

4004V3

Glass Bonder

General Information

4004 is a UV and visible light curing acrylate adhesive. It is one component, solvent free based on modified urethane acrylate. It is designed for plastic bonding. It has excellent bond strength on PVC, PET, PC etc.. And it can be cured in seconds, which enables faster processing, greater output, and lower assembly costs.

Uncured Properties

Chemical Type	Acrylated Urethane	-
Appearance	Clear Liquid	AKT1.1
Viscosity @25°C	5,000cP	AKT1.6
Specific Gravity	1.05g/ml	AKT1.5
Solubility	Alcohols/Acetone/EA	-
Flash Point	>93°C /200°F	ASTM D92
Thixotropy Index	1.1	AKT1.7

Curing Schedule

With UVA light (320nm ~ 420nm)

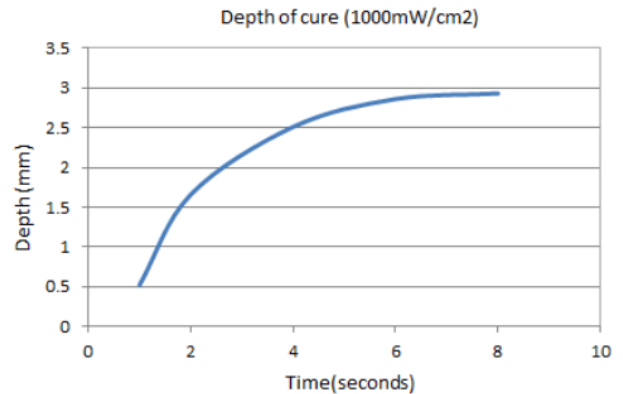
UVA @ 365 nm, 1200mJ/cm² (Typical Bonding Requirement)

Fully cure can be determined by curing at different times and intensities, and then measuring the corresponding change in cured properties such as adhesion and hardness, etc. Or can be determined by FTIR. Full cure is defined as the point at which more light exposure no longer improves cured properties.

Depth of cure @ 1000 mW/cm², 3mm

For a certain adhesive, the cure depth depends both on light source, light intensity and exposure time. The graph below show the increase in depth of cure with time as measured from the thickness of the cured pellet formed in a polypropylene mold.

Curing System – Aventk® XM-210 365nm



Cured Properties

Shore Hardness	D60	AKT 5.1
Elongation at Break	110%	AKT 5.3
Tensile at Break	22Mpa	AKT 5.2
Young's Modulus	210Mpa	AKT 5.4
Boiling water absorption	2.6%@2H	AKT 4.2
Water absorption 25°C	2.7%@24H	AKT 4.3
Linear shrinkage	1.1%	AKT 4.4
Glass transition, Tg	42°C	AKT 4.5
CTE α1, ppm/K	174	AKT 4.6
α2, ppm/K	175	AKT 4.6

Shearing Strength

Cured by Aventk® XM-210 365nm 1200mJ/cm²

PC-PC	7.4Mpa	AKT 6.1
PC-Fe	4.2 Mpa	AKT 6.1
Glass-Glass	6.7 Mpa	AKT 6.1

After Aging

Cured by Aventk® XM-210 365nm 1200mJ/cm²

85°C/85% @168H	57%	AKT 7.1
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Directions for use

- This Product is light sensitive. Exposure to ambient and artificial light should be kept to a minimum during storage and handling.
- The product should be dispensed from applicators with black pipes and needles with UV block property.
- For best performance, all surfaces in contact with the material should be clean and free from flux residue, grease, mold release, or other contaminants prior to dispensing the material.
- Apply adhesive to one of the bond surfaces and assemble immediately.
- Crystalline and semi-crystalline thermoplastics should be checked for the risk of stress cracking when exposed to liquid adhesive.
- Excess uncured adhesive can be wiped away with organic solvent.
- Curing speed is dependent on lamp intensity, distance from light source, depth of cure needed or thickness, and percent light transmission of components between the material and light source.
- Oxygen may inhibit surface cure. Surfaces exposed to air may require high-intensity UV light to produce a dry surface cure. Flooding the curing area with an inert gas, such as nitrogen, can also reduce the effects of oxygen inhibition.
- Cooling system should be provided for temperature sensitive substrates such as thermoplastics.
- Bonding parts should be allowed to cool after cure before testing and subjecting to any loads or electrical testing.

Storage

Store the material in cool (10°C ~35°C), dark place when not in use. Do not expose to light.

Shelf life: (Kept in original container) 12 months.

Pot life: (After original container opened) 7 days.

Dispensing Setting

This material can be dispensed with a variety of manual and automatic applicators, such as needle valve and jetting valve. The detail dispensing parameter should be obtained through experiment on the actual parts and process requirement.

Health and Safety

This material is intended for industrial use only. Keep out of the reach of children.

Hazard statement(s)

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H402 Harmful to aquatic life.

Precautionary statement(s)

P201 Obtain special instructions before use.

P280 Wear protective gloves.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

Please refer to MSDS for more detail safety information.