

Envirotemp FR3 Fluid: Fire Safety Information

This section provides information and test data on the fire resistance of FR3 fluid relative to mineral oil: The following documents are included:

- **CPS Reference Document: Summary of fire safety issues and summary of key tests.**
- **CPS Line Magazine Article on Reduced Risk Exposure for Substation Transformers. (Summary of FM revisions in Loss Prevention Data Sheets)**
- **Factory Mutual Global Approval listing of FR3 fluid**
- **FM Global Property Loss Prevention Data Sheets 5-4**
- **FM Research Corp. Technical Report: Transformer Fluid Fire Testing w/mineral oil, R-Temp fluid, and Envirotemp FR3. (Glowing Hot Metal Ignition Test).**
- **UL Classification of FR3 fluid per UL Std. EOUV.MH10678 for Dielectric Mediums**
- **UL Classification of FR3 fluid per UL Std. EOVK.MH10678 for Transformer Fluids. (Listing per requirements of NEC[®] Article 450.23)**
- **CPS Test Report: FM-Type Pool Fire Tests (Long Duration Arc Ignition Test)**
- **US Dept. of Interior Bureau of Reclamation' Facilities Instructions, Standards, and Techniques: Transformer Fire Protection.**
- **CPS Bulletin: NEC[®] Requirement Guidelines for the Installation of Listed Less-Flammable Liquid-Filled Transformers.**
- **CPS Bulletin 92005: Transformer Options for Fire Sensitive Locations**

Conclusion: In spite of the very high temperatures of arcs due to faults, tests and three decades of field history of less-flammable fluids show that the minimum fire point requirement of 300°C is sufficiently above the fire point of mineral oil to prevent sustained ignition of the liquid due to arc faults. In fact, it is FM approved and Classified for indoor installations up to 10 MVA without a NEC rated vault or sprinklers when the units are installed per the NEC and listing requirements. FR3 fluid has an inherently higher flash and fire point, suggesting even greater resistance to ignition than the HMWH and silicone oils.