

PPE LAUNCHES NEW GENERATION LEAD-FREE, STEAM RESISTANT SEALS

High performance elastomer seal expert, Precision Polymer Engineering, has launched a new range of lead-free FKM grades that comply with REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) legislation. The company's lead-free, steam resistant fluoroelastomer, V75J, has been specially developed to provide improved in-service performance over lead-cured seals in high performance sealing applications such as marine diesel engines, heat exchangers, paper/pulp processing equipment and hot water/steam systems.

Traditionally lead oxide was used in the litharge curing process during seal manufacture to increase steam resistance of fluorocarbon elastomers. Materials experts at PPE have improved the strength of a peroxide-cured, terpolymer, FKM using innovative filler combinations. The result, V75J, is one of a number of 'new generation' fluoroelastomers from PPE which display outstanding resistance to hot water and steam without the use of litharge curatives. These materials also offer resistance to oils, fuels and hydraulic fluids, high temperature performance and superior, long-term sealing ability.

"Precision Polymer Engineering Ltd operates at the forefront of elastomer technology and by innovative use of polymer architecture, additives and fillers we can now offer realistic alternatives that are not only lead-free, but offer improved long-term sealing performance over litharge-cured seals" comments Peter Cloney, PPE's Managing Director.

Fluoroelastomers have two main cure profiles: bisphenol cure and peroxide cure. Although peroxide-cured materials have a better inherent steam resistance than bisphenol cured alternatives, they tend to be weaker. Bisphenol-cured elastomers are typically formulated with metallic oxides, of which lead oxide (litharge) is the traditional choice for steam resistant applications because it prevents the seal from swelling when it comes into contact with water or steam.

In recent independent fluid immersion tests, V75J was benchmarked against 11 leading material compounds (including perfluoroelastomers) in water/steam for 1000 hrs at 140°C. V75J was found to be the best performing material followed by Perlast® G80A. The remaining materials were badly deformed or disintegrated. In another example, V75J was chosen by a leading engine manufacturer to replace an incumbent litharge-cured FKM. The existing material was failing prematurely due to excessive temperatures causing 'un-crosslinking', leading to failures within the warranty period of the engine. By replacing this material with V75J, the customer successfully extended the life of the seals beyond the warranty period, into tens of thousands of hours' service, with no issues.

To meet diverse requirements, additional steam resistant elastomers offered by PPE include; A75H (FEPM), E70K (EPDM), Perlast® G75B and G80A (FFKM) perfluoroelastomers and V76F and V88F (FKM).