

ArmD™ UV NCC, ArmD™ WF NCC

Silica/silica non-circular core fiber

These fibers, well-suited for laser applications and more, are particularly advantageous when the shape and uniformity of the output beam are critical. Armadillo provides these fibers in various core/cladding geometries such as rectangular, square, octagonal, offering additional benefits compared to our UV/WV range. The need for laser beam-shaping optics can be eliminated.

Uniform Power Distribution

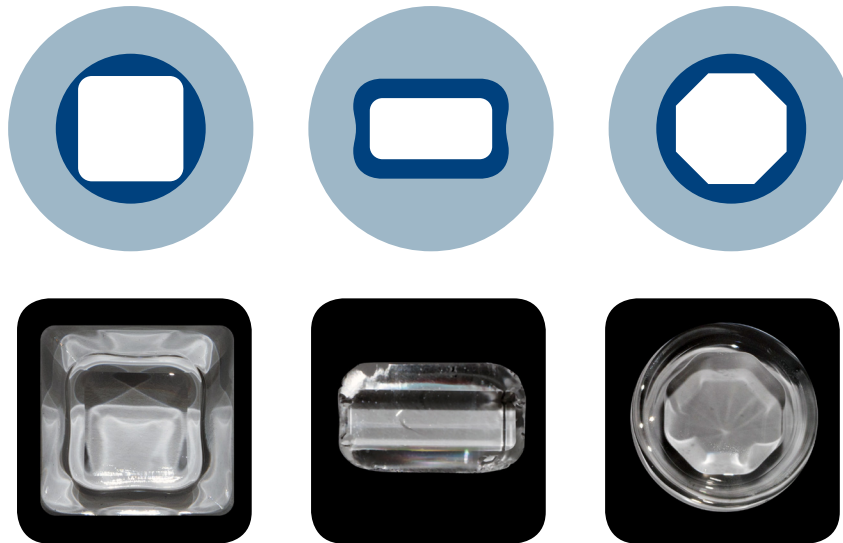
Wavelength

ArmD™ UV NCC	190 - 1200 nm
ArmD™ WF NCC	300 - 2400 nm

Numerical aperture (NA)

Low	0,16 ± 0,02
Standard	0,22 ± 0,02
High	0,28 ± 0,02

Various core and cladding geometries are offered, including square, rectangular, or octagonal shapes

