

High **Thermal Stability**

Ultra High Thermal Stability

High **Thermal Stability**

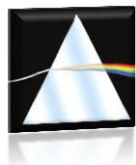
High Refractive Index

Single coating



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Description

EFiRON® PC is first commercialized UV-curable fluorinated acrylate polymers in the world with patented technology.

EFiRON® PC can serve as a cladding for silica core, and optical waveguides.

EFiRON® PC has a very wide refractive index range, providing a high numerical aperture in optical applications.

Feature

- Low refractive index from 1.325 to 1.452
- Easy to design a product around specific application
- Optimization of optical, thermal, mechanical property on customer's demands
- Long shelf life (1 year)
- Application: Special Optical Fiber, High Power Fiber Laser, Fiber Recoating, PCF, POF, PMMA, Large Core Fiber and etc

Liquid State

Inspection	PC-363	PC-370	PC-373	PC-375	PC-400	PC-404F	PC-409	PC-414	PC-430	PC-444	PC-452
Viscosity (cps)	4,700	5,000	4,500	5,200	5,400	4,700	1,400	4,800	4,500	4,800	5,000
R. I. at 589nm	1.361	1.367	1.369	1.378	1.390	1.396	1.390	1.406	1.421	1.433	1.442

Cured State

Inspection	PC-363	PC-370	PC-373	PC-375	PC-400	PC-404F	PC-409	PC-414	PC-430	PC-444	PC-452
R. I. at 852nm	1.363	1.370	1.373	1.382	1.400	1.404	1.400	1.414	1.430	1.444	1.452
N.A at 852nm	0.50	0.48	0.46	0.44	0.40	0.37	0.40	0.33	0.25	0.15	0.00
2.5% Secant Modulus (MPa)	30	50	65	240	400	430	400	380	460	510	650
Young's Modulus (MPa)	31	54	70	280	490	495	490	420	540	600	710
Tensile Strength (MPa)	10	10	12	12	20	17	18	20	20	25	27
Elongation(%)	100	75	70	60	25	9	15	15	12	10	8
Tg(°C)	40	45	47	57	85	103	100	98	98	95	90



Description

EFiRON® SPC is PFOA free and PFOA precursor free product. EFiRON® SPC satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)
The properties of EFiRON® SPC is the same as the original EFiRON® PC series.

Feature

- Low refractive index from 1.325 to 1.452
- Easy to design a product around specific application
- Optimization of optical, thermal, mechanical property on customer's demands
- Long shelf life (1 year)
- Application: Special Optical Fiber, High Power Fiber Laser, Fiber Recoating, PCF, POF, PMMA, Large Core Fiber and etc

Liquid State

Inspection	SPC-325	SPC-347	SPC-355	SPC-363	SPC-370	SPC-373	SPC-382	SPC-400	SPC-404F	SPC-409	SPC-414	SPC-430	SPC-444	SPC-452
Viscosity (cps)	1600	1,900	4,800	4,700	5,000	4,500	5,200	5,400	4,700	1,400	4,800	4,500	4,800	5,000
R. I. at 589nm	1.327	1.344	1.350	1.361	1.367	1.369	1.378	1.390	1.396	1.390	1.406	1.421	1.433	1.442

Cured State

Inspection	SPC-325	SPC-347	SPC-355	SPC-363	SPC-370	SPC-373	SPC-382	SPC-400	SPC-404F	SPC-409	SPC-414	SPC-430	SPC-444	SPC-452
R. I. at 852nm	1.325	1.347	1.355	1.363	1.370	1.373	1.382	1.400	1.404	1.400	1.414	1.430	1.444	1.452
N.A at 852nm	0.594	0.54	0.52	0.50	0.48	0.46	0.44	0.40	0.37	0.40	0.33	0.25	0.15	0.00
2.5% Secant Modulus (MPa)	12	18	27	30	50	65	240	400	430	400	380	460	510	650
Young's Modulus (MPa)	12	17	28	31	54	70	280	490	495	490	420	540	600	710
Tensile Strength (MPa)	5	5	5	10	10	12	12	20	17	18	20	20	25	27
Elongation(%)	60	30	25	100	75	70	60	25	9	15	15	12	10	8
Tg(°C)				40	45	47	57	85	103		98	98	95	90



