



APTEK LABORATORIES, INC.

ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 6100-1-A/B

Water Clear Optoelectronic Encapsulant

PRODUCT DESCRIPTION

APTEK 6100-1A/B is a two component, unfilled, water clear, rigid system designed for the encapsulation of LED chips in OPTO devices. **APTEK 6100-1A/B** provides excellent environmental protection and when casted becomes the lens portion of the device and displays excellent clarity and light transmissivity.

KEY FEATURES AND BENEFITS

- Fast gel time/ good hot strength for fast demold time
- High purity system to minimize potential of corrosion to die and lead frame surfaces
- Low mixed viscosity for easy degassing and minimum bubble entrapment
- Minimum discoloration with prolonged heat aging to 120°C

HANDLING INFORMATION

Mix ratio, parts by weight:	100 (6100-1A) / 100 (6100-1B)
Work life*, 25°C, 45% RH, 500 gms, hrs. *adversely affected by heat and humidity	>8
Gel time, 10 gms, 120°C, mins	5-10
Mixed viscosity @ 25°C, cps (spindle/RPM)	650 (#3/50)

Handling Notes:

1. Visually inspect containers of Part B before use. It is a very pure material and may crystallize upon prolonged storage below 20°C. If crystals are present, place the container into 60-70°C air circulating oven for 1 to 4 hours until material is totally liquid. Allow to cool to 30-35°C before use. DO NOT FORCE COOL as this may cause re-crystallization.
2. Part B is moisture sensitive. Reseal opened containers immediately after use. If possible, purge with dry nitrogen or argon before resealing to prolong shelf-life.

MIXING

Weigh 100 parts by weight of APTEK 6100-1 Part A into a clean, dry, glass, metal or plastic container and then add 100 parts of APTEK 6100-1 Part B. Machine mix at slow speed or hand stir with glass or metal stirrer until complete and thorough blending is achieved. Care should be taken to avoid any source of moisture contamination or air entrapment during mix. Mixture may be warmed to 35°C maximum to facilitate degassing and handling.

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Note: For best results and void free castings vacuum mixture (25-35°C) at less than 15mm Hg for 5 minutes. Stop vacuuming when material starts to boil.

CURE SCHEDULES*

Discrettes:

Demold time: 60 mins. @ 125°C

Post Cure: 4 hrs. @ 150°C
or
8 hrs. @ 125°C

Displays (polycarbonate casings):

Cure time: 12 hrs. @ 115°C

*Note: Above schedules were determined by tracking the Tg vs time data at various temperatures. These schedules represent a condition where the Tg of the system has remained constant for at least 35% of the time at each respective temperature.

The user should determine the proper cure schedule for individual application requirements. As a guideline increased cure times will improve heat/humidity resistance without adversely effecting physical and electrical properties.

TYPICAL PROPERTIES

(values not to be used for specification purposes)

<u>CHARACTERISTICS</u>	<u>6100-1A</u>	<u>6100-1B</u>	<u>TEST METHOD</u>
Color	dark blue	clear to pale yellow	Visual
Specific gravity	1.16	1.19	ASTM D-1475
Viscosity @ 25°C, cps	1900	375	ASTM D-1824
Flash point, °C	>200	>150	ASTM D-92
Shelf life @ 25°C, mos factory sealed containers	12	12	
Index of refraction, 25°C	1.54	1.48	ABBE
<u>CURED PHYSICAL PROPERTIES</u>	<u>APTEK 6100-1A/B</u>		<u>TEST METHOD</u>
Hardness, durometer D	86		ASTM D-2240
Glass transition temp., °C	125		ASTM E-831
Thermal coefficient of expansion, in/in/°C	alpha 1,max. alpha 2,max.	70x10 ⁻⁶ 200x10 ⁻⁶	ASTM E-831 ASTM E-831
Moisture Absorption; 2 hr water boil, %	0.45		ASTM D-570