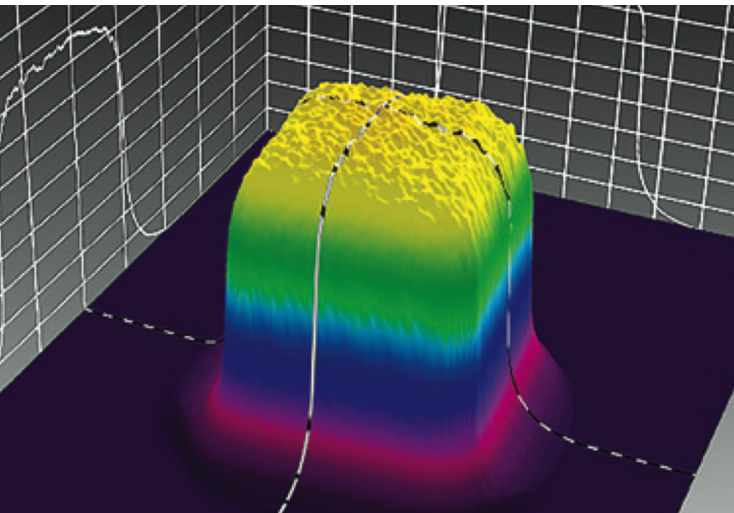


Advantages

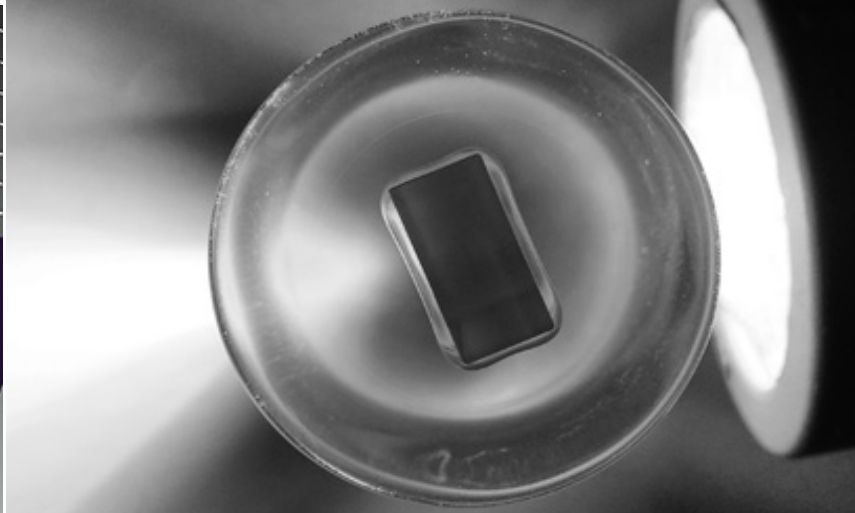
- Broad UV / VIS / NIR spectral range
- Wide range of core and cladding geometries, e.g. square, rectangular or octagonal
- Homogeneous power distribution
- Very low NA expansion
- Excellent image scrambling characteristics
- No need for laser beam-shaping optics
- High resistance against laser damage
- Step-index profile
- Biocompatible material
- ISO9001 compliant manufacturing environment
- 500 ArmD™ UV and ArmD™WF fibers in stock Non-standard diameters and NA values available
- Option of fully customized fiber production
- CE mark
- Sterilizable using ETO and other methods

ArmD™ UV NCF, ArmD™ WF NCF

Silica / silica non-circular fiber

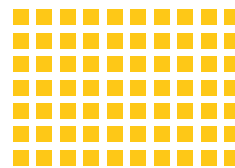


Fibers with a rectangular core geometry homogenize the intensity distribution. The image shows the intensity distribution on the focal level, using NCF fibers with core diameter of $800 \times 800 \mu\text{m}$.



Fiber with rectangular core geometry.

Pure fused silica and F-doped fused silica square and rectangular-shaped fibers, deviating from the traditional round form, offer distinct advantages by maximizing packing density for both input and output. These fibers are particularly well-suited for connections to angular sources and receivers. The angular-shaped core ensures a consistent short-distance homogenization of input power distribution. Additionally, our angular fibers are available in rectangular shapes with large side ratios and a small corner radius, thanks to our special PCVD technology.



The corner radius for rectangular shapes (r_4) is described as the ratio between the radius of a circle, inscribed in the corner of the rectangle and the diameter of a circle, inscribed within the rectangle itself (D_{in})

Large NCF's are well-suited for applications demanding a blend of flexibility and substantial cross-sections in silica fibers, such as a diode laser delivery system.

