

Heat Transfer and Quenching Oils

(April 2021 edition)

AMALIE Premium Heat Transfer and Quenching Oils are mineral oil-based fluids for use in secondary or indirect heating systems. They are formulated with high quality group II base stocks. They are non-toxic, non-corrosive, have a low odor level and excellent seal compatibility. These fluids have a high ability to absorb heat quickly and transport it to the material or fluid requiring heat. Their excellent thermal and oxidation stability provides long service life and clean heat exchanger systems. They are recommended for use in closed liquid-phase heat transfer systems, and open systems where maximum bulk oil temperatures do not exceed 190°C.

AMALIE Premium Heat Transfer and Quenching Oils may also be used for rapid or controlled cooling of steel or other metals. This treatment can be part of a hardening, tempering or other heat-treating process. These fluids will aid in the hardening of steel by controlling heat transfer during quenching. **AMALIE Premium Heat Transfer and Quenching Oils** also enhance wetting of steel during quenching to minimize the formation of undesirable thermal and transformational gradients which may lead to increased distortion and cracking.

Benefits

- Accelerated Cooling Rate
- Constant Cooling Rates in Service
- Minimum Viscosity Increase Through Controlled Formation of Organic Acids
- Reduced Steel Component Cracking and Distortion
- Promotes Deep Hardening
- Low Toxicity and Corrosiveness
- Meets Requirements of DIN 51502 Class L and ISO 6743/12 Category L

Typical Physical and Chemical Properties

| Property | Heat Transfer 22 | Heat Transfer 32 |
|----------------------------------|------------------|------------------|
| API Gravity | 33 | 32 |
| Lbs./gallon | 7.16 | 7.2 |
| Viscosity, cSt | | |
| @100C | 4.5 | 5.6 |
| @ 40 C | 24 | 34 |
| Viscosity Index | 103 | 104 |
| Color | 2.5 | 2.5 |
| Pour Point, C (F) | -15 (5) | -15 (5) |
| Flash Point, C (F) | 201 (394) | 211 (412) |
| Fire Point, C (F) | 225 (437) | 230 (446) |
| Ramsbottom Carbon Residue, wt% | 0.04 | 0.05 |
| ASTM D6200 Results | | |
| Max Cooling Rate, °C | 80.84 | 77.045 |
| Temp at Max Cool Rate, °C | 547.455 | 555.99 |
| Cooling rate at 300°C, °C/second | 12.18 | 11.325 |
| Time to 600°C, seconds | 10.55 | 11.6 |
| Time to 400°C, seconds | 13.7 | 15.05 |
| Time to 200°C, seconds | 36.85 | 40.6 |