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OF Product Line for Optical Fiber Primary Coatings

Our OF low Refractive Index primary coatings are distinguished by their carefully balanced combination of high adhesion to the core, and high modulus. The majority of our OF products include a proprietary adhesion promoter that dramatically improves adhesion to the core, especially under wet conditions. A special feature of our adhesion promoter is that it allows a relatively long shelf life of 6 months.

Our best-selling OF-136 (RI=1.36) is used by the majority of specialty optical fibers manufacturers. Its adhesion was optimized carefully for the highest value, while making sure it is not too high, to allow stripping.

OF-133-V2 (RI=1.33) enables a breakthrough Numerical Aperture of 0.6. Its close relative, OF-134-V2, couples a low index of 1.34 with a relatively high modulus of 20 MPa. The high NA of these products can significantly increase the efficiency of optical amplifiers and fiber lasers.

For demanding applications, customers choose the combination of very high modulus and very high adhesion offered by OF-138 (index 1.38), OF-139-N, and OF-140-N. These tough coatings are preferred for fibers that are subjected to high mechanical stresses and high temperatures.

Another notable product is OF-HC-14, which is our only secondary hard coat. The adhesion of OF-HC-14 to our primary coatings is about an order of magnitude higher, compared to similar commercially available hard coats.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	OF-133-V3	1.337	1.333	UV	11	4	2400	1.3	50	60A	6
2	OF-134-V2	1.346	1.341	UV	28	17	2500	3.2	36	86A	6
3	OF-136	1.369	1.363	UV	64	85	2200	8.0	50	95A	6
4	OF-136-N	1.369	1.363	UV	50	55	3200	6.0	52	95A	12
5	OF-1375-A	1.377	1.372	UV	70	155	3700	8.3	54	95A	6
6	OF-138	1.384	1.379	UV	120	230	3300	10.0	62	52D	6
7	OF-140-N	1.407	1.401	UV	170	560	3200	17	32	65D	12
8	OF-145-N	1.455	1.448	UV	800	1100	3000	30	13	75D	12
9	OF-146-N	1.467	1.460	UV	>1500	1600	3800	37	3	80D	12
10	OF-HC-14 Hard	1.468	1.462	UV	na	1400	3700	40	3.5	82D	12



The Low Modulus LM Product Line

Our new series of LM (Low Modulus) products was designed for Cascaded Cladding Light Strippers.

In cascaded light strippers the recoating is done multiple adjacent segments, each with a gradually higher index. This technique enables gradual dissipation of the cladding power, preventing excessive, potentially catastrophic, heat build-up in a single hot spot.

The low modulus of the LM products reduces stress, and increases reliability, under thermal cycling.

LM products should be considered in various applications, where good endurance, under thermal cycling, and good adhesion, are important.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	LM-136-EA	1.369	1.363	UV	225	17	1700	4.0	80	na	9
2	LM-1415	1.415	1.408	UV	600	17	1500	3.0	90	na	12
3	LM-142-NI	1.420	1.413	UV	700	13	1200	3.0	90	na	12
4	LM-142-NI-10	1.415	1.407	UV	650	22	5400	4.0	100	na	6
5	LM-144	1.439	1.432	UV	800	21	1900	5	140	na	12
6	LM-1445	1.444	1.437	UV	1000	25	1900	5.5	150	na	12
7	LM-145	1.449	1.442	UV	1200	30	1900	6	150	na	12
8	LM-1455	1.455	1.448	UV	1600	32	1700	6	150	na	12
9	LM-146	1.460	1.452	UV	1900	35	1400	7	160	na	12
10	LM-146-NI	1.460	1.454	UV	1100	22	1500	6	95	NA	12
11	LM-1465	1.465	1.458	UV	1900	32	1800	6	160	na	12
12	LM-147	1.470	1.462	UV	1900	31	2150	5	170	na	12
13	LM-1475	1.475	1.467	UV	1200	36	1750	6	160	na	12
14	LM-148	1.480	1.472	UV	500	42	1300	6.7	160	na	12
15	LM-1485	1.485	1.477	UV	600	50	1280	7	150	na	12
16	LM-149	1.490	1.482	UV	700	57	1280	7.7	160	na	12
17	LM-155	1.550	1.540	UV	1200	50	2600	8	130	na	12

MY-130 UV Cured Optical Adhesives and Coatings

The MY-130 products are used for recoating and encapsulation in the manufacturing of photonic devices, such as pump power combiners, splitters, couplers, connectors, etc.

Enabling breakthrough in efficiency, MY-133-V2000, MY-133-EA, MY-132, MY-132A, MY-131 and MY-130 are becoming an important competitive tool in the photonics industry. The low Refractive Index of 1.30 to 1.33 reduces light leakage in various applications, enabling both higher efficiency and higher reliability. These products are field proven. The pioneering MY-133, has been in the field from 2004.

