

Technical Performance Comparison AEROFLEX EPDM™ v NBR/PVC Closed-Cell Elastomeric Insulation

The intent of this technical bulletin is to illustrate, without bias, the technical performance characteristics of EPDM and NBR/PVC [Nitrile Butadiene Rubber/PVC] closed-cell elastomeric insulation for building mechanical systems: piping, ducts, and equipment. Data was obtained from publicly available technical data sheets of 2 leading U.S. manufacturers as of the date of this publication.

Note: NBR/PVC manufacturer formulations: NBR/PVC through 1" thick; EPDM @ 1-1/2" and 2" thick.

Physical/Performance	EPDM	NBR/PVC	Note
Closed cell w/ built-in vapor retarder	Yes	Yes	ASTM C534, Type I and II, Grade 1
Service temperature range [continuous, low]	-297F/-183C	-297F/-183C	ASTM C411
Service temperature range [continuous, high]	257F/125C	220F/105C	NBR/PVC through 1" thick
		300F/149C	EPDM @ 1-1/2" & 2" thick
Thermal conductivity [through 1" thick @ 75°F]	0.245	0.245	ASTM C177, C518
Thermal conductivity [through 2" thick @ 75°F]	0.245	0.280	NBR/PVC > EPDM @ 1-1/2" and 2" thick
R-value @ 1/4" thick [sheet]	1.3	1.0	
R-value @ 1/2" thick [sheet]	2.4	2.1	
R-value @ 3/4" thick [sheet]	3.5	3.1	
R-value @ 1" thick [sheet]	4.5	4.2	
R-value @ 1-1/2" thick [sheet]	6.9	6.0	
R-value @ 2" thick [sheet]	9.0	8.0	
Surface burning characteristics [through 1"]	Pass	Pass	ASTM E84, UL723, CAN/ULC-S102
Surface burning characteristics [through 2"]	Pass	Pass [EPDM]	ASTM E84, UL723
Permeability [perm-inch, through 1" thick]	0.02	0.05	ASTM E96, Procedure A
Permeability [perm-inch, through 2" thick]	0.02	0.08	NBR/PVC > EPDM @ 1-1/2" and 2" thick
Mold & fungal resistance	No growth	Pass	ASTM G21, C1338, UL181
Water absorption [% by volume]	0.2	0.2	ASTM C209, C1763
UV resistance [cracking, color change]	Minimal	No data	ASTM G7
Ozone resistance	No cracking	No data	ASTM D1171
Density	3-6 lbs./ft3	3-6 lbs./ft3	ASTM D1667
Meets ASHRAE 90.1	Yes	Yes	
Meets IECC®	Yes	Yes	
Environmental Product Declaration [EPD]	Yes	Yes	
Health Product Declaration [HPD]	Yes	No data	
GREENGUARD Gold certified	Yes	Yes	
Manufactured without CFC's & HCFC's; free of PBDE's, PFAS, REACH, and RoHS chemicals	Yes	Yes	
Free of asbestos, formaldehyde, lead, mercury	Yes	Yes	
Buy America complaint	Yes	Yes	
Build America, Buy American [BABA] complaint	Yes	Yes	