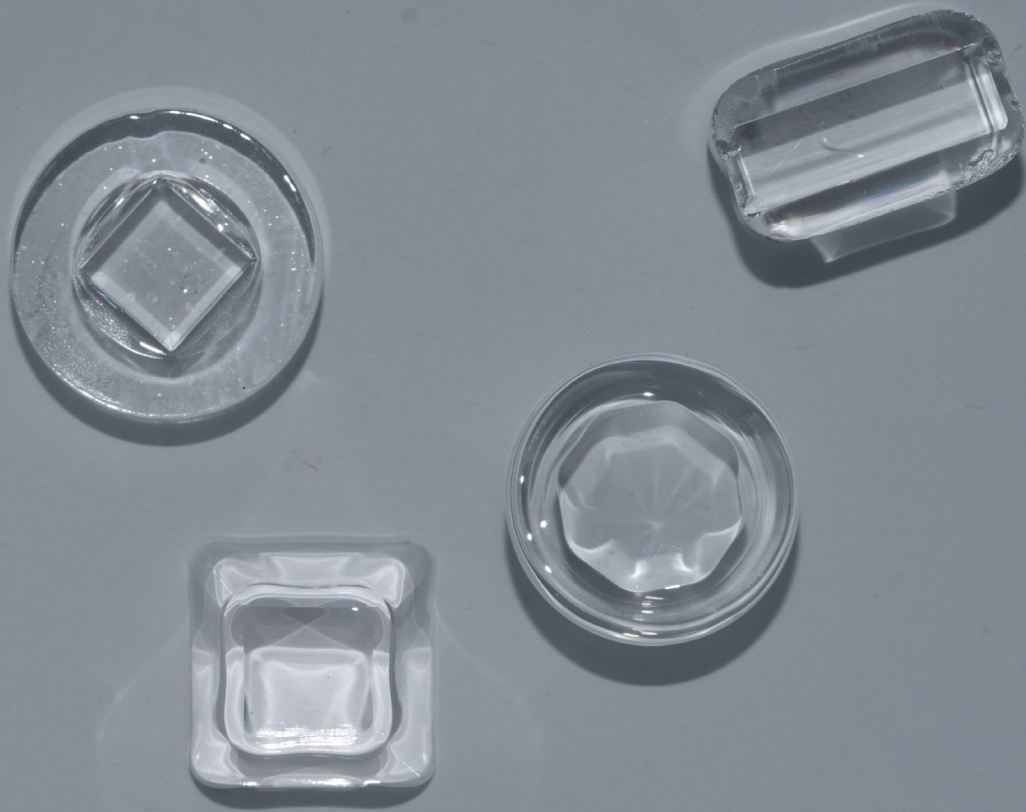


Three types of standard radii are available for a square shape: $r_4 < 10\%$, $10\% < r_4 < 20\%$, $r_4 > 20\%$.



