

Application Note:

Process for Adhering Silicone Sponge to Calendered Silicone Rubber Substrates for Flexible Heaters

Arlon, one of the world's leading suppliers of calendered silicone rubber substrates, is introducing the four grades of silicone sponge shown in the following table. These grades are designed specifically for the silicone flexible heater industry where high temperature thermal insulation is needed for safety and energy efficiency. These grades deliver a level of compatibility with Arlon's calendered silicone rubber substrates previously unobtainable from competitive sponge and foam products.

Arlon Silicone Sponge Properties:

Arlon Sponge Product	General Purpose		Flame Resistant	
	99C52R250	99C52R500	99C72X250	99C72X500
Color	Red		Gray	
Thickness (inch)	0.225-0.275	0.450-0.550	0.225-0.275	0.450-0.550
Compress deflection at 25% (psi)	10-15			
Water absorption (closed cell test)	5% Max			
Compression Set at 100°C (22hrs)	< 20%			
Thermal Conductivity	< 0.150 W/mK			
Specific Gravity	0.4 - 0.6			
Tensile Strength	100 psi (min)			
Elongation	300% (min)			
Ply Adhesion to Arlon 51276R015	>3 lbs/in			
Total Mass Loss (125°C, 24hr, vacuum)	<1%			
Tensile Strength Retention (after 250°C* 3Days)	>70%			
Elongation Retention (after 250°C* 3Days)	>30%			

Process Recommendation:

The following process recommendation is made for adhering Arlon silicone sponge to an uncured calendered silicone rubber substrate. Considerations are made for both vacuum bag and platen press processes.

1. Sponge surface should be clean and free of contamination. Sponge surfaces may be cleaned with isopropyl alcohol and a lint free cloth. After cleaning allow the isopropyl alcohol to completely evaporate prior to moving to Step 2.
2. Laminate the silicone sponge to the uncured surface of the flexible heater taking care to remove air from the interface. A nip roller or squeegee can be used to simultaneously drive air from the interface and laminate in a single step.

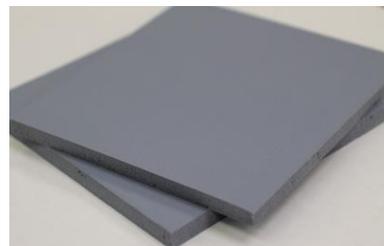
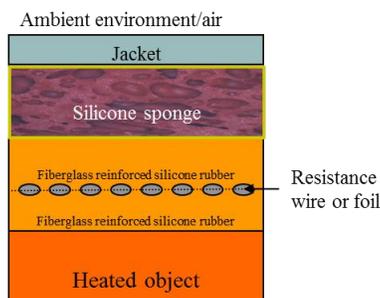
Arlon Silicones Technology

3. Apply pressure by vacuum bag or platen press to ensure intimate contact between the sponge and the uncured layer of the flexible heater. Too much pressure can result in the silicone sponge elongating in the x/y direction which will cause the flexible heater to curl after releasing pressure. To address this reduce pressure incrementally by 20%. Maintain pressure at room temperature for at least one minute.
 - a. If by vacuum bag apply full vacuum (approx. 14 PSI).
 - b. If by platen press apply 15 PSI uniformly across the heater assembly.
4. Remove pressure and oven cure. Temperature should be according to the uncured calendered silicone rubber substrate.
 - a. Typically between 212°F (100°C) and 350°F (177°C).
5. Cure time can vary significantly depending on the cure temperature and thermal lag of the equipment and heater assembly. Generally 15 – 30 minutes is sufficient.

Availability:

Arlon silicone sponge is available in full width manufactured rolls and sheets.

Arlon Sponge Product	General Purpose		Flame Resistant	
	99C52R250	99C52R500	99C72X250	99C72X500
Rolls, manufactured width in inches	46	42	46	42
Rolls, minimum usable width in inches	44	40	44	40
Rolls, standard lengths in lineal yards	50	40	50	40
Sheets, maximum dimensions in inches	44 x 84	40 x 84	44 x 84	40 x 84



Arlon sponge bonds cohesively to Arlon substrates without RTV adhesives.



Contact your local sales engineer today or call us at +1 (800) 635-9333.