

## Re-Coating Materials for Fiber Lasers & EDFAs

### Dedicated Re-Coating Materials are optimized for the specific requirements of re-coating

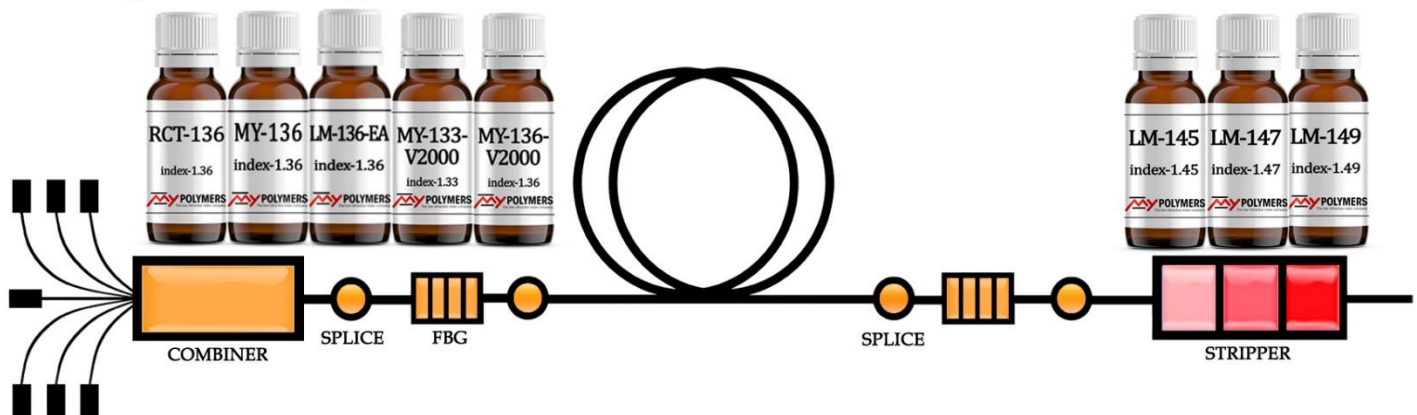
MY Polymers has a wide range of dedicated re-coating materials. We believe there is a real need in such materials, due to the contradicting requirements between Re-coating Materials and Primary Coatings (see table on 2<sup>nd</sup> page). Our materials have been optimized for Re-Coating, and they are replacing Primary Coatings in most re-coating applications.

Some typical re-coating applications are shown in the 2 drawings below.

Drawing #1 shows a typical block diagram for a fiber laser. Re-coating is required for the pump power combiner, the FBG components, splices, couplers, etc.

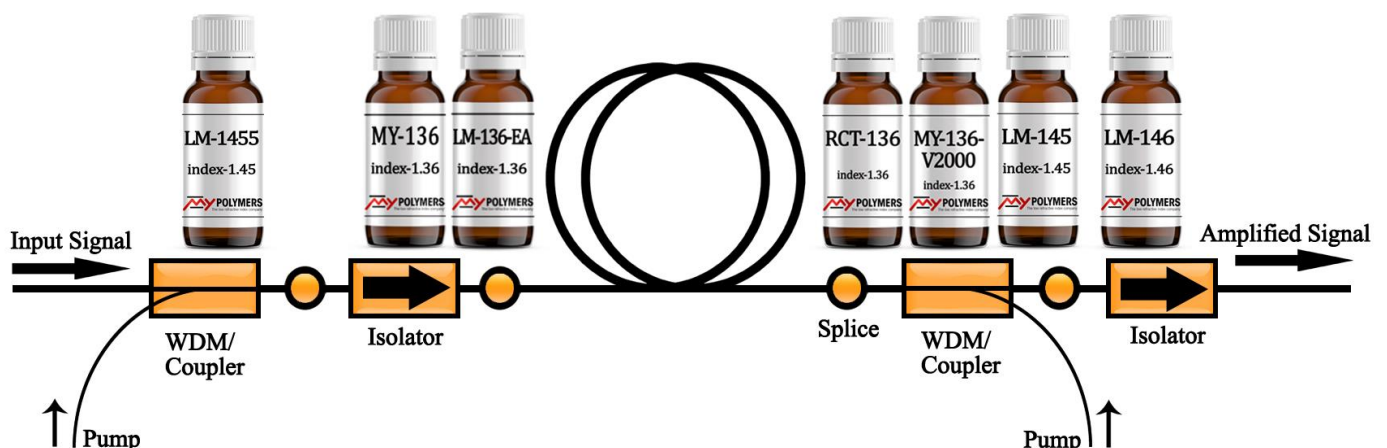
For cladding Power strippers, customers select the higher index, Low Modulus (meaning High Flexibility) LM-14X. A growing number of customers are adopting the Cascaded CPS design, using a cascade of re-coating segments with a gradually higher index. This structure enables a gradual dissipation of heat, resulting in dramatically improved reliability.

