**Manufacturer:**
Dymax®

**Product Name:**
Dymax OP-21G Plastic Bonding Adhesive, Optically Clear, Higher Viscosity version of OP-21, UV Cure - 3ml Syringe

**Manufacturer Part Number:**
OP-21G-3ML



DYMAX®

**OPTICAL ADHESIVES**

**OP-21 & OP-21G Product Data Sheet**

# OP-21 & OP-21G
# Flexible Plastic Bonder

Designed as efficient optical plastic bonders, OP-21 and OP-21G cure upon exposure to UV or visible light in seconds. Even most UV opaque and translucent plastics are easily bonded with light. Because of their solvent-free and rapid cure features they increase productivity, lower assembly cost and enhance worker safety. When cured with Dymax spot, beam or flood lamps, they deliver optimum speed and performance for a variety of optical applications. This product is in full compliance with RoHS directives 2015/863/EU.

**SUBSTRATES BONDED:** **• Polycarbonate • Polystyrene • Acrylic • Plastics • Metals • Glass**

**FEATURES:** **• Solvent Free • High Strength • Optically Clear • Wide Surface Compatibility**
**• Broad Temperature Range • Complete Cure in Seconds**

**APPLICATIONS:** **• Lens Bonding • Fixturing • Tacking**

## TYPICAL UNCURED PROPERTIES

| | | | |
|---|---|---|---|
| Solvent Content | | None - 100% Solids | |
| Composition | | Urethane Acrylate | |
| Appearance | | Clear Liquid | |
| Solubility | | Alcohols/Chlorinated Solvents/Ketones | |
| Flash Point | | >85°C (185°F) | |
| Density | | 1.06 | |
| Viscosity | OP-21 | 450 cP | ASTM D-1084 |
| | OP-21G | 25,000 cP | |

## TYPICAL CURED PROPERTIES

| | | |
|---|---|---|
| *PHYSICAL* | | |
| Linear Shrinkage | 2.7 % | ASTM D-2566 |
| Durometer Hardness | D55 | ASTM D-2240 |
| Elongation at Break | 175% | ASTM D-638 |
| 24 hr Water Absorption | 1.8% | ASTM D-570 |
| Tensile at Break | 1,700 psi | ASTM D-638 |
| Boiling Water Absorption (2 h) | 1.3% | ASTM D-570 |

*DSTM refers to Dymax Standard Test Method

## RECOMMENDED CURING SYSTEMS

| **Lamp** | **2000-EC** | **5000-EC** | **PC-3** | **3010-EC** |
|---|---|---|---|---|
| **Light Type** | UV | UV | UV | UV |
| **Lamp Type** | Flood | Flood | Spot | Spot |
| **Intensity (mW/cm²) at Peak Wavelength** | 50 @ 365 nm | 150 @ 365 nm | 1000 @ 365 nm | 1800 @ 365 nm |
| **Wavelength (nm) Working Range** | 300-500 | 300-500 | 300-500 | 300-500 |
| **Cure speed (sec)** | | | | |
| **Between glass slides** | 1 | 1 | 1 | 1 |
| **1/8" Bead** | 20 | 15 | 10 | 7 |
| **Cure Depth in 1 Minute (inch)** | 3/16 | 9/16 | 1/8 | 3/16 |

RoHS Compliant

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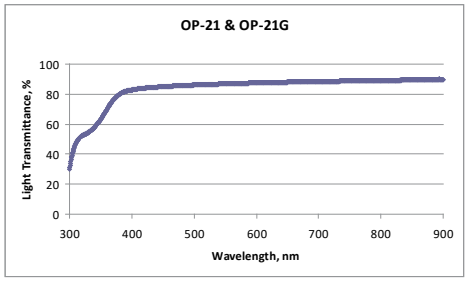
The required intensity and cure time should be determined during the initial process validation stage. Factors that should be considered during process validation which can effect the adhesive cure rate and depth of cure include part geometry, bond-gap size, percent light transmittance through the substrate at 365 nm and/or 436 nm, distance from the light source to the adhesive bond are. UV and visible light intensity and spectral output of the light source, the desired margin of safety to be built into the process, etc.

## OPTICAL PROPERTIES

| | | |
|---|---|---|
| Refractive Index (25°C) Uncured | 1.478 | ASTM D-1218 |
| Refractive Index (25°C) Cured | 1.50 | ASTM D-1218 |

**LIGHT TRANSMITTANCE***




*Measured at 0.03 mm [0.001in] per DSTM-501‡

## STORAGE AND SHELF LIFE

Store the material in a cool, dark place when not in use. Do not expose to light. This product may polymerize upon prolonged exposure to ambient and artificial light. Keep covered when not in use. This material has an 18-month shelf life from date of manufacture, unless otherwise specified, when stored between 10°C (50°F) and 35°C (90°F) in the original, unopened container.

## DISPENSING THE ADHESIVE

This material may be dispensed with a variety of manual and automatic applicators or other equipment as required.

## SAFETY

Wear impervious gloves and/or barrier cream. Repeated or continuous skin contact with liquid adhesive will cause irritation and should be avoided. Do not wear absorbent gloves. Remove adhesive from skin with soap and water. Never use solvents to remove adhesive from skin or eyes.

## CAUTION

For industrial use only. Avoid breathing vapors. Avoid contact with eyes and clothing. In case of contact, immediately flush with water for at least 15 minutes; get medical attention. Wash clothing before reuse. Keep out of reach of children. Do not take internally. If swallowed, induce vomiting at once and call a physician. Repeated or continuous skin contact with liquid adhesive will cause irritation and should be avoided.

## GENERAL INFORMATION

This product is intended for industrial use only. Keep out of the reach of children. Avoid breathing vapors. Avoid contact with skin, eyes, and clothing. Wear impervious gloves. Repeated or continuous skin contact with uncured material may cause irritation. Remove material from skin with soap and water. Never use organic solvents to remove material from skin and eyes. For more information on the safe handling of this material, please refer to the Safety Data Sheet before use.

The data provided in this document are based on historical testing that Dymax performed under laboratory conditions as they existed at that time, and are for informational purposes only. The data are neither specifications nor guarantees of future performance in a particular application. Dymax does not guarantee that this product's properties are suitable for the user's intended purpose.

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Numerous factors—including, without limitation, transport, storage, processing, the material with which the product is used, and the ultimate function or purpose for which the product was obtained—may affect the product's performance and/or may cause the product's actual behavior to deviate from its behavior in the laboratory. None of these factors are within Dymax's control. Conclusions about the behavior of the product under the user's particular conditions, and the product's suitability for a specific purpose, cannot be drawn from the information contained in this document.

It is the user's responsibility to determine (i) whether a product is suitable for the user's particular purpose or application and (ii) whether it is compatible with the user's intended manufacturing process, equipment, and methods. Under no circumstances will Dymax be liable for determining such suitability or compatibility. Before the user sells any item that incorporates Dymax's product, the user shall adequately and repetitively test the item in accordance with the user's procedures and protocols. Unless specifically agreed to in writing, Dymax will have no involvement in, and shall under no circumstances be liable for, such testing.

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