

# HEAT TRANSFER OIL ANALYSIS



# Heat Transfer Oil Analysis

WearCheck's heat transfer oil test kit has been designed to enhance efficiency in thermal transfer machinery. Degraded or contaminated oil can cause reduced system efficiencies due to damaged pumps or fouled heat exchangers. Compromised oil can become a fire or explosion risk. It is therefore vital that heat transfer oils be tested regularly.

Heat transfer oil analysis targets key areas of the oil's performance, contamination and degradation. For instance, oxidation of the oil will result in elevated acid levels as well as an increased viscosity, and the by-products of this oxidation will lead to deposits in the system resulting in lower thermal efficiencies. Oxidation can be caused by excessive operating temperatures and/or the presence of metallic catalysts such as iron or copper, and over-extended fluid service.

A second area of concern is thermal cracking. Here, the oil's chemical backbone is broken up into smaller, more volatile components. A significant variance between the closed cup and open cup flash point indicates a build up of these volatile fractions which pose real fire and explosion risks. Thermal cracking can also manifest itself with decreased kinematic viscosity.

By providing a comprehensive test profile, not only the problem, but also the root of the problem, can be discovered.

## Heat Transfer Oil Tests

Test	Test Method
Viscosity at 40°C	ASTM D7279
Viscosity at 100°C	ASTM D7279
Viscosity Index	ASTM D2270
Density at 20°C	ASTM D4052
Total Acid Number	ASTM D974
Moisture (ppm)	ASTM D6304
Flash Point PMCC	ASTM D93
Flash Point COC	ASTM D92
Fire Point COC	ASTM D92
Conradson Carbon Residue	ASTM D189
Pentane Insolubles	ASTM D4055
Elemental Concentration Al, Cr, Cu, Fe, Ba, Ca, P, Zn, Na, Si	ASM D5185*
Particle Count (4, 6, 14, 20, 25, 50, 75, 100 micron & ISO code)	ISO 4406:99

\*Based on, but not exactly according to the method

## Typical Applications:

- Tank heating
- Suction heating
- Reactor vessel heating
- Process reboilers
- Platen or press heating
- Ovens and fryers
- Natural gas heating
- Jacketed vessel heating
- Indirect steam generators
- In-line gas heating
- Heated molds or dies
- Crude oil heating
- Calendar roll heating
- Building heaters
- Autoclaves



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