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高性能胶粘剂
HARDLOC OP/UV

紫外线硬化型胶粘剂

UV CURING ADHESIVES
HARDLOC
OP/UV

URL : <http://www.denka.co.jp>

照相机镜头的粘接
Camera lens adhesion

HARDLOC OP/UV系列被广泛用于 照相机录像机等的光学镜头、玻璃工艺品的粘接领域

HARDLOC OP/UV Series is extensively used as an adhesive for optical lens and parts such as cameras and electronic devices.

录像机镜头的粘接
Video camera lens adhesion

投影机镜头的粘接
Projector lens adhesion

电子元件的贴装
Electronic device adhesion

Application

Features of the Products

产品特点

Denka开发的划时代的紫外线固化型胶粘剂 HARDLOC OP/UV

HARDLOC OP/UV series are UV curing adhesives, which were developed by DENKA's original technology.

■发挥出色的特性 The HARDLOC OP/UV series shows some excellent physical characteristics.

因为固化收缩少、固化物富有柔韧性、所以能减少被粘物的变形。

The HARDLOC OP/UV series can limit strain on the adherend because the cured resin is very flexible and the shrinkage ratio is small.

有良好的透射率、折射率等光学特性。

The HARDLOC OP/UV series excels in optical characteristics like transmittance, index of refraction etc.

有优良的在空气中的表面固化性。

The HARDLOC OP/UV series can cure even in the presence of oxygen.

有良好的耐热性、耐寒性。

The HARDLOC OP/UV series excels in heat and cold resistance.

因为不照射紫外线时不会固化、所以易于调节粘度、粘接镜头时易于对准光轴。

It is easy to adjust the viscosity and to match the optical axis when the lens is bonded, because it does not harden if not irradiated by ultraviolet rays.

符合Telcordia标准。

It cleared the telcordia standard.

■使用紫外线照射能瞬时粘接 Boosts working efficiency

用紫外线照射能在几秒钟内粘接、能大幅提高作业效率。

The HARDLOC OP/UV series can cure in seconds if exposed to UV light, therefore working efficiency will increase greatly.

■易于使用的一滴性 Single component liquid

因是单液性、所以无需计量混合。

It is not necessary to mixes.

■改善作业环境 Improves the workshop environment

因为无溶剂、气味小、所以能改善作业环境。

You can improve the workshop environment because the HARDLOC OP/UV series does not have a solvent and the odor is weak.



※包装外形各产品不尽相同。

The mode of packing is different according to the product.

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OP Grade

OP系列/OP Series

粘接性能、耐久性、作业性等因产品而异。研讨时请向我公司营业所咨询。

Every grades has differet the adhesion performance durability and the workability. Please inquire the details of the person in charge.

品名 Grade	固化前 Features of adhesives before curing					固化后 Features of adhesives after curing						包装 Packaging	颜色 Color	主要特点 Main features	使用地方例子 Parts or sections to be bonded
	主成分 Base resin	粘度 Viscosity [mPa.s] [at25°C]	液体比重 Specific gravity of liquid [at25°C]	折射率 Index of refraction [nD]	固定时间 Set time 秒 [sec.]	固化物硬度 Hardness 肖氏 [Shore]	固化收缩率 Shrinkage ratio [%]	玻璃化温度 Glass transition temperature [°C]	折射率 Index of refraction [nD]	伸长率 Elongation percentage [%]	杨氏模量 Young's modulus [MPa]				
OP-1020Z	ポリエー・ポリチオール Polyene·polythiol	150	1.20	1.515	16	D-35	7.6	0	1.550	70	7.1	100g	透明 Transparent	标准 Standard	光学镜头零部件 Optical lens and optical parts
OP-1030Z		300	1.20	1.517	16	D-35	6.9	0	1.550	70	7.1			标准 Standard	
OP-1050Z		500	1.21	1.519	16	D-35	6.6	0	1.550	70	7.1			标准 Standard	
OP-1020K		200	1.21	1.517	12	D-45	6.9	7	1.555	60	8.3			耐热 Heat resistance	
OP-1030K		300	1.20	1.518	12	D-45	6.8	8	1.555	60	8.9			耐热 Heat resistance	
OP-1045K		450	1.21	1.520	12	D-45	6.6	7	1.555	60	8.9			耐热 Heat resistance	
OP-1080L		600	1.29	1.522	60	A-40	4.8	-8	1.544	100	1.2			柔软、迟固化 Flexibility·Cure in second	
OP-1120LN		1,200	1.27	1.518	80	D-33	5.4	4	1.537	190	2.1			柔软、低荧光 Flexibility·Low fluorescence	
OP-1805		500	1.13	1.528	10	A-37	6.5	-26	1.557	90	1.6			柔软、高耐湿、高折射率 Flexibility·high degree of resistance to mousture·high refraction index	
OP-1840-05		5,400	1.17	1.548	17	A-50	4.5	-15	1.569	70	2.2			柔软、高耐湿、高折射率 Flexibility·high degree of resistance to mousture·high refraction index	
OP-1540		40,000	1.19	1.563	22	A-55	3.2	9	1.570	250	1.4			柔软、低收缩 Flexibility·little shrinkage ratio	
OP-1903R		360	1.11	1.510	14	A-18	5.9	-34	1.535	80	0.4			高耐光	
OP-2070		700,000	1.32	1.554	160	A-70	0.8	10	1.564	300	9.5			高粘度、低收缩 high viscosity·little shrinkage ratio	

