OF-139

Optical Fiber Cladding Materials

Provisional Data Sheet: July 2011

OF-139 is one of a series of low refractive index UV curable coating materials and encapsulants. The material is designed to be compatible with Optical fiber Drawing Towers.
Its main feature is the low refractive index of 1.39 in the near IR. It is a tough and flexible polymer.

Typical Properties

n^D liquid	1.386
n^D cured (@589 nm)	1.397
Refractive index cured @ 1µ	1.390
Density, g/cm^3	1.48
Viscosity, cps @25°C	5000
Adhesion to glass, 90° Peel, g/cm	80
Hardness, Shore D	60
Young modulus, MPa	240

The product is supplied pre-filtered to below 1 micron particles.

Adhesion

Peel test was performed on samples coated on a virgin glass with a thickness of about 270 microns and after a delay of 1 days at ambient conditions followed by one hour @90°C and another 6 hours to re-equilibrate.

Storage

1. Avoid unnecessary exposure to ambient light and moisture.
2. The product should be stored at ambient conditions of 20-30ºC. Do not refrigerate. Upon storage and especially if subjected to low temperature, some ingredients may crystallize out.
3. Long periods of storage combined with excessive heat may cause irreversible gelation..
4. Do not store under nitrogen. Oxygen is an essential inhibitor against premature gelation.
5. The adhesive is supplied in glass bottles. Keep container closed to avoid moisture penetration.

The product is specified to be useful for 6 months.

Application

OF-136 is a dual cure composition that is based on a fast UV curing followed by a slow moisture curing. The moisture in the surrounding atmosphere is sufficient to start the process. The final stage of the moisture curing is a condensation reaction which is enhanced by heat and coupled with a release of a small level of methanol. The UV curing is done under nitrogen. Typically, a dose of 1000-2000 mJ/cm2 is necessary. When properly cured under nitrogen, it should have no oily surface or a tacky surface. Final adhesion will be achieved not earlier than 24 hours after curing and possibly only after rewinding and venting of the fibers. For best adhesion and best performance, it is recommended to allow the fiber to dwell for 30-60 minutes at 80-90°C. This post heat process has to be done a day or more after the coating operation and can be delayed until shortly before the actual use.

Safety: Refer to the MSDS

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