The best-selling products in this line are MY-133-V2000, and MY-136-V2000, followed by the newer MY-136, MY-132, MY-130, and MY-133-EA that has an integrated adhesion primer.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	MY-130	1.308	1.303	UV	Low	<1	120	<0.2	<10	na	12
2	MY-131	1.314	1.311	UV	Low	<1.5	150	<0.2	<10	na	12
3	MY-132	1.324	1.320	UV	3	2.5	200	na	<10	65A	12
4	MY-132-A	1.326	1.322	UV	7	0.4	2600	0.3	80	30A	12
5	MY-132-V15K	1.327	1.322	UV	40	very low	14500	na	na	7	12
6	MY-133	1.336	1.331	UV	3	4.0	700	0.4	12	73A	12
7	MY-133-EA*	1.338	1.333	UV	27	3.6	2300	1.0	45	62A	6
8	MY-133-V2000	1.333	1.329	UV	9	5.2	2900	2.4	60	70A	12
9	MY-136	1.364	1.360	UV	110	20	750	4.7	83	85A	12
10	RCT-136	1.369	1.363	UV	150	43	1700	5.4	56	70A	9
11	MY-136-V2000	1.369	1.363	UV	50	53	1700	6.0	50	93A	12
12	MY-1375	1.379	1.375	UV	60	108	4200	9.5	52	52D	12
13	MY-1375-V2000	1.380	1.375	UV	60	110	2000	9.0	40	95A	12
14	MY-138	1.388	1.382	UV	60	250	4000	12.0	62	60D	12
15	MY-139	1.393	1.388	UV	88	350	3500	11.5	40	60D	12

* Improved adhesion under wet conditions



MY-140 UV Cured Optical Adhesives and Coatings

Distinguished by their strong adhesion and their robustness, the MY-140 products are used wherever there is a need for high bonding strength, coupled with low refractive index. Typical applications are for bonding of optical components, for re-coating cascaded Cladding Light Strippers.

The MY-140 product line technology is used in the field since the year 2000.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	MY-140	1.407	1.401	UV	270	500	4200	17	30	65D	12
2	MY-141	1.414	1.409	UV	350	530	4000	17	45	68D	12
3	MY-142	1.420	1.416	UV	95	5.3	1050	3.7	100	70A	12
4	MY-142-D	1.420	1.414	UV	400	500	3300	16	30	na	12
5	MY-143*	1.436	1.428	UV	1000	25	1200	3.1	71	80A	12
6	MY-145	1.450	1.445	UV	600	300	300	11.4	150	97A/6	12
7	MY-1455	1.455	1.451	UV	600	400	250	15	60	50D	12
8	MY-146	1.461	1.456	UV	1400	515	150	17.4	22	95A/6	12
9	MY-146-LM1	1.459	1.453	UV	500	na	465	na	na	65A	12
10	MY-1465	1.465	1.460	UV	800	160	160	10.6	140	87A	12
11	MY-147	1.470	1.465	UV	1000	270	250	11.6	174	64D	12
12	MY-1473	1.474	1.469	UV	1700	555	150	14.8	90	60D	12
13	MY-148	1.480	1.474	UV	830	580	185	16.7	90	65D	12
14	MY-149	1.492	1.485	UV	600	4.6	1000	1.3	370	na	12
15	MY-150	1.496	1.477	UV	1600	23	1800	4	450	na	12
16	RCT-155	1.550	1.540	UV	50	50	2500	7	100	na	12

* Improved adhesion under wet conditions



Dual Cure (Heat + UV) Products

Our Dual Cure (DC) products find a growing number of applications as adhesives, coatings and sealants. All our Dual Cure materials are one component materials. They are cured by either UV radiation, Heat, or a combination of both. This feature enables curing in partially or fully shaded regions of the device.

The DC line includes both flexible and rigid products with a refractive index from 1.33 to 1.50, with relatively big selection close to the index of silica. These include DC-1455 (flexible, index=1.448 at 950 nm) and DC-1455-HM and (Rigid, index=1.451) The DC line also includes high bond strength products like DC-150 (flexible) and DC-1473 (rigid).

The newest members of the DC line are DC-152 (index=1.52) and DC-157 (index=1.57).