OP Technical Data

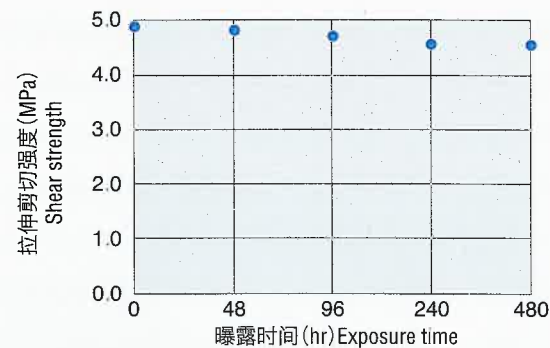
OP系列物性/Physical Characteristics of the OP Series

OP数据 1

耐久性 (高温高湿性)

Durability (at high temperature and high humidity)

胶粘剂: OP-1030K
 曝露条件: 85°C、85%RH、~500h
 被粘物: TEMPAX玻璃/TEMPAX玻璃 *2 (*2: 注册商标)
 粘接面积: 3.125cm²
 Adhesive: OP-1030K
 Exposure condition: 85°C, 85% RH, up to 500 hrs.
 Adherends: TEMPAX Glass/TEMPAX Glass *2 (*2: Registered trademark)
 Bonded area: 3.125cm²

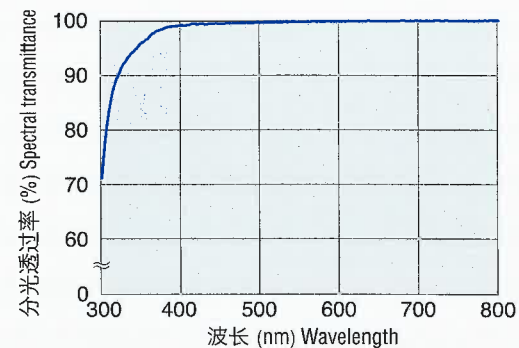


OP数据 3

光线透射率

Light transmittance

胶粘剂: OP-1030K
 试体: 石英玻璃/胶粘剂/石英玻璃 Ref: 纯水
 粘接膜厚: 20μm
 Adhesive: OP-1030K
 Specimen: Quartz glass/adhesive/quartz glass Ref: Purified water
 Bonded thickness: 20μm

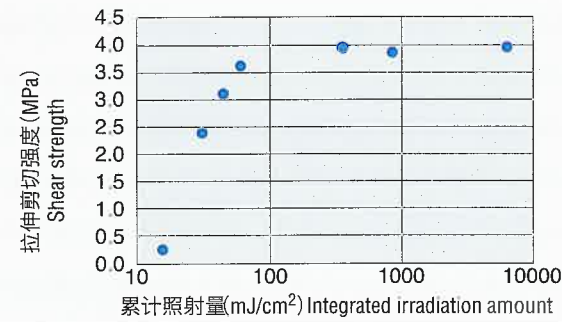


OP数据 2

紫外线照射量和固化性

UV-light irradiation amount and curing property

胶粘剂: OP-1030K Adhesive: OP-1030K
 被粘物: 玻璃/玻璃 Adherends: Glass/Glass
 粘接面积: 3.125cm² Bonded area: 3.125 cm²
 照射器: 不可见光 Irradiator: Black Light
 照度: 3mW/cm² (365nm) Illuminance: 3mW/cm² (365 nm)



