

Coating Comparison Chart

Coating Material	Typical Use	Refractive Index Relative to Silica	Buffering or Overcoat Required?	Crimp & Cleave Compatibility	Coating Strip Method	Use Temperature Range	Comments
Urethane Acrylate	Single coating	Higher	optional	No	Chemical	-40° to +85°C	Telecomm. Standard
	Dual coating	Higher	optional	No	Chemical or Mechanical	-40° to +85°C	For thin-walled designs
HCS	Hard cladding	Lower	ETFE	Yes	Often not needed; pyrolytic or chemical methods feasible	-65° to +125°C	Medium-or High-numerical aperture versions available
	Non-optical	Higher	ETFE	Yes	Often not needed; pyrolytic or chemical methods feasible	-65° to +125°C	Designed especially for crimp/cleave termination
PYROCOAT	High-temperature coating	Higher	optional	No	Chemical	-60 to +300°C continuous; ≤400°C short duration	Preferred choice for high temperature environments
Silicone	Soft cladding, non-optical coating, or soft buffer	Lower	Typically over-jacketed with thermoplastic	No	Mechanical	-60° to +200°C	Superior low temperature performance as well as high temperature stability
Carbon	Hermetic layer	n/a	Yes	No	n/a	≤300°C continuous; ≤400°C short duration	Minimizes effects of hydrogen ingress and moisture-induced static fatigue

Coatings

In a typical optical fiber, 75 percent of the materials used are coatings and/or buffers. Coatings applied directly to the glass provide physical and environmental protection. A coating can sometimes act as a cladding (when the coating refractive index is less than that of the glass) and thus play a direct role in light transmission. Buffers are applied over the coating(s) and provide additional mechanical protection such as crush resistance.

OFS's coating and buffer types can be tailored to specific design requirements. Many

telecommunications applications use conventional urethane acrylate coatings to minimize microbending and aid in strippability. Specialty applications may use one or a combination of urethane acrylate, HCS (Hard Clad Silica), PYROCOAT polyimide, silicone, carbon, and other custom-designed coatings. Our HCS coating is available in both fluoroacrylate (low refractive index) and hydrocarbon acrylate (high refractive index) versions. HCS is also available in a non-optical version for coating applications. Some buffers are applied over coatings during the fiber draw process while an even larger variety of buffers are extruded after

draw, during cabling. The chart above lists the key characteristics of the coatings we typically use. Buffering materials, including those extruded in cabling, are described in more detail on the next page, entitled "Cabling Material Comparison Chart."