



Mobiltherm 600 Series  
Mobil Industrial, United States  
  
Heat transfer Oils

Product Description

Mobiltherm heat transfer oils are high performance products intended for use in closed indirect heating installations. They are recommended for use in cold-oil sealed, indirect heating and cooling systems in all kinds of industrial processes.

Mobiltherm heat transfer oils are formulated from highly refined base stocks that are resistant to thermal cracking and chemical oxidation. They are very thermally stable and are capable of an extremely long service life without deposit formation or viscosity increase.

Mobiltherm heat transfer oils have good heat transfer efficiency and their viscosities are such that they can be pumped readily at both start-up and operating temperatures. They demonstrate specific heat and thermal conductivities that provide more rapid heat dissipation. The flash points of these oils will not decrease significantly in service because of their resistance to thermal cracking at the operating temperatures for which they are recommended.

Features and Benefits

Mobiltherm oils are important members of the Mobil brand of specialty fluids that have gained a reputation for performance and reliability, even in severe applications. Modern refining techniques are a key factor in providing the excellent product features.

Mobiltherm 600 Series offer the following benefits:

| Features  | Advantages and Potential Benefits   |
|---|---|
| High resistance to thermal cracking and decomposition | Free from sludge and coke deposits and minimum interference with heat transfer capability and minimized maintenance needs |
| Excellent thermal properties                          | High heat transfer rates and improved operating efficiency and lower operating costs                                      |
| Good thermal and oxidative stability                  | Long trouble free service life and reduced downtime   |
| Good low temperature fluidity                         | Easy starting of cold systems   |

## Applications

Application Considerations: Mobiltherm heat transfer oils should not be mixed with other oils since this may impair the excellent thermal and oxidation stability resulting in a change in other properties, and complicate analyses aimed at determining useful oil life. If the oils are used above their recommended maximum temperatures, vapor lock may result unless the system is designed to operate at the higher temperature by pressurizing with an inert gas such as nitrogen. At higher temperatures, fluid life will be shortened because the rate of thermal degradation which increases markedly as temperatures rise above the recommended limit. In well-designed systems the temperature of the oil film surrounding the heating element should be about 15°C to 30°C above the bulk oil temperature. If higher than this, the service life of the oil may be shortened and sludge and coke may be deposited which would interfere with the heat transfer rates.

As with other mineral oils, Mobiltherm heat transfer oils should be used only in systems with forced circulation. Systems that depend on convection for circulation of the heat transfer medium do not provide a rapid enough flow to prevent local overheating and rapid deterioration of the oil. Further, these oils are not recommended for use in open systems where hot oil is exposed directly to the air. If they spray or escape from leakage points, hot Mobiltherm oils may spontaneously ignite.

Mobiltherm 600 series can be used in open and closed installations where the bulk oil temperature ranges are as outlined in the table below.

- Mobiltherm 603: Closed Systems (-15° C to 285° C), Open Systems (-15° C7 C to 150° C)
- Mobiltherm 605: Closed Systems (-12° C to 315° C), Open Systems (-12° C to 180° C)
- Mobiltherm 610: Open systems (-6°C to 250°C)
- Mobiltherm 611: Open systems (-6°C to 275°C)

## Typical Properties

| Mobiltherm 600 Series                     | 603   | 605   | 610  | 611   |
|---|-------|-------|------|-------|
| Viscosity, ASTM D 445                     |       |       |      |       |
| cSt @ 40°C                                | 20.2  | 30.4  | 113  | 490   |
| cSt @ 100°C                               | 4.2   | 5.4   | 11.5 | 31.5  |
| Pour Point, °C, ASTM D 97                 | -15   | -12   | -6   | -6    |
| Flash Point, °C, ASTM D 92                | 194   | 230   | 250  | 294   |
| Specific Gravity @15 °C kg/l, ASTM D 4052 | 0.835 | 0.857 | 0.88 | 0.906 |

## Health and Safety

Based on available information, this product is not expected to produce adverse effects on health when used for the intended application and the recommendations provided in the Material Safety Data Sheet (MSDS) are

followed. MSDS's are available upon request through your sales contact office, or via the Internet. This product should not be used for purposes other than its intended use. If disposing of used product, take care to protect the environment.

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Typical Properties are typical of those obtained with normal production tolerance and do not constitute a specification. Variations that do not affect product performance are to be expected during normal manufacture and at different blending locations. The information contained herein is subject to change without notice. All products may not be available locally. For more information, contact your local ExxonMobil contact or visit [www.exxonmobil.com](http://www.exxonmobil.com)

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