OP数据 4

各种被粘物的粘接性

Adhesiveness for various adherends

胶粘剂: OP-1030K Adhesive: OP-1030K
 粘接面积: 3.125cm² Bonded area: 3.125 cm²

被粘物 Adherends	拉伸剪切强度 (MPa) Shear strength	表面处理 Surface treatment
玻璃-玻璃 Glass-glass	4.9	未处理 Untreated
玻璃-铝 Glass-aluminum	4.2	金属喷沙 Metal sanding
玻璃-铜 Glass-copper	4.1	↑
玻璃-铁 Glass-steel	4.6	↑
玻璃-ABS Glass-ABS	3.7	未处理 Untreated
玻璃-聚碳酸酯 Glass-polycarbonate	3.1	↑
玻璃-PVC Glass-PVC	2.9	↑
玻璃-聚苯乙烯 Glass-polystyrene	1.9	↑

※金属侧为喷沙处理 Metal sanding is treated with sandblast

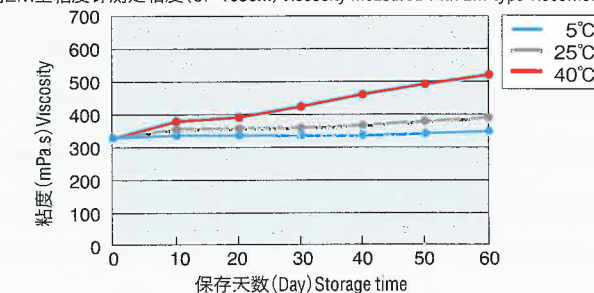
OP数据 5

各保存温度下的粘度变化

Changes in viscosity vs. storage temperature

胶粘剂: OP-1030K Adhesive: OP-1030K

用EM型粘度计测定粘度(OP-1030M) Viscosity measured with EM-type viscometer



OP-River Type-II

OP-River Type II物性/Physical Characteristics of OP-River Type II

OP River型II是为剥离附着在镜头表面的固化物而研发的剥离剂。

OP-River Type II is a releasing agent, which was developed to peel the cured resin from a lens.

特点 Features

能在短时间内剥离。(20~40分钟左右)

It can be peeled off in a short time (about 20-40 minutes).

用途 Usage

是适合于剥离附着在玻璃上的有机系树脂 (特别是HARDLOC OP/UV) 的剥离剂。

It is a suitable parting agent for peeling off an organic resin (especially, HARDLOC OP/UV) that adhesive to glass.

一般性状 General Features

外观 Appearance	淡蓝色透明液体 Cambridge blue transparent liquid
气味 Odor	有 Present
比重 Specific gravity	1.00



使用注意事项 Notice

液体为丙稀酸性, 是种极性很强的溶剂, 使用时请注意以下几点:

- 1) 挥发性很高, 请盖严, 并保存在阴凉处。
- 2) 使用时请佩戴聚乙烯制防护手套、防护眼镜等。
- 3) 使用时请使用聚乙烯制或不锈钢制带盖容器。
- 4) 沾在皮肤上时, 请用肥皂水迅速洗去。
- 5) 溅入眼内时, 即使少量也很危险。请用大量的水立即充分清洗, 并及时就医。

The liquid is alkaline, a solvent with strong polarity is used, and please take particular notice of the following points during use:

- 1) Since it is highly volatile, please close it properly and store in a cool dark place.
- 2) Please wear protective polyethylene gloves and glasses, etc. when handling.
- 3) Please use a container with a polyethylene or stainless steel lid before use.
- 4) Please wash promptly with water and soap if it comes in contact with the skin.
- 5) Even small amounts are very dangerous if it enters the eye. Please wash with large amounts of water, and consult a doctor at once.

剥离方法 Peeling method

①利用加热板加热的剥离方法

1) 预先对加热板进行加热 (300~350°C) 后, 将连接镜头放在加热板上放置一定时间 (5~10分钟)。

注1. 若15分钟内不发生剥离现象 (白化或失去光泽) 时, 将镜头反过来加热, 观察状态。

注2. 应将温度设置在350°C以下。否则若温度较高, 会在发生剥离现象的同时发生黄变, OP-RIVER TYPE II变为不溶硬化物。

2) 固定单侧镜头, 用木锤等敲击另一侧镜头。

1. Peeling method by hot plate heating

1) The joint lens is put on the pre-heated hot plate (300-350°C) for a fixed time (5-10minutes).