$$r = R_4 / D_{in} * 100\%$$





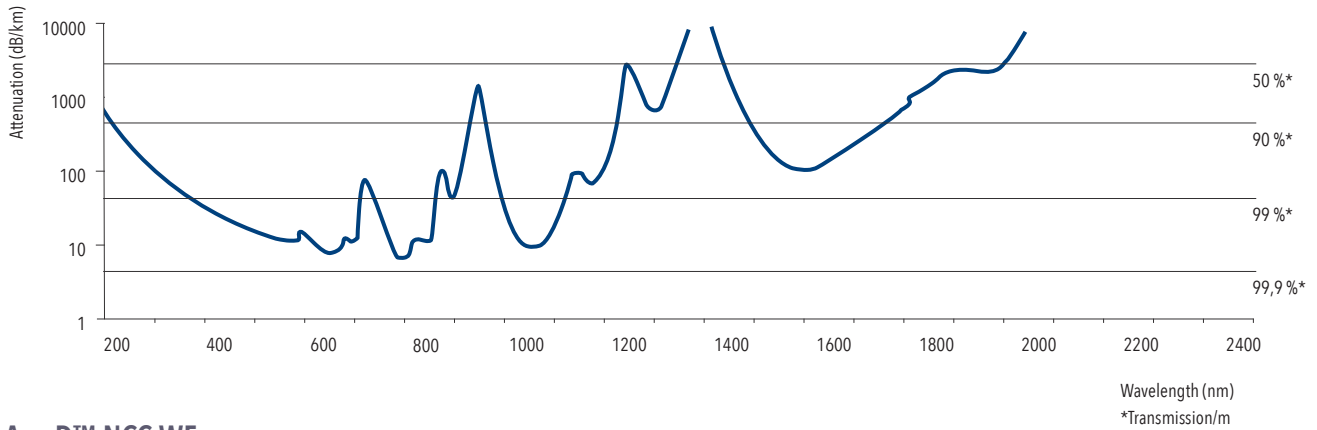
Technical data

Wavelength / spectral range	ArmD™ UV NCC: 190 - 1200 nm ArmD™ WF NCC: 300 - 2400 nm
Numerical aperture (NA)	0,16 ± 0,02 0,22 ± 0,02 0,28 ± 0,02 or customised
Operating temperature	-190 to +350 °C
Core diameter	Geometries and diameters upon request
OH content	ArmD™ UV NCC: high (> 700 ppm) ArmD™ WF NCC: low (< 1 ppm) Fibers with OH contents < 0,25 ppm
Standard proof test	100 kpsi (nylon, ETFE, acrylate cladding) 70 kpsi (polyimide cladding)
Minimum bending radius	50 × cladding diameter (short-term mechanical stress) 150 × core diameter (during use with high laser power)

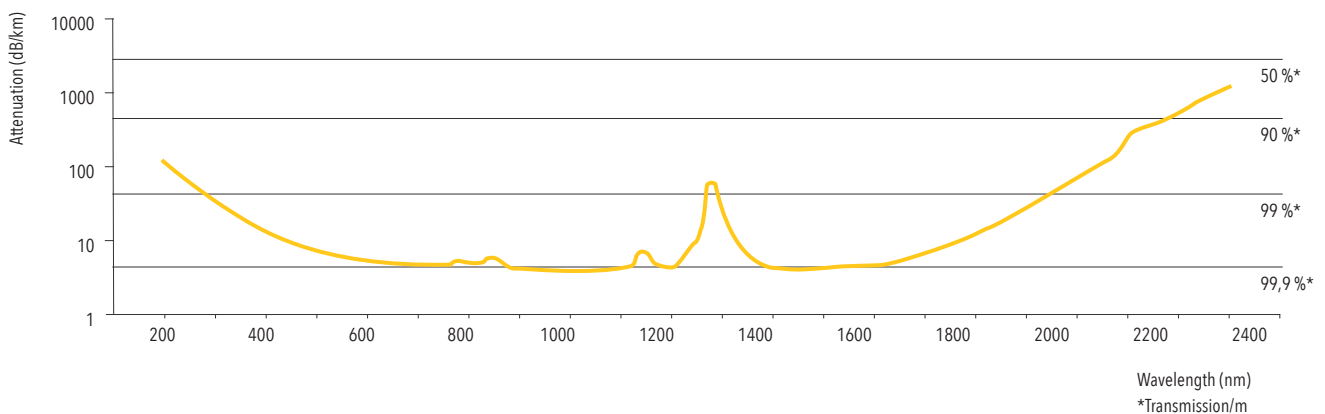
Attenuation values

The following diagrams provide an overview of attenuation values in relation to wavelengths:

ArmD™ NCC UV



ArmD™ NCC WF



Applications

The preferred option for applications such as laser surface treatments, astronomy applications, and numerous others.

1 2 3 4 5 6

Product code key using the example of WF 300/330 (H)(B)N (28)

- | | |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Fiber type | UV = ArmD™ UV WF = ArmD™ WF WFGE = ArmD™ WFGE HUV = ArmD™ HUV HWF = ArmD™ HWF |
| 2 Standard core / cladding ratios | Core \varnothing (μm) / Cladding \varnothing (μm) |
| 3 Buffer | H = hard polymer buffer No information = silicone buffer |
| 4 Colour | B = black BL = blue W = white Y = yellow R = red G = green No information = transparent |
| 5 Jacket material | A = acrylate jacket (no buffer) F = PFA Fluon® N = nylon jacket (silicone or hard polymer jacket)
T = ETFE jacket (silicone or hard polymer buffer) P = polyimide jacket (no buffer) |
| 6 Numerical aperture (NA) | 12 = 0,12 28 = 0,28 No information = 0,22 (standard) |

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