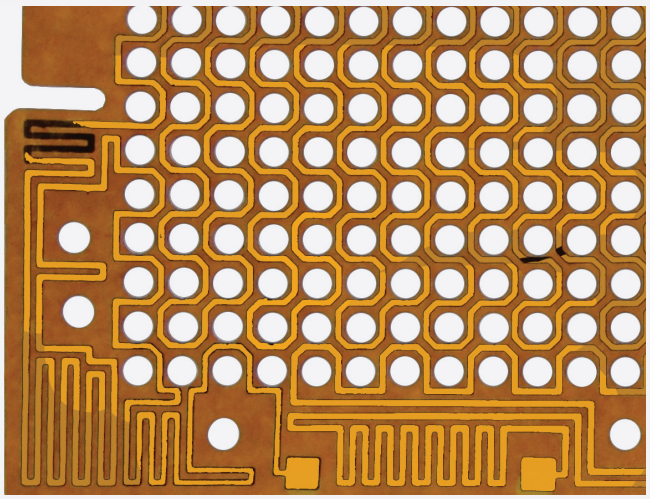
Application Note

ARLON® ENGINEERED FOR YOU

ARLON® raPid™ Flex Heater Dielectric

ARLON® raPid™ polyimide substrates are comprised of a revolutionary construction that incorporates the benefits of polyimide heater dielectrics with the flexibility and usability of a silicone adhesive system. This combination greatly reduces cure temperatures, pressures, and cycle times.



TYPICAL PROPERTIES	
Temperature Range, °C (°F)	-50 to 232 (-58 to 450)
Dielectric Strength, kV	9.5
Flame Rating, UL	HB
UL RTI, °C (°F)	150 (302)
Ply Adhesion, N/mm (lbf/in)	1050 (6.0)

PERFORMANCE ADVANTAGES
Cure Cycle Times - Under 20 minutes
Press Cure Temperatures as low as 121°C (250°F)
Can be used for both foil-etched and wire-wound flex heater constructions
Formulated to eliminate voids, blisters, and bubbles with low/no pick off
Superior thermoset bonding properties with no circuit swimming and very low outgassing
Available in both generic polyimide and Kapton® brand polymide

Applications:

- Replacement for acrylic or FEP adhesives in polyimide flexible heaters
- Maintain temperatures in analytical test equipment with a chemical-resistant heater
- Outdoor electronics requiring cold weather operation via ultra-low profile heater constructions
- Low-weight heaters for aerospace applications to protect devices against cold temperatures at high altitudes
- Medical equipment requiring faster response rate heating systems

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ARLON® raPid™ Flex Heater Dielectric, cont'd.

Part Number	39C20N005-25X	40C20N005-25X	I39C28N005-12X	I40C28N005-12X	39C20R007-25X	40C20R007-25X
Polyimide Type, mm (in)	Generic 0.05 (0.002)	Kapton® 0.05 (0.002)	Generic 0.05 (0.002)	Kapton® 0.05 (0.002)	Generic 0.05 (0.002)	Kapton® 0.05 (0.002)
Adhesive, mm (in)	Transparent Silicone 0.075 (0.003)	Transparent Silicone 0.075 (0.003)	Transparent Silicone 0.075 (0.003)	Transparent Silicone 0.075 (0.003)	Red Silicone 0.13 (0.005)	Red Silicone 0.13 (0.005)
Foil Laminates, mm (in)	None	None	Inconel® 0.025 (0.001)	Inconel® 0.025 (0.001)	None	None
Release Liner, mm (in)	LLDPE 0.064 (0.0025)	LLDPE 0.064 (0.0025)	LLDPE 0.064 (0.0025)	LLDPE 0.064 (0.0025)	LLDPE 0.064 (0.0025)	LLDPE 0.064 (0.0025)
Dielectric, kV min.	9.5	9.5	9.5	9.5	9.5	9.5
Ply Adhesion, N/min (lbf/in. min)	1,050 (6.0)	1,050 (6.0)	1,050 (6.0)	1,050 (6.0)	1,050 (6.0)	1,050 (6.0)
UL Flame Class	HB	HB	HB	HB	HB	HB
UL Hot Wire Ignition	4	4	4	4	4	4
UL High Amp Arc Ignition	0	0	0	0	0	0
RTI, °C (°F)	150 (302)	150 (302)	150 (302)	150 (302)	150 (302)	150 (302)
Width, mm (in)	635 (25)	635 (25)	304 (12)	304 (12)	632 (25)	635 (25)

Notes:
- All metric conversions are approximate.
- Additional technical information is available.
- Typical values should not be used for specification limits.

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ARLON® raPid™ Flex Heater Dielectric, cont'd.

Process Recommendations for Foil-Etched Flex Heaters

1. Print I##C28N005 to desired circuit using photo-lithography techniques and etch with ferric chloride or other suitable solvent.
2. Prime etched circuit with Dow Corning PR-2260, Lord Chemlok 607 or other suitable primer according to manufacturer's recommendations.
3. Remove polyethylene release liner from another piece of ARLON® raPid™ substrate and laminate rubber to rubber taking care to avoid air entrapment. Use of a squeegee or nip roller will aid air removal.
4. Use platen press or vacuum bag to thermally cure the laminate at 120ºC (248ºF) and 103 kPA (17.5 psi) for 15 minutes.

Process Recommendations for Wire-Wound Flex Heaters

1. Wind resistance wire on pin board to form desired circuit.
2. Remove polyethylene release liner from ARLON raPid substrate and lay over circuit.
3. Using a roller, transfer circuit by rolling ARLON raPid substrate onto the pin board.
4. Peel ARLON raPid substrate away from pin board to pick up circuit.
5. Remove polyethylene release liner from another piece of ARLON raPid substrate and laminate rubber to rubber taking care to avoid air entrapment. Use of a squeegee or nip roller will aid air removal.
6. Use platen press or vacuum bag to thermally cure the laminate at 120ºC (248ºF) and 103 kPA (17.5 psi) for 15 minutes.

For more information and to request a sample, please contact our team of product experts at **solutions@rogerscorp.com**

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