EFiRon HDC Series

Description

EFiRON® HDC Series is specially designed for high glass adhesion. **EFiRON® HDC Series** can be applied for high thermal / boiling water environment. **EFiRON® HDC** satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)

Feature

- Low refractive index from 1.363 to 1.382
- Formulated with newly developed silane technology
- Super High adhesion (<3.0 N/25mm)
- Application: Special Optical Fiber, High Power Fiber Laser Beam passive part, Fiber Recoating, PCF, POF, PMMA, Large Core Fiber and etc

Liquid State

Inspection	HDC-363	HDC-370	HDC-373	HDC-382
Viscosity(cps)	4,700	5,500	5,000	4,500
R. I at 589nm	1.357	1.367	1.370	1.377

Cured State

Inspection	HDC-363	HDC-370	HDC-373	HDC-382
R. I. at 852nm	1.363	1.370	1.373	1.382
N.A at 852nm	0.49	0.48	0.47	0.44
2.5% Secant Modulus (MPa)	10	18	22	120
Young's Modulus (MPa)	18	28	23	123
Tensile Strength (MPa)	6	9	10	11
Elongation(%)	80	95	100	52
Glass Adhesion(N/25mm)	2.0	2.2	2.2	2.0



EFiRon APC Series

Description

EFiRON® APC Series is specially designed to have high adhesion and modulus for water/thermal resistance applications.
EFiRON® APC satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)

Feature

- Low refractive index from 1.363 to 1.382
- Formulated with newly developed silane technology
- High adhesion & high modulus
- Application: Special Optical Fiber, High Power Fiber Laser, Fiber Recoating, PCF, POF, PMMA, Large Core Fiber and etc

Liquid State

Inspection	APC-363F	APC-370	APC-373	APC-382
Viscosity(cps)	5,100	5,100	6,000	5,600
R. I at 589nm	1.360	1.366	1.370	1.378

Cured State

Inspection	APC-363F	APC-370	APC-373	APC-382
R. I. at 852nm	1.363	1.370	1.373	1.382
N.A at 852nm	0.49	0.48	0.46	0.44
2.5% Secant Modulus (MPa)	32	72	110	250
Young's Modulus (MPa)	32	79	117	290
Tensile Strength (MPa)	7	11	10	13
Elongation(%)	80	70	65	65
Glass Adhesion(N/25mm)	2.3	2.3	2.2	2.2



EFiRon XPC Series

Description

EFiRON® XPC Series is specially designed to meet the growing customer needs in the high power/thermal laser fiber industry. EFiRON® XPC satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)

Feature

- Low refractive index from 1.363 to 1.400
- Formulated for High modulus
- Can be used for high power single coating applications
- Long shelf life (1 year)
- Application: Special Optical Fiber, High Power Fiber Laser, Fiber Recoating, PCF, POF, PMMA, Large Core Fiber and etc

Liquid State

Inspection	XPC-363F	XPC-365	XPC-370	XPC-373	XPC-373HV	XPC-409
Viscosity (cps)	1,900	2,300	5,000	1,600	5,200	1,650
R. I at 589nm	1.357	1.361	1.365	1.368	1.370	1.390

Cured State

Inspection	XPC-363F	XPC-365	XPC-370	XPC-373	XPC-373HV	XPC-409
R. I at 852nm	1.363	1.365	1.370	1.373	1.373	1.400
N.A at 852nm	0.50	0.49	0.48	0.46	0.46	0.38
2.5% Secant Modulus (MPa)	80	85	115	220	170	370
Young's Modulus (MPa)	85	86	115	250	190	450
Tensile Strength (MPa)	7	8	10	11	10	15
Elongation(%)	20	20	25	11	10	10
Tg(°C)	73	73	75	78	71	75



