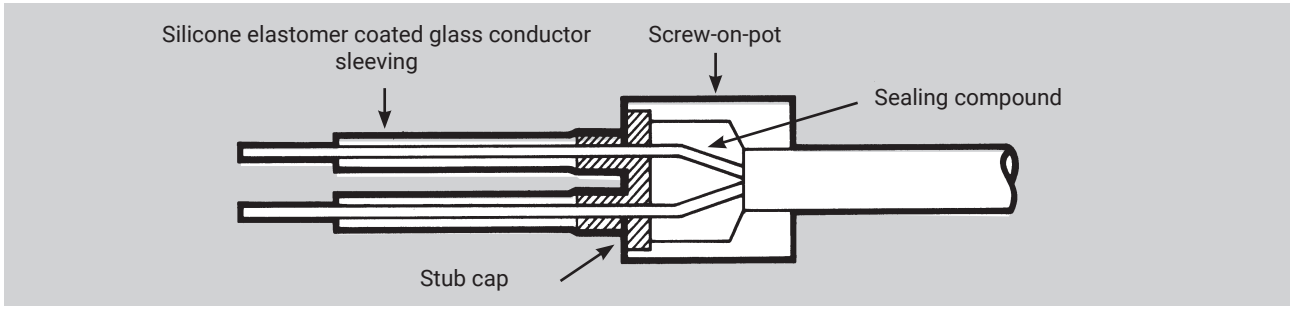
The Ultimate Fire Survival Cable System

PYROTENAX

PYRO MI Fire Survival Cable

Information Sheet for nVent RAYCHEM PYRO MI Wiring Cables and Seals In Radioactive Environments

SUBJECTED TO A RADIATION DOSAGE OF 100 MEGA RADS WITHOUT LOSS OF SEALING PROPERTIES



In order for a material to be useful within a nuclear reactor it must be able to withstand not only elevated temperatures, but high fluxes of energetic nuclear radiation for prolonged periods. Therefore, it is necessary that the service life of any material considered for use in a nuclear reactor is known. This particularly important for materials used as cable dielectrics.

The more injurious or deleterious effects of radiation normally occur in the organic and semi-conductor materials, whereas inorganic materials such as metals or ceramics are generally considered to have a high radiation resistance.

In considering the make-up of a nVent PYROTENAX Pyro MI Cable, the performance of metals in terms of radiation resistance compared with other materials is unsurpassed.

The performance of MgO as a dielectric under high radiation conditions has been the subject of considerable investigation over the years by researchers concerned with radiation damage in solids. The results have been exceptionally favourable compared with those for other forms of insulating materials. From these observations it is expected that there would be no significant change in the material up to at least a flux density of 1020 neutrons cm-2.

As already stated, it is the organic materials which suffer most from exposure to radiation. Although the major part of a Pyro MI Cable termination is metal, the seal does contain some organic material, e.g. sealing compound, disc/stub cap and conductor insulating sleeving, nVent UK Limited have, therefore, carried out a series of tests to evaluate the performance of MI Cable terminations when subject to radiation.

As a result of this work a variation of the standard seal is suitable for use in radiation environments. It is simply a matter of substituting RZPS silicone elastomer coated glass conductor sleeving for the standard PVC sleeving included with the RPS or RPSL seal pack. This seal has been subjected to a total radiation dosage time of 100 mega rads without loss of sealing properties. This seal is suitable for a maximum operating temperature of 105oC in normal humidity conditions. It is not, however, intended for LOCA conditions when seals may be exposed to super-heated steam.

The completely inorganic construction of Pyro MI Cables, in addition to providing a high radiation resistance which far exceeds that of a cable insulated with an organic material such as PVC, also offers such advantages as resistance to extreme temperatures, oxidising atmospheres and mechanical degradation.
In fact Pyro MI Cable is considered the only type of cable suitable for a great many nuclear applications.

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