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	DC-133	1.335	1.330	UV/HE	5	3	2200	1.0	40	68	12
2	DC-136	1.366	1.360	UV/HE	180	9	600	2.4	70	83	12
3	DC-145	NA	1.449	UV/HE	1200	30	1900	6	150	84	6
4	DC-146	1.461	1.454	UV/HE	2000	17	1200	4.3	170	NA	12
5	DC-150	NA	1.478	UV/HE	>1000	23	1800	4	450	NA	6



The –NI Products

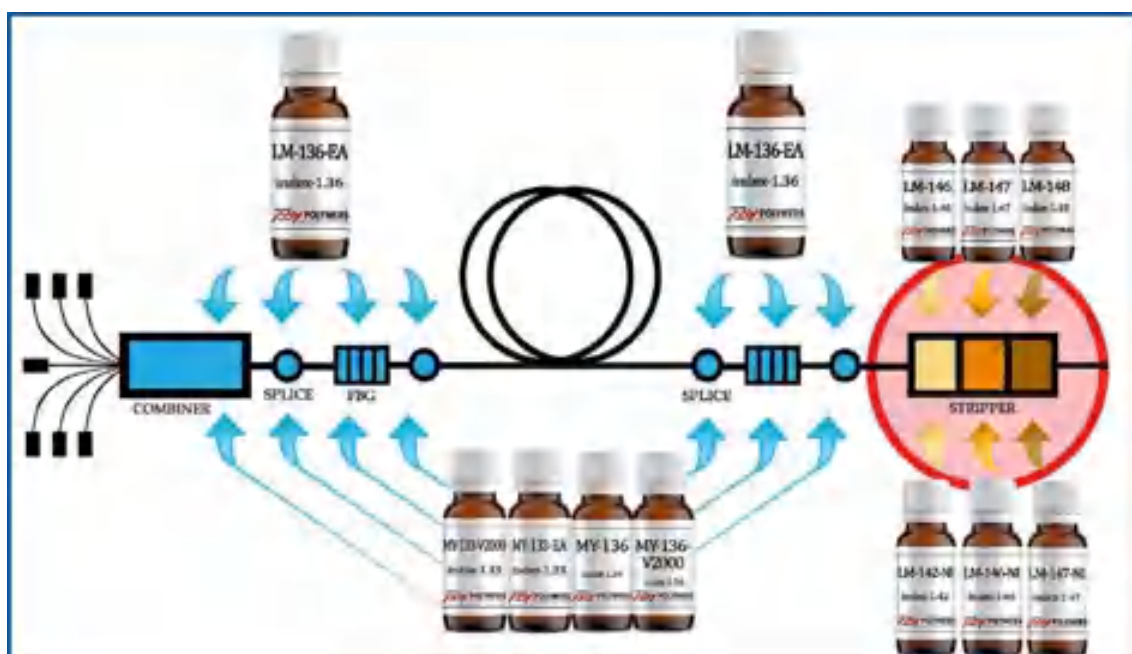
Our new series of –NI products are a new extension of the LM (Low Modulus) Product Line and the MY (medium to High Modulus) products line.

The –NI products are distinguished by 2 additional properties:

- (1) They are less sensitive to oxygen inhibition. This means the products can achieve good surface curing even when an inert atmosphere cannot be provided.
- (2) They are optimized for good curing under LED UV spot curing systems, as well as the older, more established, mercury lamp spot curing systems.

The addition of these features enhances the ease of use of the –NI line.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	LM-142-NI	1.423	1.417	UV	1000	28	3200	3	110	NA	12
2	LM-142-NI-10	1.415	1.407	UV	650	22	5400	4.0	100	na	6
3	LM-146-NI	1.460	1.454	UV	1100	22	1500	6	95	NA	12
4	MY-145-NI	1.452	1.446	UV	>2000	660	400	NA	NA	NA	12
5	MY-146-NI	1.458	1.452	UV	>2000	900	300	NA	NA	NA	12



LOCA Adhesives

These adhesives are by far our strongest low index adhesives. They are similar to the adhesives used in common adhesive tapes. They are used mainly as lamination adhesive between films and flat surfaces.

LOCA-135 is the most versatile. It has good adhesion to glass, PMMA, PET and PC. LOCA-133 has lower adhesion to glass.

Both LOCA-135 and LOCA-133 require a final UV curing stage after lamination.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	LOCA-133	1.337	1.332	35	2000	700	2800	12	LOCA-133	1.337	1.332
2	LOCA-135	1.357	1.353	50	2000	440	2800	12	LOCA-135	1.357	1.353

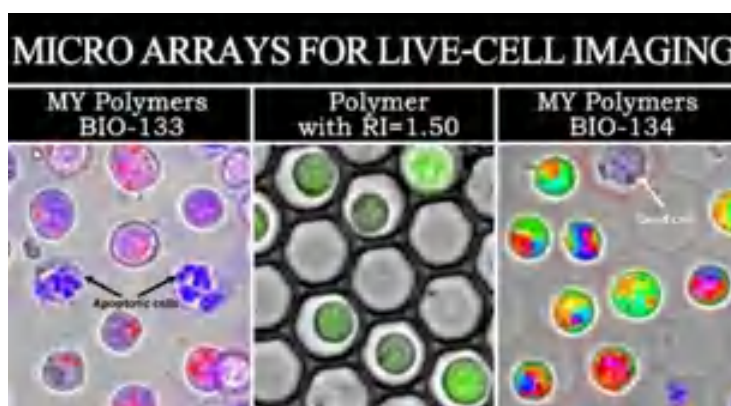


Bio-Photonic Polymers

Our dedicated bio-Photonic polymers BIO-133 and BIO-134 were designed to minimize cytotoxicity and fluorescence. The index of BIO-133/4 matches the refractive index of water and cells. This enables construction of 3-D structures, such as micro-wells and micro-pillars, which do not distort the images. A breakthrough in microscopy image quality, thanks for the use of BIO-133/4 was demonstrated.

