

Problems With Multi-Purpose Oils in Heat Transfer Service

Multi-purpose oils and blends have found a wide range of uses in industry. As the name implies, these oils must be capable of providing an acceptable level of service in each of the many different applications they might be applied. In designing for broad service conditions, it's necessary to trade-off one characteristic for another so that the oil will perform reasonably in each application. The result? Trade offs. Some of the original qualities may not, by necessity, be included in the final product and performance in many of the recommended applications may be mediocre. Thus it's not likely that a multi-purpose oil or blend will be the best choice for any specific type of service. This becomes a concern in applications where truly demanding service conditions must be met.

Heat Transfer Fluids

Multi-purpose oils are occasionally used in the transfer of heat, a particularly demanding application. Sold as "cheaper" heat transfer fluids, many of these blends have caused serious equipment problems. As a direct result, some thermal fluid system manufacturers approve only specific-purpose heat transfer fluids for use in their equipment. Some even void equipment warranties if non-approved fluids are used.

Problems

Field reports detail significant problems in systems running multi-purpose oils. Problems include fires, flashes, reduced control of temperature, loss of heat uniformity, decreased production efficiency, increased cycle time, sludging, hard baked-on carbon deposits, odors, and fluid vaporization/evaporation. Equipment damage has included failed heaters, stressed tube bundles, fouled valves, sludged pumps, and severe blockages in heat users.

Local Blenders & Large Oil Companies

Multi-purpose oils are often blended *locally*. As such, they have the advantage of being cheap and immediately available. But some questions should be asked. What certifications do the local blends carry? What is the base feedstock? What is the additive package? What percentage of the final product is reclaimed oil? What are the levels of purity? What technical support (including system troubleshooting and thermal fluid analysis) is available?

It's quick, easy and often cheap to source heat transfer fluid from the same distributors who supply lube oils, greases and chemicals, but is it the wisest course in the long run? Some *single-cut* (non-blended) paraffinic-type oils perform

reasonably well in average thermal fluid systems. Many do not. Major oil companies offer average-grade non-blended oils as heat transfer fluids, but do not support them. Why? Heat transfer fluids are a tiny part of their huge fuels and lubricants business. Thus, it makes sense that large amounts of resources are devoted to support these high volume products. And little technical support is available from local oil distributors.

Additives

General-purpose oils can contain additives that are intended to enhance performance, often in the lubrication of machinery. These additives perform well in the lower temperature applications they are typically designed for. But in high temperature service, precipitates can form. These solids can plate out on metal surfaces (fouling), and can form thick sludge.

Single-purpose heat transfer fluids can also contain additives. However, these additives are typically used in exceedingly small quantities, and are more carefully designed to perform across the entire temperature range served by the fluid.

Specialization

Local oil companies and oil and chemical distributors must try to be "all things to all people." As such, it's understandable that they cannot

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become deeply knowledgeable in each product they carry — and on each and every application those products are intended for. On the other hand, specialty companies are not involved with a broad variety

of products. Devoted to one narrow field, their resources are highly concentrated.

This intense focus results in products tightly designed for specific demanding applications, and allows the availability of quick and in-depth technical support. This support includes assistance during

the design and installation phases, system troubleshooting, fluid analysis and close liaison with the equipment manufacturer's engineers and service people. What's more, this assistance continues over the entire life of the the thermal fluid system.

Questions? We'd like to hear from you. Call toll-free, +1 800-222-3611, or fax or e-mail us, or visit our website, www.paratherm.com.

Note: The information and recommendations in this literature are made in good faith and are believed to be correct as of the below date. You, the user or specifier, should independently determine the suitability and fitness of Paratherm heat transfer fluids for use in your specific application. We warrant that the fluids conform to the specifications in Paratherm literature. Because our assistance is furnished without charge, and because we have no control over the fluid's end use or the conditions under which it will be used, we make no other warranties—expressed or implied, including the warranties of mer-

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