Note 1. If the peeling phenomenon (turning white or cloudy) does not start within 15 minutes, turn the lens around, and observe it.

Note 2. The temperature is set not to exceed 350°C. If the temperature increases, it becomes yellow during the peeling phenomenon, and OP-RIVER TYPE II becomes insoluble and hardens.

2) Fix the lens on the one side, and hit the lens on the other side with a wooden hammer.

②镜头表面清洗方法

剥离后, 浸渍在HARDLOC OP-RIVER II内1小时后, 用水清洗。

(※清洗后请用无尘纸擦去水分, 而不要加热烘干。也可用沾有丙酮或乙醇的无尘纸擦拭。)

2. Method of washing lens surface

After peeling, immerse for one hour in HARDLOC OP-RIVER II, and wash with water.

(*Don't heat to dry, but please wipe the moisture off with non-fibrous paper. The paper can also be soaked in acetone or alcohol before wiping.)

UV Grade

UVX系列/UV-Series

品种 Product type	粘度 Viscosity [mPa.s]	液体比重 Specific gravity of liquid [at 25°C]	折射率 (硬化后) Refraction index [nD at 25°C]	固化收缩率 Shrinkage ratio [%]	硬度 Hardness [肖氏] [Shore]	Tg [°C]	储存模量 Storage modulus [MPa]	主要特点 Features	使用地方例子 Parts or sections to be bonded
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丙烯酸系 Acrylic Series

UVX-7700	50,000	1.57	白色 White	4.0	D-90	130	8,000	低收缩性、耐热 Low shrinkage, heat-resistant	电子器件 Electronic device
UVX-8520KL	12,000	1.59	白色 White	3.6	D-81	69	4,100	树脂、金属粘结性 Adhesive to resin, metal	电子器件 Electronic device
UVX-8527	27,000	1.54	白色 White	1.9	D-64	39	710	树脂、金属粘结性 耐冲击性 Adhesive to resin, metal, shock	电子器件 Electronic device
UVX-8536	16,000	1.52	白色 White	3.2	D-82	70	2,400	树脂、金属粘结性 Adhesive to resin, metal	电子器件 Electronic device
UVX-8400	8,300	1.55	白色 White	4.9	D-89	80	4,600	树脂、玻璃粘结性 Adhesive to resin, glass	透镜模块 Lens module
UVX-8800	30,000	1.60	白色 White	5.0	D-85	90	4,000	树脂、金属粘结性 Adhesive to resin, metal	电子器件 Electronic device
UVX-8830	52,000	1.64	白色 White	4.1	D-91	86	4,100	树脂、金属粘结性 Adhesive to resin, metal	电子器件 Electronic device
UVX-9200	47,000	1.78	白色 White	4.1	>D-90	102	7,000	树脂、金属粘结性 Adhesive to resin, metal	电子器件 Electronic device
UVX-7000	1,200	0.98	1.51	5~6	D-68	100	1,200	耐热、耐久性 透明 Heat-resistant, durable	光纤接合 Bonding for optical fiber
UVX-3037P	1,200	0.97	1.51	6.2	D-72	120	810	耐热、耐久性 透明 Heat-resistant, durable	棱镜接合 Bonding for Prism
UVX-8204	16,000	1.00	1.50	3.3	D-40	45	290	树脂粘结性 透明 Adhesive to resin	树脂透镜接合 Bonding for COP, PAR

UVX粘结性表/List of adhesiveness of UV

品种 Grade	玻璃 Glass	锌压铸件 Zinc die-casting [ZnDC2]	镁压铸件 Magnesium die-casting [MgDC2]	铝 Aluminum [Al]	聚碳酸酯 Polycarbonate [PC]	聚酯 Polyester [PET]	聚苯硫醚 Poly phenyl sul fayd [PPS]	液晶聚合物 Liquid crystal polymer	聚芳酯 Polyarylate [Par]	FR-4 FRP	环烯烃聚合物 Cycloolefin polymer [COP]
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丙烯酸系 Acrylic Series

