

# Mobiltherm® 600 Series

## Heat transfer Oils

### Product Description

Mobiltherm heat transfer oils are high performance products intended for use in closed indirect heating installations. They are formulated from highly refined base stocks that are resistant to thermal cracking and chemical oxidation. They have good heat transfer efficiency and their viscosities are such that they can be pumped readily at both start-up and operating temperatures. 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. The Mobiltherm products are very thermally stable and are capable of an extremely long service life without deposit formation or viscosity increase. They demonstrate specific heats and thermal conductivities that provide more rapid heat dissipation. Mobiltherm heat transfer oils are recommended for use in both closed and open, cold-oil sealed, indirect heating and cooling systems in all kinds of industrial processes.

### Features & Benefits

Mobiltherm oils are important member of the Mobil brand of specialty fluids that have gained a reputation for performance and reliability, even in severe applications. Application of the most modern refining techniques is a key factor in the excellent features of these products.

Mobiltherm 603 and 605 offer the following benefits:

Features	Advantages and Potential Benefits
High resistance to thermal cracking and decomposition	Freedom from sludge and coke deposits and minimum interference with heat transfer capability and minimised 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 of the Mobiltherm oils, cause a change in other properties, and complicate the interpretation of analyses made to determine the oil's useful 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 pressurising with an inert gas such as nitrogen. However, at higher temperatures, fluid life will be shortened because the rate of thermal degradation 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 603 and Mobiltherm 605 can be used in open and closed installations where the bulk oil temperature ranges are as outlined in the table below and where minimum shutdown temperatures are not below -7°C.

- Bulk Oil Temperature Ranges for Mobiltherm 603: Closed Systems (-7°C to 285°C), Open Systems (-7°C to 150°C)
- Bulk Oil Temperature Ranges for Mobiltherm 605: Closed Systems (-7°C to 315°C), Open Systems (-7°C to 180°C)
- Closed, cold-oil sealed, indirect heating and cooling systems in all kinds of industrial processes operating at bulk oil temperatures up to the maximum temperatures quoted in the table above and at atmospheric pressure.
- Open systems provided the bulk temperatures do not exceed the maximum temperatures quoted in the table above.

## Typical Properties

Mobiltherm 600 Series	603	605
Viscosity, ASTM D 445		
cSt @ 40°C	20.2	30.4
cSt @ 100°C	4.2	5.4
Pour Point, °C, ASTM D 97	-6	-6
Flash Point, °C, ASTM D 92	190 (min)	230
Specific Gravity @15 °C kg/l, ASTM D 4052	-	0.857
Micro-Conradson Residue, wt %, D4530	0.05 (max)	0.05 (max)

## Health & 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 contract 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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