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MY-133

Optical Adhesive and Encapsulant

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MY-133 is one of a series of low refractive index UV curable adhesives and encapsulants. Its main feature is the extremely low refractive index of 1.33.
MY-133 should be considered as an encapsulant more than an adhesive. Its adhesion can be improved with the use of primers.

Properties

Viscosity	700-800 cps
density	1.67
Refractive index (non-cured) @ 589 nm*	1.3315
Refractive index (cured) @ 589 nm*	1.336
Refractive index (cured) @ 950 nm*	1.331
Curing	300-400 nm
Shrinkage upon curing, volumetric, %	1.8%
Appearance	Pale yellowish clear fluid. Particulate free.
Appearance after curing	Colorless, clear, soft solid, Hardness Shore A 60-65

* Please contact us for RI data at other wavelengths.
The product is supplied pre-filtered to below 0.5 micron particles.

Storage

1. Avoid unnecessary exposure to ambient light.
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. It may appear as crystals or haze. If that happens, the product has to be reheated to 60-70ºC for half an hour and then shaken well for a few minutes. If necessary, repeat this procedure until it clarifies.
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 partially filled glass bottles. This allows for enough air (oxygen) to be present. Repackaging in plastic (polyethylene or polypropylene) bottles or syringes is possible because these plastics are permeable to oxygen.

The product is specified to be useful for 12 months.

Application

The adhesive is supplied in dark glass bottles in order to enable observation of its clarity and to enable re-clarification by heating as specified above. If possible it is recommended to re-pack it in a light-protected syringe. Use a plastic syringe which is permeable and allows oxygen to get in. Do not use syringes with a rubber plunger which also contain silicone lubricant. Please consult us for a source.

Like most UV cured acrylic resins, the polymerization of MY-133 leaves an oily surface. To achieve good aesthetic non tacky surface, it is necessary to irradiate under nitrogen. No inerting is necessary when curing between two layers. Curing under a layer of water is also a possibility.
Curing can be achieved by any source of UV at 300-400nm. Typically, a dose of 1000-2000 mJ/cm2 is necessary.
The cured product is a soft polymer.

Priming

Adhesion primers are available for glass, metals and many plastics. They are easy to apply. They are supplied as solutions in volatile solvents. For easy exporting it can also be supplied as concentrates of 50% solids and with further diluting instructions with acetone or alcohols. The primer is made to adhere the adhesive to the non-active part of the light device. It has a higher RI of about 1.45. It can be applied by brushing, dipping etc. The primer is available in two versions:

Primer P: Intended for plastics. It is a UV curable solid resin in a solvent. It can be brushed or otherwise applied on the part. It is allowed to dry for a few minutes prior to the application of MY-133. Excellent adhesion is achieved.

Primer G: Intended for glass and metal but also suitable for plastics. The application is similar. Curing is based on both UV curing and moisture curing. Venting of over 5 minutes is necessary to evaporate the volatiles, depending on thickness and type of solvent being used.
A new primer is now available to match the refractive index of MY-133.

Primer 133H A primer with a matching RI=1.33 is specifically intended for glass, ceramics and some metals (aluminum, copper). It is a moisture sensitive solution. It has a remarkable better adhesion than the non primed adhesive. It is intended for the optically active elements. It is supplied as 25% solids in a mixture of solvents which are safe for shipping. It is applied as a thin coating with 10-15 minutes delay before applying the adhesive.

Safety: Although safer than most UV adhesives, this adhesive is a chemical and must be handled by professional workers and after review of the MSDS.