CoolTherm® UR-2000 Thermally Conductive Urethane Gap Filler

Technical Data Sheet

CoolTherm® UR-2000 gap filler is a two-component thermally conductive urethane system designed to provide thermal conductivity for electronic applications. CoolTherm UR-2000 gap filler cures at room temperature to produce a flame retardant adhesive.

Features and Benefits:

Thixotropic Viscosity – maintains low viscosity during dispensing, with minimal flow after dispensing; excellent sag and slump resistance.

UL Rated – provides excellent flame retardancy; meets requirements of UL 94 V-0 standards.

Room Temperature Cure – suitable for curing at room temperature; may be heat cured (120°C) to expedite cure.

Durable – provides excellent adhesion to powder-coated and e-coated aluminum surfaces; excellent resistance to peel from PET film and aluminum-coated PET substrates.

Application:

Mixing – Mix CoolTherm UR-2000 resin with CoolTherm UR-2000 hardener at a 1:1 ratio, by volume (100:125, by weight). Handheld cartridges or automatic meter/mix/dispense equipment should be used to avoid any air entrapment in the material. Manual mixing is not recommended.

Applying – Apply material using handheld cartridges or automatic meter/mix/dispense equipment.

- Handheld Cartridges
  1. Load the cartridge into the applicator gun and remove the end caps.
  2. Level the plungers by expelling a small amount of material to ensure both sides are level.
  3. Attach mixing tip and expel a mixer's length of material.
  4. Apply material to substrate and mate the parts within the working time of the gap filler. Clamp in position until material reaches handling strength.

- Meter/Mix/Dispense Equipment
  1. Ensure the correct style/type of MMD system is used with this material.
  2. Warming the dispense lines will lower viscosity, increase dispensing speed, and maintain consistency in the dispensing environment.
  3. Contact your Parker LORD representative if assistance is needed with selecting and using equipment.
  4. Refer to Meter/Mix/Dispensing of LORD Urethane Gap Filler Materials technical tip for additional information.

Curing – CoolTherm UR-2000 gap filler will reach full cure in 24 hours at room temperature. Cure can be expedited at 120°C for 2 hours. This time-at-temperature profile refers to the time the material should be allowed to cure once it reaches the target temperature. Allowance should be made for oven ramp rates, parts with large thermal mass and other circumstances that may delay material reaching the target temperature.

Typical Properties*

	UR-2000 Resin	UR-2000 Hardener	Mixed
Appearance	Red to Pink Paste	White Paste	Pink Paste
Viscosity, cP @ 25°C			
0.5/sec Shear Rate	1,200,000	1,250,000	500,000
1/sec Shear Rate	745,000	780,000	400,000
5/sec Shear Rate	305,000	270,000	220,000
Specific Gravity	2.3	2.8	–
Working Time, minutes @ 25°C	–	–	85

*Data is typical and not to be used for specification purposes.

Typical Cured Properties*	
Thermal Conductivity, W/m·K Hot Disc Transient Method	2
Glass Transition Temperature (Tg), ºC by DMA	20
Hardness Shore D, ASTM D 2240	55
Lap Shear Strength, MPa (psi) ASTM D 1002 Powder-coated Aluminum E-coated Steel	 6 (870) 9 (1305)
180º Peel Strength, gf/cm ASTM D 903 Bare PET, 0.25 mm Aluminum-coated PET	 2000 600
Volume Resistivity, ohm-cm ASTM D 257	1 x 10^{13}
Dielectric Strength, kV/mm (V/mil) 1 MHz, ASTM D 149	15 (381)

*Data is typical and not to be used for specification purposes.

Shelf Life/Storage:

Shelf life of each component is six months when stored in clean, dry environment at 18-30°C in original, unopened container.

After opening, protect each component from exposure to moisture by using dry nitrogen as an inert cover each time material is removed. Do not return dispensed material to its original container.

Cautionary Information:

Before using this or any Parker LORD product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

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