

## PSP - Photosensitive Preforms

### Ordering Information

To order j-fiber PSP please call, fax or email us and specify the following parameters:

Preform Type:	j-fiber PSP
Operating Wavelength:	nm
NA:	
Preform Quantity:	kg
Other:	desired ship date, special requests

All fibers and preforms are subject to j-fiber's ongoing process and quality improvement programs ensuring excellent performance and high reliability. We reserve the right to make changes to the above specification without notice.

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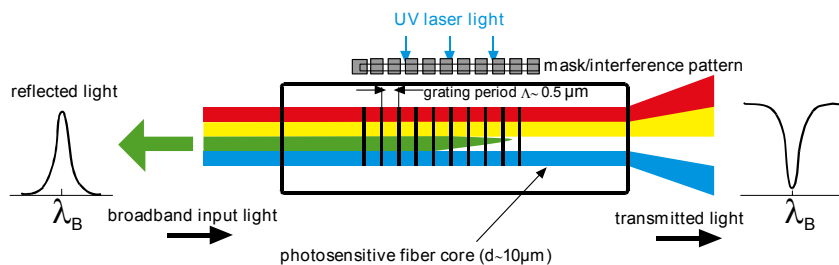
For further information about our Photosensitive Fiber and Preforms and other j-fiber products and services, please contact us:

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### For maximum efficiency in Bragg Grating Fabrication

j-fiber offers the PSP specialty preform designs, intrinsically photosensitive Singlemode preforms for Fiber Bragg Gratings (FBGs) fabrication. FBGs have quickly established themselves as one of the key enabling technologies behind new sensor applications. They can be used to reflect, filter or disperse light within an optical fiber. FBGs can be used in the fabrication of optical strain and temperature sensors, with quasi-distributed measurements possible using gratings written sequentially into a continuous length of fiber.

#### Fiber Bragg Grating (FBG)



### j-fiber PSP series - the industries only preform product that allows FBG imprinting during fiber drawing processes

**The innovation:** j-fiber PSP series provide one of the only preform designs with ultra-high photosensitivity to UV radiation in the industry.

**The key:** our PSP product series feature a highly germanium doped core design that was optimized by j-fiber.

**The superior advantage:** the j-fiber PSP series allow for imprinting of Fiber Bragg Grating Arrays into the fiber during the fiber drawing process.

The PSP series of preforms was designed to enable a highly efficient manufacturing of photosensitive fiber for FBG imprinting. Their ease of fabrication and use combined with their unique properties and great advantages make them ideal for a great number of applications in fiber sensors and lasers. The preforms are a good choice for Type I grating production, due to its high germanium content. Featuring a high NA the fiber benefits from reduced loss at tight bends and low splice loss to other fiber with high NA, such as Raman amplifier fiber.

### The Key Benefits

- Ultra-High photosensitivity preform
- Maximum process efficiency: Allows for most rapid formation of high reflectivity FBG's during fiber drawing
- Significant cost reduction and flexibility in FBG manufacturing
- Flexibility and efficiency in coating: any special coatings can be applied while drawing is in process
- Eliminated need for recoating results in high tensile strengths of the fiber
- Eliminates hydrogen loading. j-fiber PSP is a convenient and cost-saving alternative to hydrogenated standard fiber.

## Highly efficient Fiber Bragg Grating making

The series of photosensitivity optimized preforms are available in various NA levels to minimize fiber splice loss for any application.

### Target Fiber Specifications

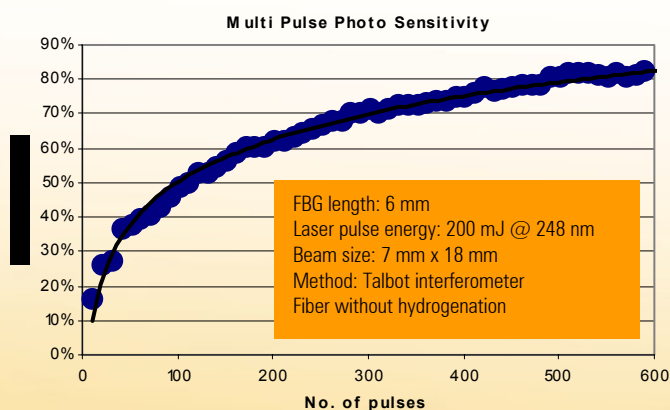
	PSP 1310/0.16	PSP 1550/0.26	PSP 1550/0.30	Unit
Operating Wavelength	1300	1550	1550	nm
Mode Field Diameter at oper. Wavelength	6.8 ± 0.5	5.0 ± 0.5	4.8 ± 0.3	μm
Cut-off Wavelength <sup>1</sup>	1260 ± 50	1400 ± 50	1400 ± 50	nm
Numerical Aperture <sup>1</sup>	0.16 ± 0.02	0.26 ± 0.02	0.30 ± 0.02	
Cladding Diameter	125 ± 1			μm

<sup>1</sup>Different numerical aperture and cut-off wavelengths available on request

### Standard Characteristics

	Spec. Values	Unit
Core Composition	Ge, SiO <sub>2</sub>	
Cladding Composition	SiO <sub>2</sub>	
Refractive Index Profile	Step-index	
Preform Diameter (O.D.)	15 - 25	mm
Tolerance of O.D. within a Rod:	± 4.0	%
Preform Length	400 - 1200	mm
Preform Non-Circularity	≤ 2.0	%
Clad Concentricity Error of O.D	< 1.0	%

### Photosensitivity of fiber made from j-fiber PSP series



Source: IPHT Jena, Germany

## Dynamic Imprinting Conditions

### UV-Radiation Conditions

	j-fiber PSP	Unit
Grating Imprinting conditions	dynamic	
Wavelength	248	nm
Energy Density	0,15	J/cm <sup>2</sup>
Irradiation Duration	2*10 <sup>-8</sup>	s

### Grating Parameters

	j-fiber PSP	Unit
Reflection max	10 - 40	%
Bandwidth	0,15	nm
Grating Length	6	mm
Index modulation	(2-8)*10 <sup>-5</sup>	

## Appearance

The general appearance of the perform shall be dust free and flawless. There shall be no bubbles in the material. The core material has the bubble class 0 according to DIN 58927. There shall be no substantial surface damage or contamination. Other specification are available upon request

## Yield

- j-fiber does not guarantee fiber yield and strength as they are dependent upon individual draw conditions:

### Inspection Documents

Preform ID, Mass, Effective Length, Numerical Aperture, Refractive Index Delta, Diameter Average, Diameter Min./Max.

The inspection documents will be supplied with each shipment. The preform data can also be transmitted electronically and precede each shipment (MS Windows, floppy disk, email etc.)

## Packaging

Every preform is individually packaged as such to withstand normal transportation hazards and handling. Each preform is identified by an ID number written on an adhesive label.