Select-a-Seal® Sealing Mechanism

Rubber composite sealing systems must be designed to address the following failure mechanisms:

- Conforming to flange irregularities without damaging the rubber
- Maintaining sufficient sealing stress after compressive stress relaxation
- Accommodating shear stresses without surface abrasion or structural damage

To see a video illustration of how Select-a-Seal works click on one of the links below:
(Please note: You must have Windows Media Player® or Real One Player® installed on your computer before you can view the following clip.)

Click Here for Windows Media Player

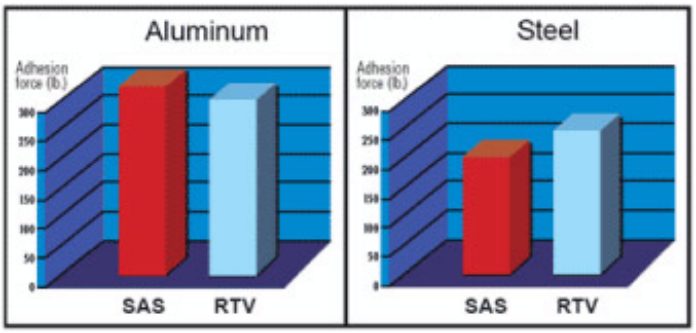
Click here for Real Player

High Speed	 Play High Speed Clip	 Play High Speed Clip
Dial Up	 Play Dial-Up Clip	 Play Dial-Up Clip

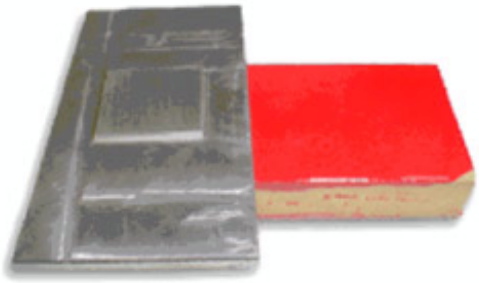
Select-a-Seal addresses these concerns through a patented sealing mechanism:
Standard edge geometry and current polymer formulations allow for high compression (up to 60%) without cracking. The geometry of the standard edge exhibits a very low spring rate at the tips of the oval, which allows it to accommodate rough and irregular flanges. When the edge is compressed to the thickness of the structural carrier, the rubber-to-carrier attachment point and intrusion zone add stiffness and generate considerable sealing force.

Compression stress relaxation is addressed by Select-a-Seal gaskets in a unique way. A rubber sealing member under compression inherently tries to relax, and if it is captured in the joint in a fixed groove or by a rigid carrier, the joint cannot compensate for this relaxation and leaks can develop. In Select-a-Seal gaskets, the compressible carrier is compressible rather than rigid. This compressible carrier also exhibits some relaxation over time, which results in slight additional compression of both the carrier and edge seal. This actually improves the polymer edge compression over time. In addition, the sealing mechanism of the polymer edge is a combination of sealing stress and surface adhesion to the flanges. Therefore, as stress is reduced over time, the adhesion mechanism is not necessarily affected.

Shear stresses are accommodated by the structural carrier, which can flex up to 20% of its thickness in shear without sliding on the flange surfaces. Surface abrasion and rubber-to-carrier delamination are avoided by designing the correct carrier thickness into the gasket.

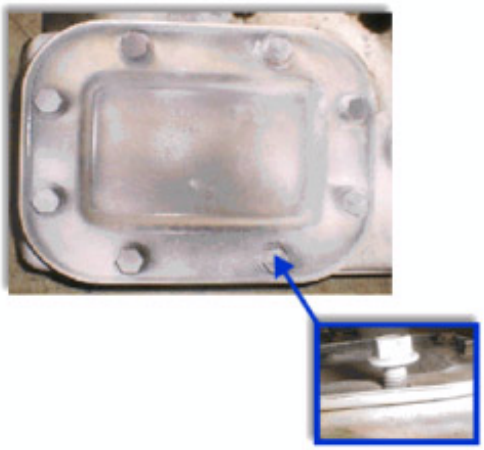


Select-a-Seal adds a second sealing mechanism of surface adhesion:



To test sealing edge adhesion, aluminum and steel were placed against Select-a-Seal REC and RTV silicone at room temperature for a period of time under load. Theadhesion force was subsequently measured and force values recorded.

1 sq. inch of metal placed against SAS edge polymer - (70 psi/3 days/R.T.).



SAS-12 Adhesion Force:
Steel = 175 lb
Aluminum = 300 lb

Cured RTV Adhesion Force:
Steel = 210 lb
Aluminum = 275 lb

Demonstration – 1000 hour leak free Thermal Cycle test with bolt removed from stamped flange illustrates adhesion impact.

  Interface Solutions Inc A leading manufacturer of gasket sealing solutions and engineered...

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