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TECHNICAL BULLETIN #82

APPLICATIONS FOR AR-GLO/OL® FLUORESCENT DYE

About AR-GLO/OL: Fluorescent dyes often exhibit a phenomenon known as quenching, where the fluorescent response of the dye/oil mixture will diminish as the concentration of the dye within the mixture increases. If an overly concentrated fluorescent dye were to be added to a system containing no additional lubricating oil, the mixture would not fluoresce when it leaks out. AR-GLO/OL (patent pending) is a fluorescent material that is supplied in the concentration at which it exhibits its *peak* fluorescence. When it is introduced into an *oilless* system, the material will fluoresce brilliantly at any leak site and will allow the leaks in the system to be clearly visible under ultraviolet light. AR-GLO/OL is a polyol ester-based dye that can be used universally to detect leaks in all oilless refrigeration or air conditioning systems (CFC, HCFC, HFC) and heat transfer systems employing a high vapor pressure working fluid in which oils are soluble, such as a refrigerant.

Use of AR-GLO/OL in Oilless Cooling Systems: Adding AR-GLO/OL to a circulating, oilless refrigeration or air conditioning circuit, or a heat transfer loop as previously described, will allow for the use of the ultraviolet leak detection process in these systems. The minute quantity of AR-GLO/OL incorporated into the system will *not* adversely affect the heat transfer characteristics of the coils or the machinery itself. The fact that the system is continually circulating the material allows for the cumulative effect of the AR-GLO/OL around leaking areas. This means that although only a minute amount of AR-GLO/OL is in the lines, the leak site is continuously exposed to it and the amount of fluorescent material at a leak site will increase until the leak is found and repaired.

AR-GLO/OL in Refrigerant Delivery Systems: Detecting leakage within a refrigerant delivery system can be accomplished by adding AR-GLO/OL to the reservoir of liquid refrigerant within the delivery system. As the liquid refrigerant is drawn off the reservoir to charge other systems, the fluorescent mixture will travel throughout the delivery system and be deposited on the exterior of the leaking areas. The refrigerant delivery system is then inspected under ultraviolet light whereupon any leaks will fluoresce brightly. As the refrigerant supply going into the delivery system is always supplied with AR-GLO/OL, the cumulative effect comes into play and a very small amount of AR-GLO/OL (one pint per 2,500 pounds of refrigerant) is all that is necessary.

AR-GLO/OL in Containment Systems: AR-GLO/OL can also be used to detect leaks in a heat transfer fluid or refrigerant containment system. Once again, the AR-GLO/OL will only be effective for heat transfer fluids capable of taking an oil into solution and having a sufficiently high vapor pressure to evaporate quickly when exposed to the outside environment. The AR-GLO/OL would be placed into the container to be leak checked. It will remain in solution within the contained liquid heat transfer fluid and will be deposited on the exterior of the leaking liquid areas. The containment system is then inspected using an ultraviolet lamp and all leaks will fluoresce. As this would be a static system, only leakage below the liquid level would be detectable.

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10/00 A93442-3
PRINTED IN U.S.A.