### Drawing #1: Recoating in Fiber Lasers



Drawing #2 shows a typical schematic diagram of an Erbium Doped Fiber Amplifier (EDFA). The splice points require re-coating. Likewise, re-coating is required for most components such as couplers, combiners, and splitters.

### Drawing #2: Recoating in EDFA Optical Amplifiers



### The leading Re-Coating Materials with an index of 1.36

These materials are intended for re-coating of pump power combiners, splices, FBG, couplers, etc.

The following table includes the major properties of the leading products in this category.

Leading Re-Coating materials with matching 1.36 index include LM-136-EA, MY-136, and MY-136-V2000. These products have High Flexibility, Strong Adhesion, and break-through performance under thermal cycling, thermal shock and heat-damp testing.

Product	RI @ 950nm	Adhesion g/cm	Elastic Mod. MPa	Viscosity CPS	Tensile MPa	Elong. @ Break %	Shelf Life, months
RCT-136	1.363	150	43	1700	5.4	56	9
LM-136-EA	1.363	225	17	1700	4.0	80	9
MY-136	1.360	110	20	750	4.7	45	12
MY-136-V2000	1.363	50	53	1700	6.0	50	12

**Re-coating materials with the lowest index:** Some customers use lower index re-coating materials with an index of 1.33 or 1.32. Some popular materials are shown in the following table:

Product	RI @ 950nm	Adhesion g/cm	Elastic Mod. MPa	Viscosity CPS	Tensile MPa	Elong. @ Break %	Shelf Life, months
MY-133-V2000	1.329	9	5.2	2900	2.4	60	12
MY-133-EA	1.333	27	3.6	2300	1.0	45	6
MY-132-A	1.322	7	0.4	2600	0.3	80	12

### The Low Modulus LM products for Re-Coating of Cladding Power Strippers

A different, specialized application, is recoating of cladding light strippers. The new trend of using Cascaded strippers, requires a set of materials with different refractive index. The combination of High Flexibility and high bond strength, provides a dramatic improvement in reliability under thermal cycling and thermal shock. The following table summarizes the important properties of some common products used for this application.

The -NI in products such as LM-142-NI, denotes products that are less sensitive to oxygen inhibition, enabling to get good surface curing without an inert atmosphere. The -NI products were optimized for UV LED curing.

Product	RI @ 950nm	Adhesion g/cm	Elastic Mod. MPa	Viscosity CPS	Tensile MPa	Elong. @ Break %	Shelf Life, months
LM-145	1.442	1200	30	1900	6	150	12
LM-146	1.452	1900	35	1400	7	160	12
LM-147	1.462	1900	31	2150	5	170	12
LM-148	1.472	500	42	1300	6.7	160	12
LM-142-NI	1.417	1000	28	3200	3	110	12

### Dedicated Re-Coating Materials are optimized for the Re-Coating task

In the past, the original primary coating was used a re-coating material. However, there are major differences and contradictions between the requirements from these materials. Due to these contradictions (see table below) manufacturers of fiber lasers, optical amplifiers, and fiber-optic components are switching to the new Dedicated Re-Coating Materials, which were optimized for these specific applications.

Property	Re-Coating Material	Primary Coating
Adhesion	Highest, for Reliability	Limited, for Stripping
Flexibility	Highest, for Thermal endurance	Limited, for Robustness
Oxygen Sensitivity	Better be minimized	Not Relevant (N2 is there)
LED compatibility	Requested	Not requested



#### About MY Polymers Ltd.

Distinguished by its total focus on low refractive index materials, **MY Polymers** is a leader in this field.

**MY Polymers** has been active in the field of Low Refractive Index Optical Coatings, Adhesives and Polymers since 2004. The company develops, produces, and sells primary coatings for optical fibers, recoating materials, optical adhesives, bio-photonics materials, and various other low index polymers, coatings and adhesives.

**MY Polymers** is ISO certified. We serve the global Photonics and Electronic Display industries, with customers in North America, Asia and Europe.