UVX-7700		◎	○	○							
UVX-8520KL	○	○	○		◎	○	○		○	◎	
UVX-8527					◎		◎	○			
UVX-8536	○	◎	○				○	◎			
UVX-8400	◎				◎	○	○		○	○	
UVX-8800	○	◎	◎	○	○	○	◎		○	○	
UVX-8830	○	◎	○	○	○	○	◎		○	○	
UVX-9200	○	◎			○	○	◎	○	○	○	
UVX-7000	◎		○				○	○		○	
UVX-3037P	◎	○	○	○			○	○		○	
UVX-8204	○		○		◎	○	○	○			◎

注1)本数据并非保证值。

UV Technical Data

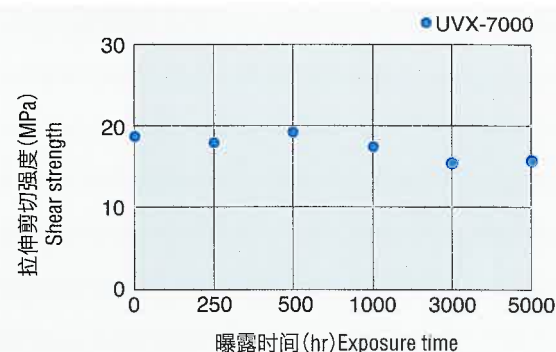
UVX系列物性/Physical Characteristics of UV Series

UV数据 1

耐久性 (高温高湿性)

Durability (at high temperature and high humidity)

胶粘剂: UVX-7000
 曝露条件: 85°C、85%RH、~5000h *1 *1:Telcordia
 被粘物: TEMPAX玻璃/TEMPAX玻璃 *2 (*2:注册商标)
 粘接面积: 8mm φ (=0.5cm²)
 粘接厚度: 80 μm
 Adhesive: UVX-7000
 Exposure condition: 85°C, 85% RH, up to 5000 hrs. *1 *1: Telcordia
 Adherends: TEMPAX Glass/TEMPAX Glass *2 *2: Registered trademark
 Bonded area: 8mm φ (= 0.5cm²)
 Bonded thickness: 80 μm

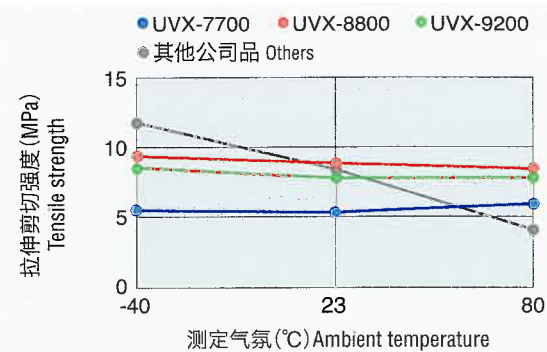


UV数据 2

耐热性 (热时测定)

Heat resistance (measured during heating)

胶粘剂: UVX-7700、UVX-8800、UVX-9200
 测定气氛: -40、23、80°C *1) 曝露时间30min
 被粘物: 锌压铸件/锌压铸件
 粘接面积: 14mm²
 粘接厚度: 600 μm
 Adhesive: UVX-7700, UVX-8800, UVX-9200
 Ambient temperatures of measurement: -40, 23, and 80°C *1) Exposure time: 30min.
 Adherends: Zinc die-casting/zinc die-casting
 Bonded area: 14 mm²
 Bonded thickness: 600 μm

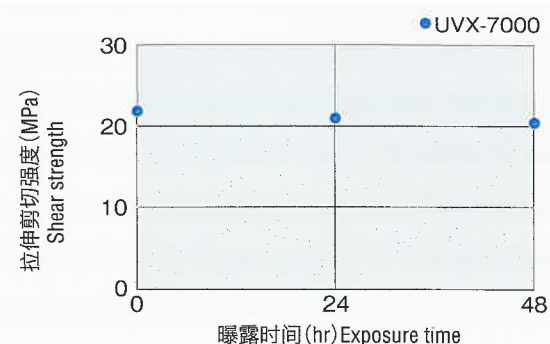


UV数据 3

耐湿性 (PCT)

Moisture resistance (PCT)