EFiRon HTC Series

Description

EFiRON® HTC Series was developed with brand new polymer backbone for the high thermal resistance & high power laser application
EFiRON® HTC Series satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)

Feature

- Refractive Index from 1.36 to 1.373
- High thermal resistance
- Optical Application
 - YDF laser fiber
 - High power laser
 - Military & Industrial laser

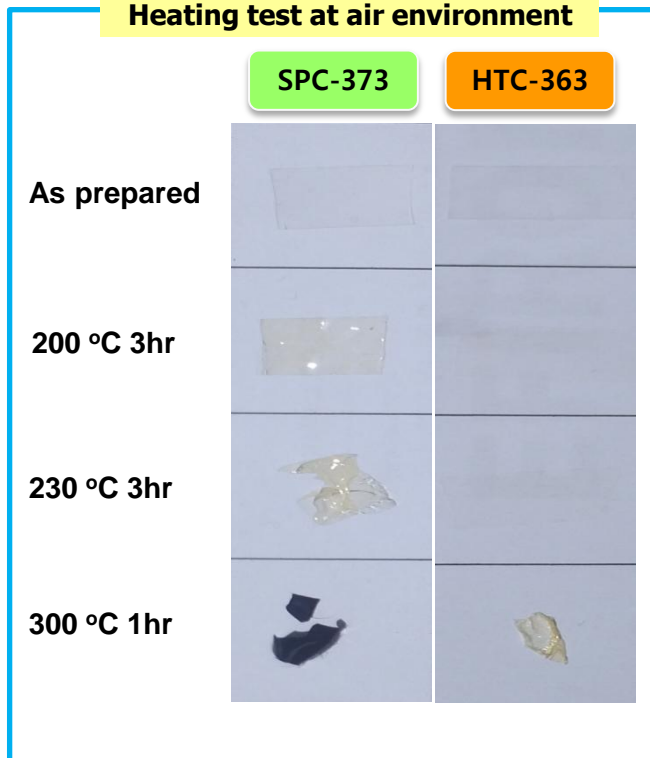
Liquid State

Inspection	HTC-363
Viscosity(cps)	4,500
R. I at 589nm	1.363

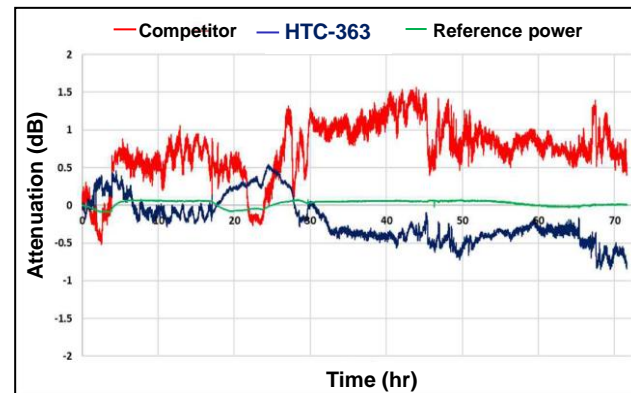
Cured State

Inspection	HTC-363
R. I. at 852nm	1.363
N.A at 852nm	0.52
2.5% Secant Modulus (MPa)	90
Tensile Strength (MPa)	3.5
Elongation(%)	<3.0%
Decomposition 5% Td (°C)	292°C

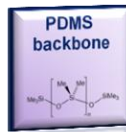
Heating test at air environment



YDF laser Heat test (150oC, 72hr)



Samples	Attenuation (dB/m)	Scattering fluctuation	Coating damage
Competitor	0.041	similar	None
HCT-363	-0.078	similar	None



EFiRon FSC Series

Description

EFiRON® FSC was developed with PDMS(polydimethylsiloxane) backbone which has high thermal durability and good glass stickiness. **EFiRON® FSC** can be applied as the inner coating for the medical laser fiber due to its high thermal resistance and good adhesion to the PTFE polymer surface. **EFiRON® FSC** Series satisfy rigorous European and USA environmental regulations.