Hydrolyzable ionic contaminants

<u>Ion</u>	<u>Extraction Level, ppm</u>
Cl ⁻	<35
Br ⁻	<3
F ⁻	<3
NH ₄ ⁺	<15
K ⁺	<10
Na ⁺	<20
NO ₃ ⁻	<6
PO ₄ ⁻	<6

Notes:

1. Sample ground to 40-60 mesh.
2. 1 gm of sample to 50 gm of de-ionized water.
3. Sample/water mixture refluxed 48 hrs @ 125°C, 15 psi

CURED ELECTRICAL PROPERTIES

APTEK 6100-1A/B

TEST METHOD

Volume resistivity
@25°C, ohm-cm

>1.0 x 10¹⁵

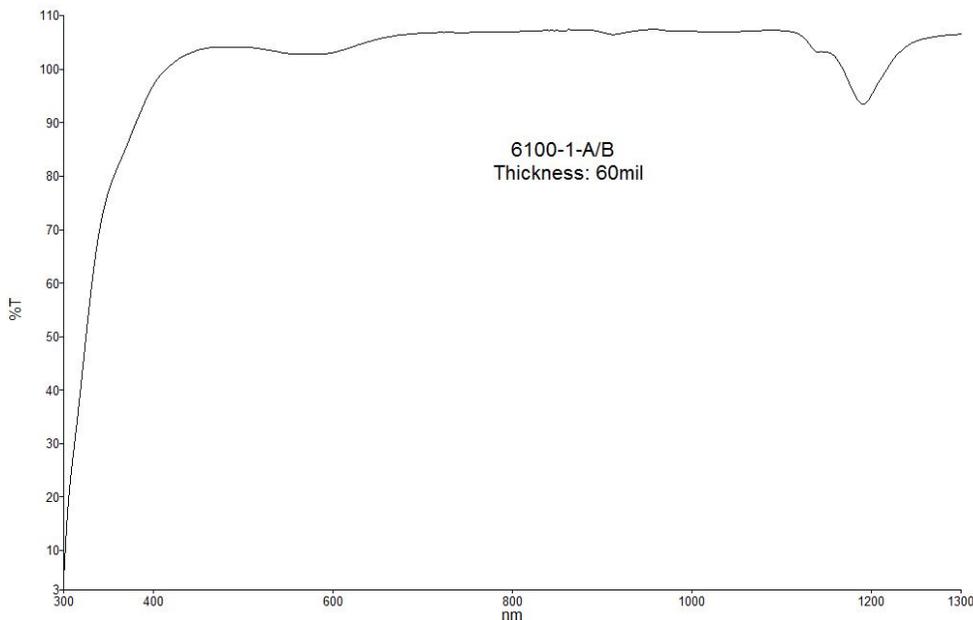
ASTM D-257

Dissipation factor/dielectric constant
@ 25°C, 1 MHz, max.

0.008/3.7

ASTM D-150

TRANSMISSION CURVE @ 60 MILS THICKNESS:



SAFETY AND FIRST AID

APTEK 6100-1A is safe to handle when used properly. Contact with skin or eyes can cause irritation and possible allergic skin reaction with prolonged or repeated use. Avoid contact with skin and eyes and use in a well-ventilated area and avoid breathing vapors. In case of eye contact, flush with fresh clean water for at least 15 minutes; for skin contact, wash thoroughly with soap and water. If swallowed, drink at least one pint of water and call a physician. Refer to Material Safety Data Sheet for more details.

APTEK 6100-1B is safe to handle when used properly. It may cause eye irritation, possible eye damage, skin irritation and possible allergic skin reaction with direct contact. Prolonged inhalation of vapors may result in breathlessness, coughing, and irritation of mucous membranes. Avoid skin and eye contact and use in a well ventilated area. In case of eye contact, flush profusely with fresh clean water for 15 minutes and contact a physician. For skin contact, wash thoroughly with soap and water. If inhaled, move subject to fresh air and provide fresh water to drink. If swallowed, dilute with at least one pint of water and contact physician immediately. Refer to Material Safety Data Sheet for more details.

FOR INDUSTRIAL USE ONLY

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