胶粘剂: UVX-7000
 曝露条件: 121°C、100%RH、2atm、~48h
 被粘物: TEMPAX玻璃/TEMPAX玻璃 *2 (*2:注册商标)
 粘接面积: 8mm φ (=0.5cm²)
 粘接厚度: 80 μm
 Adhesive: UVX-7000
 Exposure conditions: PCT 121°C, 100% RH, 2 atm, ~48h
 Adherends: TEMPAX Glass/TEMPAX Glass *2 *2: Registered trademark
 Bonded area: 8 mm φ (= 0.5cm²)
 Bonded thickness: 80 μm

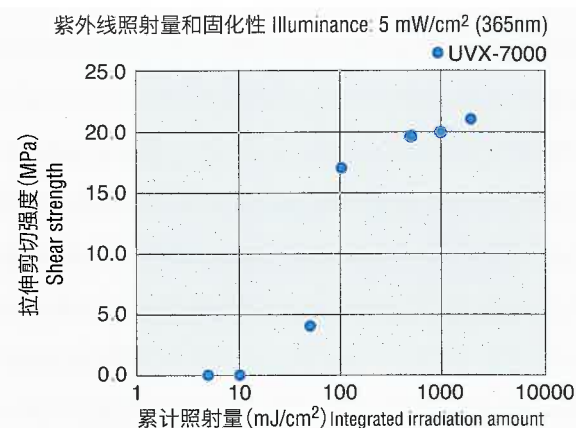


UV数据 4

紫外线照射量和固化性

UV-light irradiation amount and curing property

接着剂: UVX-7000
 被粘物: TEMPAX玻璃/TEMPAX玻璃 *2 (*2:注册商标)
 粘接面积: 8mm φ (=0.5cm²)
 粘接厚度: 80 μm
 照射器: 不可见光
 照度: 5mW/cm² (365nm)
 Adhesive: UVX-7000
 Adherends: TEMPAX Glass/TEMPAX Glass *2 *2: Registered trademark
 Bonded area: 8 mm φ (= 0.5 cm²)
 Bonded thickness: 80 μm
 Irradiator: Black light
 Illuminance: 5 mW/cm² (365nm)

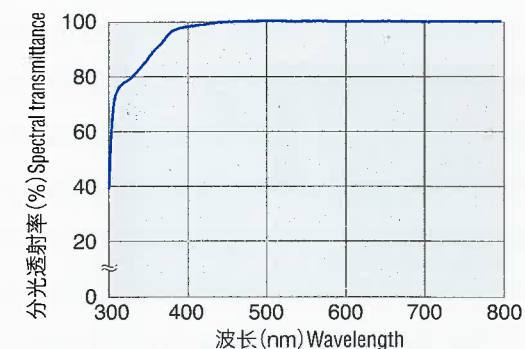


UV数据 5

光线透射率

Light transmittance

胶粘剂: UVX-7000
 试体: 白板玻璃/胶粘剂/白板玻璃 Ref: 纯水
 粘胶膜厚: 20 μm
 Adhesives: UVX-7000
 Specimen: White plate glass/adhesive/white plate glass Ref: Purified water
 Film adhesive thickness: 20 μm



How to Use

使用方法

■紫外线光源 UV light source

能使用不可见光、金属卤化物灯、高压汞灯等一般照射装置。
 照射365nm左右的紫外线后固化。

General UV light source with 365 nm UV light such as metal halide lamp, high pressure mercury arc lamp, and black light are suitable.

■固化所需照射量 Typical curing condition ※环氧除外

- HARDLOC OP·UV系列一般能以2000~3000mJ/cm²的能量固化。
- 请使用照度计, 确认对实际粘接材料的紫外线透射率。
 另, 作业时请考虑到被粘物的材质(紫外线吸收率)和厚度的影响。
 ※紫外线照射量 (mJ/cm²) = 紫外线强度 (mW/cm²) × 照射时间 (秒)。

Recommended energy to complete curing is between 2,000 to 3,000 mJ/cm². However, the curing condition depends on the bonded thickness and the light transmittance of the substrate. So, please make sure that the curing condition is good by actual end use tests.

[Notes]
 UV energy (mJ/cm²) = Intensity of the light source (mW/cm²) × Exposure time (s).
 For example, if the intensity of the light source is 100 mW/cm² and it is exposed for 25 seconds, then the total UV energy would be 2,500 mJ/cm².

■HARDLOC的保质期 Shelf life

保管温度5°C以下 2个月 (从我公司工厂出货日算起)

Please kindly contact DENKA Japan for further assistance as our product range is comprehensive and each grade differs from one and another.