

## SUBJECTIVE BONDING STUDY

### PRODUCTS TESTED

#### BRP Rubber Products

- |   |  |
|---|--|
| <p>BG715- Premium Grade 70 Durometer Buna "N" or NBR<br/>         BC615- Premium Grade 60 Durometer Neoprene (polychloroprene)<br/>         V1630- Premium Grade 75 Durometer VITON® rubber sheet<br/>         BA615- Premium Grade 60 Durometer EDPM</p> | <p>C530- Nylon inserted premium grade 70 Neoprene<br/>         IS872- White Buna- FDA approved</p> |
|---|--|

### SETUP AND TESTING

Adhesive systems evaluated were backed with 1 mil PET film (liner-side for double-coated products) and trimmed to 1 inch width. 2 sample sets were laminated to customer-supplied materials using ~50% compression; one set laminated at Room Temperature and one set using 150 °F Heat Assist. Samples were conditioned for 5 days at room temperature and evaluated. Samples further conditioned for 5 days @ 120 °F and 5 days at Room Temperature and evaluated.

#### SUBJECTIVE RATING SYSTEM

- EXCELLENT:** Completely destructive bond and/or substantial force required to remove adhesive from material.
- VERY GOOD:** Substantial Destruction to surface of material and/or significant force required to remove adhesive from material.
- GOOD:** Partially destructive bond and/or moderate force required to remove adhesive from material.
- FAIR:** Non-destructive bond to material but moderate force required to remove adhesive

#### SYMBOLS

<b>HEAT ASSIST NECESSARY</b>	Δ Bond demonstrated improvement after accelerated aging noted (time and temp)
<b>HEAT ASSIST BENEFICIAL</b>	D Discoloration of adhesive noted after accelerated aging noted
S Indicates Product Series	OG Outgassing
LAM Lamination Temperature	L- Minor Legging      L Moderate Legging      L+ Major Legging
RT Room Temperature	

Foam Bonding evaluations are affected by foam thickness and integrity. Adhesion to foam and rubber products are affected by factors including material thickness and density, lamination speed, temperature, and compression. Bond strength observed immediately after lamination is often not a reliable indicator of long term adhesion or compatibility. Results being provided as a guide to product selection; products should be thoroughly tested to application materials applied using intended production equipment and practices and evaluated in conditions reflecting intended use.

Data presented are typical properties taken from a limited number of production runs, and should not be used for specification purposes. Berry Global, Inc. makes no warranty expressed or implied, and specifically disclaims and disavows any implied warranty or merchantability and of fitness for a particular purpose. Berry also is not responsible for formulation changes in products that could impact the bonding ability of the Berry materials tested. Accordingly, all Berry products are sold with the understanding that purchasers will be solely responsible for determining the suitability of the materials for any purpose.

Results: Rubber Materials after 4 Days @ Room Temperature

		<b>BG715</b> Premium Grade 70 Durometer Buna "N"	<b>BC615</b> Premium Grade 60 Durometer Neoprene	<b>V1630</b> Premium Grade 75 Durometer VITON®	<b>BA615</b> Premium Grade 60 Durometer EPDM	<b>C530</b> Nylon inserted premium Grade 70 Durometer Neoprene	<b>IS872</b> White Buna- FDA approved
COND:		4 Days @ RT	4 Days @RT	4 Days @RT	4 Days @RT	4 Days @RT	4 Days @RT
SUBJECTIVE RATING	EXCELLENT						7854 2237M 3175M 4787M
	VERY GOOD	2237M 3175M		2237M 3175M 4787M 5008B 5944M			730 5008B
	GOOD	7854L 4787M 5008B			7854L	2237M (D)	2019M
	FAIR	2019M 5944M	7854 2019M 2237M 3175M 4787M 5008B	730 7854 2019M	7854L 3175M 4787M	7854 (L) (D) 3175M (D) 4787M (D) 5008B (D)	5944M

Results: Rubber Materials after 3 days @ 120°F

		<b>BG715</b> Premium Grade 70 Durometer Buna "N"	<b>BC615</b> Premium Grade 60 Durometer Neoprene	<b>V1630</b> Premium Grade 75 Durometer VITON®	<b>BA615</b> Premium Grade 60 Durometer EPDM	<b>C530</b> Nylon inserted premium Grade 70 Durometer Neoprene	<b>IS872</b> White Buna- FDA approved
COND:		<b>3 Days @ 120°F</b>	<b>3 Days @ 120°F</b>	<b>3 Days @ 120°F</b>	<b>3 Days @ 120°F</b>	<b>3 Days @ 120°F</b>	<b>3 Days @ 120°F</b>
SUBJECTIVE RATING	EXCELLENT						7854 2237M 3175M 4787M 5008B
	VERY GOOD	2237M 3175M 4787M		7854 (L) 2019M 2237M 3175M 4787M 5008B			730 2019M
	GOOD	7854 (L) 2019M 5008B		730 5944M		4787M (D)	
	FAIR	730 5944M	7854 (L)		7854 2019M 3175M 7854 (L)	7854 (L) (D) 2019M (D) 2237M 3175M	5944M