Feature

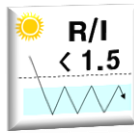
- Refractive Index from 1.404 to 1.490
- High thermal resistance
- Good glass stickiness
- Optical Application
 - Medical laser fiber
 - Inner coating with Teflon outer coat

Liquid State

Inspection	FSC-404	FSC-420	FSC-425	FSC-436	FSC-440	FSC-440 H	FSC-452	FSC-452 H	FSC-458	FSC-458 H	FSC-482	FSC-490
Viscosity (cps)	4600	4700	1500	5000	5100	4400	2300	3300	4400	5300	3800	2000
R. I. at 589nm	1.400	1.419	1.424	1.435	1.440	1.438	1.451	1.454	1.456	1.457	1.481	1.489

Cured State

Inspection	FSC-404	FSC-420	FSC-425	FSC-436	FSC-440	FSC-440 H	FSC-452	FSC-452 H	FSC-458	FSC-458 H	FSC-482	FSC-490
R. I. at 852nm	1.404	1.420	1.425	1.436	1.440	1.440	1.452	1.454	1.457	1.458	1.482	1.489
N.A at 852nm	0.39	0.33	0.31	0.25	0.22	0.22	-	-	-	-	-	-
2.5% Secant Modulus (MPa)	80	100	55	65	65	150	120	220	85	150	400	430
Tensile Strength (MPa)	7	7	5	6	5	10	8	10	7	11	15	15
Elongation(%)	55	20	35	40	30	20	25	7	50	20	25	15
Tg(°C)	62	-	-	-	-	-	-	-	61	-	-	-



EFiRon PTI, HRI, FOS Series

Description

EFiRON® TPR, HRI Series is specially designed to enhance property of Refractive Index, Modulus.
EFiRON® TPR, HRI Series satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)

Feature

- Refractive index 1.55, 1.610
- Formulated with newly developed coating for 3D, Pattern Ink technology.

Liquid State

Inspection	FOS-1000(White)	PTI-540	HRI-550	HRI-550LM	HRI-610
Viscosity(cps)	906	500	700	105	590
R. I at 589nm	-	1.527	1.540	1.540	1.588

Cured State

Inspection	FOS-1000	PTI-540	HRI-550	HRI-550LM	HRI-610
R. I. at 852nm	-	1.541	1.554	1.557	1.612
N.A at 852nm	-				-
2.5% Secant Modulus (MPa)	-	730	1,500	6.4	-
Young's Modulus (MPa)	140.7	880	1,800	10.6	-
Tensile Strength (MPa)	15.2	26	48	4.5	-
Elongation(%)	32.4	15	3	72	-



Description

EFiRON® SCU designed for single coating application.
EFiRON® SCU Series is specially designed to enhance the effectiveness of the lab's product testing.
EFiRON® SCU Series satisfy rigorous European and USA environmental regulations. (ROHS compliance & USP Class 6 certification issued by NAMSA)

Feature

- Refractive index from 1.50
- Formulated with newly developed coating technology
- Can be used as a single coating application in Lab. instead of primary and secondary application

Liquid State

Inspection	SCU-2000 (UV)	SCL-2000 (LED)*
Viscosity(cps)	10,000	10,000
R. I at 589nm	1.496	1.496

Cured State

Inspection	SCU-2000 (UV)	SCL-2000 (LED)*
R. I. at 852nm	1.50	1.50
N.A at 852nm	0	0
2.5% Secant Modulus (MPa)	260	260
Young's Modulus (MPa)	300	300
Tensile Strength (MPa)	23	23
Elongation(%)	40	40