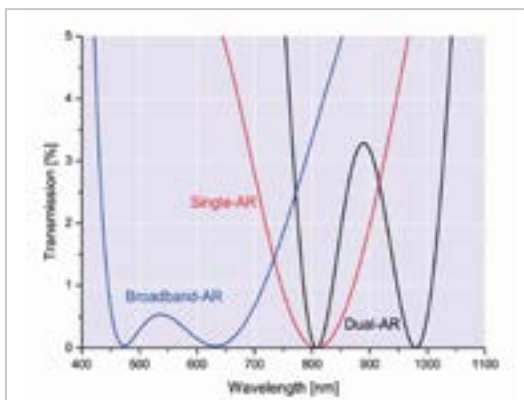
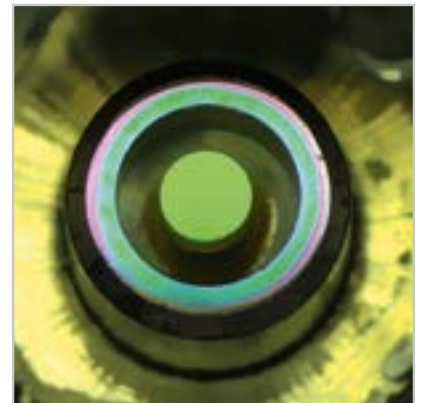


AR Coating for Optical Fibers

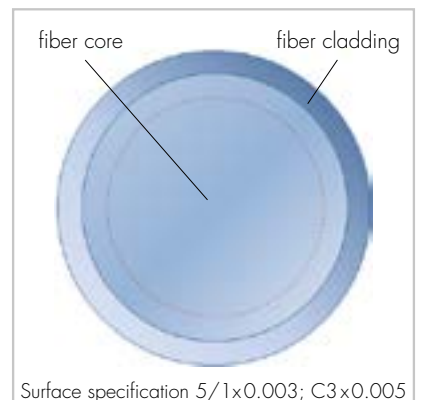
LASER COMPONENTS has manufactured hard dielectric coatings for optical components in the laser industry since 1986 and is one of the leading producers of these coatings. The fibers are coated using physical vapor deposition (PVD), which is the most commonly used coating technology in the laser industry. Through the quick layer deposition and flexible capacities coatings can be inexpensively produced with high damage thresholds. In the PVD method, the dielectric coating materials are evaporated inside a vacuum. An electron beam provides the source of energy; alternatively, the energy can come from a crucible heated by a very high current. The molecules set free by this process are deposited in clusters on the fiber tip at an energy rate of approximately 0.1 eV. The layers created have a low dispersion rate and are designed for use with high power levels.

The use of these coatings significantly reduces coupling losses. This advantage pays off in applications such as medical technology and material processing. The use of coated fibers is also advantageous when combined with laser diodes. LASER COMPONENTS offers complete fiber assemblies including coatings as well as job coatings on fibers supplied by customers. We can process all types of fibers – from fused silica fibers to sapphire fibers. It is imperative that all materials used, such as, for example, protective buffers, be suitable for high vacuums. For the application are used metal tubes from high-grade steel or teflon tubes.

In many applications the quality of the fiber surface is extremely important. LASER COMPONENTS guarantees surface defects $\leq 5/1 \times 0.003$; $C3 \times 0.005$.



Standard AR-coatings



Central wavelengths	532, 808, 980, 1064, 1310, 1480, 1550 nm (other wavelengths available upon request)
Reflections	<0.5 % – <0.1 %
Surface defects	5/1 x 0.003; C3 x 0.005
Damage thresholds (LDT)	808 nm and 980 nm: LDT approx. 3 J/cm ² (10 ns) and approx. 0.3 MW/cm ² (cw) 1310 nm and 1550 nm: LDT approx. 5 J/cm ² (10 ns) and approx. 1 MW/cm ² (cw)
Types of coatings	Single AR, Dual AR, Broadband AR
Fiber types	Fused silica fibers, quartz/quartz fibers, high temperature fibers, sapphire fibers (all common fiber types can be found in our product overview).
Fiber assembly	It is important that only materials (buffers, bending protectors, etc.) be used that do not gas out in the coating chamber and that are suitable for high vacuums!
Connectors	All metal connectors can be coated.