Microfluidic devices produced with MY-133-V2000 or BIO-133 (index=1.33) reduce artifacts in fluorescence and quantitative phase imaging, due to index matching.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	BIO-133	1.334	1.329	UV	na	5	2200	na	60	70	6
2	BIO-134	1.342	1.337	UV	na	5.6	5500	na	36	71	6



Moisture Cured Optical Coatings

Our Moisture Cured coatings cure spontaneously by absorbing moisture from the air. The moisture curing feature makes these products especially useful as coatings for surfaces. Since there is no UV curing (and no need for an inert atmosphere) it is simple to coat large surfaces, as well as complex geometries (geometries that would not allow UV curing due to blocking of UV radiation).

Our Moisture Cured coatings include 2 groups of products:

1.The MY-131/2/3/6-MC products:

These moisture cured products have very low index of 1.31, 1.32, 1.33 and 1.36. Their abrasion resistance is relatively low. They are selected where the low index gives a special benefit. For example, MY-133-MC is used in the production of SPR biosensors, that requires a coating with an index of 1.33 (the RI of water, and cell tissues is also 1.33). In this application, the MY-133-MC is coated over the surface of a glass wafer, using spin coating.

2.The AR products (AR-138, AR-139, AR-141):

The AR products are hard anti-reflective coatings, with refractive index of 1.38 – 1.41. These products are liquid repelling, allowing easy removal of grease, various oils, solvents and water. The AR coatings are Moisture Cured. They are supplied as 60% solids solution.

With pencil hardness of 2H – 1H, these coatings provide good abrasion resistance.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	MY-131-MC	1.312	1.308	MC	na	na	120	na	na	V. Soft	6
2	MY-133-MC	1.330	1.325	MC	na	na	400	na	na	Soft	6
3	MY-136-MC	1.36	1.36	MC	na	na	5000	na	na	4B	6
4	AR-138	1.389	1.384	MC	Str.	na	150	na	na	1H	4
5	AR-139	1.395	1.391	MC	Str.	na	150	na	na	2H	6
6	AR-141	1.412	1.407	MC	Str.	na	150	na	na	2H	4



Adhesion Primers

The adhesion primers increase the adhesion of low index adhesives, such as MY-133-V2000, BIO-133, or BIO-134 to various materials.

Optimal primer selection depends on function and materials. For example, PRIMER-G is frequently used to enable good adhesion of an optical fiber recoated with MY-133-V2000 to a glass ferule.

However, to enhance adhesion to the surface of a component that is in the optical path, where a low RI at the boundary is necessary, PRIMER-LC should be used. All these primers are solvent borne (25% solids). They are applied to the surface and allowed to dry out. After the application of the Low RI adhesive they undergo UV curing simultaneously with the top adhesive.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	PRIMER-LC	1.333	1.321	SB	150	na	na	na	na	na	12
2	PRIMER-G	1.430	1.424	SB	150	na	na	na	na	na	12
3	PRIMER-P	1.430	1.424	SB	150	na	na	na	na	na	12

Inkjet compatible low index optical polymer for 3D printing

JET-144, a first in a series of low index inkjet compatible materials, was recently introduced.

This optically clear material has an index of 1.44 and has the required properties for good inkjet compatibility, including the right surface tension and viscosity.

Designed primarily for piezoelectric DOD inkjet print heads, the material requires a relatively low dose of UV radiation for curing. It has strong adhesion, and relatively low modulus, which allows good endurance under thermal cycling and thermal shocks.

JET-144 will be complemented over the next few months with other inkjet compatible products, with lower index and higher index.

#	Material Name	RI at 589 nm	RI at 950 nm	Cure	Adhesion gr/cm	Elastic Modulus MPa	Viscosity CPS	Tensile Strength MPa	Elongation At Break %	Hardness Shore	Shelf Life Months
1	JET-144	1.447	1.439	UV	Good	na	15.3	na	na	na	12

Custom Products

MY Polymers provides customized products.

It may be:

- * a different Refractive Index;
- * higher or lower viscosity;
- * higher Modulus (harder) or lower (softer);
- * higher or lower bond strength;
- * a different cure method or schedule; etc.

For a detailed discussion, please feel free to [Contact Us](#)

