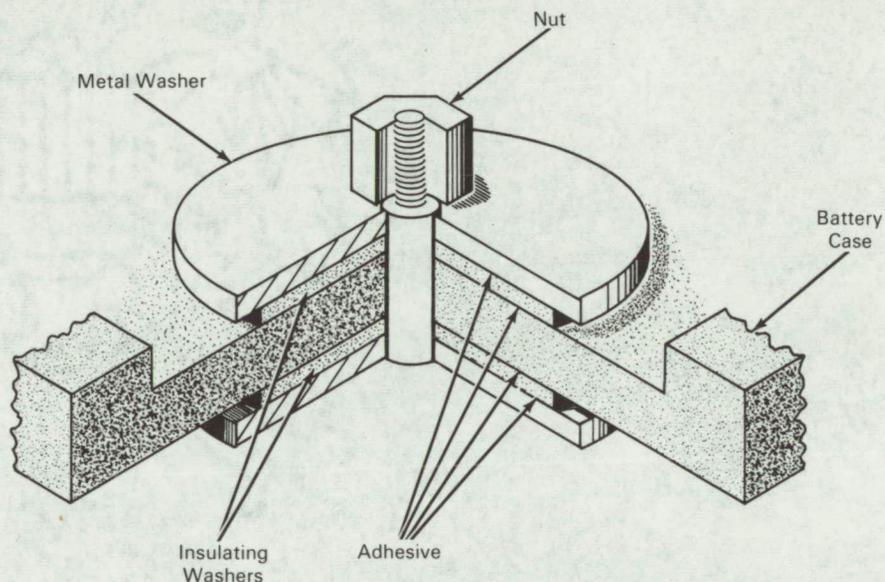


NASA TECH BRIEF



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Composite Seal Reduces Alkaline Battery Leakage



The problem: To reduce leakage through alkaline battery seals. Present seals frequently develop leaks or fail under reduced pressure because the adhesive fails. A plastic sealant such as epoxy resin may be applied to critical areas of a seal, but even such a sealant cannot withstand the erosive action of caustic electrolyte for prolonged periods.

The solution: A composite seal consisting of rubber or plastic insulating washers and a metal washer, all held together mechanically. An adhesive is applied at each washer interface.

How it's done: The insulating washers may be made of materials such as polypropylene nonwoven fabric or neoprene rubber sheet. An adhesive is

applied to each of the four interface surfaces between the metal and insulating materials. The adhesive should be the same material used to impregnate the polypropylene fabric if that is the insulator used. In the case of the neoprene rubber sheet as insulator, sheet epoxy, urethane, or neoprene adhesives should be applied. When the sheet adhesive is used with neoprene, the components are assembled dry and heated in an oven to cure the adhesive.

Notes:

1. Because this design provides positive sealing on both sides of the battery case, it is not affected by pressure differentials in either direction.
2. Seals using various combinations of insulating washers and adhesives were cyclically tested in

(continued overleaf)

caustic electrolyte at pressures up to 1,000 psig. Most seals retained their integrity for at least 52 weeks.

3. Because of simplicity of design, this seal can be produced by low-cost, production line methods.
4. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland, 20771
Reference: B65-10271

Patent status: NASA encourages the immediate commercial use of this invention. It was invented by NASA employees and a patent application has been filed. Inquiries concerning license rights may be made directly to the inventors, Mr. Karl F. Plitt and Mr. Carroll H. Clatterbuck at Goddard Space Flight Center, Greenbelt, Maryland, 20771.

Source: (GSFC-337)