Sealing materials for thermal solar systems

The use of solar energy to generate heat requires a suitable transfer medium to transport the heat generated. Various media, which are primarily based on water and oil, are used for this purpose. Maximum heat transfer leads to high system temperatures and therefore makes extremely high demands on the sealing materials used in the connecting elements of the transfer system.

For both versions, i.e. for water- and oil-based media, the Parker Seal Group offers materials which are superbly suited for various temperature requirements. EPDM, FKM and FFKM materials have been specifically developed and qualified for solar applications.

Materials for water-based heat transfer media

The EPDM material E8790-70 was specifically developed for water applications and can be used in water and water vapour up to 180 °C. The material is peroxidically cross-linked, contains no plasticizers and is also resistant against water-glycol mixtures. For air temperatures up to 200 °C, the V8836-75 FKM, a water-glycol-resistant material that is successfully used in solar technology as well, is recommended.

Materials for oil-based heat transfer media

In thermal oils with a high additive content the FKM material V8850-75 delivers particularly impressive performance at temperatures up to 200 °C and offers long-term service, maintenance and efficiency benefits. Standard materials quickly reach their limits in these applications since oil-based heat transfer media often contain additives (or develop them at high temperatures) which chemically attack many sealing materials and thus may lead to early seal failure resulting in high repair costs. Thanks to its outstanding chemical resistance V8850-75 provides a cost-effective alternative in applications previously requiring the use of much more expensive materials.

V8930-75 is the material of choice whenever maximum temperature resistance is required. This FFKM material is part of Parker's Parofluor® range and withstands temperatures up to 320 °C. V8930-75 is based on the most advanced polymer generation of high-temperature FFKM materials currently available and considerably increases reliability and service life.

Low compression set and very high media resistance qualify all of the materials mentioned above for the respective applications, and thus enable the design and operation of solar systems delivering reliable and cost-effective service.

Physical data

Test	Dimension	E8790-70	V8836-75	V8850-75	V8930-75
Material base	-	EPDM	FKM	FKM	FFKM
Colour	-	black	green	black	black
Hardness	Shore A	70	75	75	75
TR10 (ASTM D1329)	°C	-45	-17	-15	-1
Max. temperature	°C	180	200	200	320

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