



# MOBILTHERM 600 SERIES

## DESCRIPTION

The heat transfer oils are high-performance products designed to be employed in closed installations with indirect heating. They are formulated from highly refined base oils that are resistant to thermal degradation and chemical oxidation. They possess good heat transfer efficiency and their viscosities are such that they can be pumped at both start-up and operating temperatures. The flash points of these products do not significantly decrease in service due to their resistance to thermal degradation at the recommended operating temperatures. Mobiltherm products are very thermally stable and are able to provide an extremely long service life without any deposit formation or increase in viscosity.

They possess specific heat and thermal conductivity values that provide fast heat dissipation. Mobiltherm oils are recommended for use in both open and closed systems and in systems with indirect heating and cooling in all types of industrial processes.

## PROPERTIES & BENEFITS

Mobiltherm oils are important members of the special Mobil fluid trademark that have gained a reputation for performance and reliability, including in severe applications. The use of the most modern refining techniques is a key factor in the excellent properties of these products.

Mobiltherm 603 and 605 provide the following benefits:

| <b>Properties</b>                                    | <b>Potential advantages and benefits</b>  |
|--|---|
| High resistance to degradation and to decomposition. | An absence of deposits and sludge, together with minimum interference with its thermal capacity to transfer heat. Minimisation of maintenance requirements. |
| Excellent thermal properties.                        | High heat-transfer speeds, improved operation efficiency and reduced operating costs.   |
| Good thermal and oxidation stability.                | Long, problem-free service life with fewer faults.  |
| Good low-temperature fluidity.                       | Cold start-up of cold systems.  |

## APPLICATIONS

Application considerations: Mobiltherm oils must not be mixed with other oils since this could cause a loss of the excellent thermal and oxidation stability of Mobiltherm oils, leading to changes in other properties and complicating the interpretation of analyses made to determine the oil's usable lifetime. If these oils are employed above their recommended maximum temperatures, steam shut-down could occur unless the system is designed to operate at higher temperatures through pressurisation with an inert gas such as nitrogen.

However, at higher temperatures, the fluid life is reduced because the thermal degradation speed increases as the temperature exceeds the recommended limits. In well designed systems, the temperature of the oil film around the heat elements must be 15°C to 30°C above that of the oil load. If it is higher than this, then the oil service lifetime will be shortened and the sludge and deposits will interfere in the heat transfer speeds. Thus, just like other mineral oils, Mobiltherm oils must only be used in systems with forced circulations. Systems that depend on convection by circulation of the heat transfer medium do not provide a flow that is sufficiently fast to prevent local over-heating and rapid oil deterioration. Moreover, these oils are not recommended for use in open systems where the hot oil is directly exposed to air. Mobiltherm 603 and Mobiltherm 605 can be employed in open and closed systems in which the oil temperature ranges are within the following ranges and the minimum shutdown temperature is not below -70°C.

- Oil load temperature ranges for Mobiltherm 603: Closed systems (-7C to 285°C), open systems (-7°C to 150°C).
- Oil load temperature ranges for Mobiltherm 605: Closed systems (-7C to 315°C), open systems (-7°C to 180°C).
- Closed systems, with indirect heating and cooling in all types of industrial processes that operate at maximum oil temperatures that are below those previously indicated and atmospheric pressure.
- Open systems in which the oil load temperatures do not exceed those previously indicated.

## TYPICAL CHARACTERISTICS

| <b>MOBILTHERM 600 SERIES</b>              | <b>603</b> | <b>605</b> |
|---|------------|------------|
| Viscosity, ASTM D 445                     |            |            |
| cSt @ 40°C                                | 20.2       | 30.4       |
| cSt @ 100°C                               | 4.2        | 5.4        |
| Freezing point, °C, ASTM D 97             | -18        | -12        |
| Flash point, °C, ASTM D 92                | 210        | 230        |
| Density @ 15°C kg/l, ASTM D 4052          | 0.82       | 0.86       |
| Residue Micro-Conradson, % weight, D 4530 | 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, following the recommendations provided in the Material Safety Data Sheet (MSDS).