

Shell Thermia Oil B

High Performance Heat transfer fluid



Shell Thermia Oil B is based on carefully selected highly refined mineral oils chosen for its ability to provide superior performance in indirect closed fluid heat transfer systems.

Applications

- **Enclosed circulated heat transfer systems** for industrial applications such as process industry, chemical plants, textile producers etc. and in household equipment such as oil filled radiators.

Thermia B can be used in high temperature continuous heat transfer equipment with the following application limits:

| Thermia B | |
|-----------------------|-------|
| Max. film temperature | 340°C |
| Max. bulk temperature | 320°C |

Performance Features and Benefits

- **High oxidation and thermal stability**
Thermia B is based on carefully selected highly refined mineral oils. The rates of oil cracking and oxidation are very small, giving long oil life. This assumes an efficient fluid heater with good pump circulation that the film temperatures on the heater surface do not exceed the limits above.
- **Low viscosity and high heat transfer coefficient**
Low viscosity enables excellent fluidity and heat transfer also at lower temperatures.
- **Good solvency**
- **Non-corrosive**
- **Low vapour pressure**
- **Non-toxic oils and easy disposal**
Mineral oil heat transfer fluids are safer to handle than synthetic fluids. After service they can easily be collected as used oil for recycling or disposal.

Specification and Approvals

Classified as ISO 6743-12 Family Q
Meets typically DIN 51522 requirements

Advice

The life of Thermia oils depends on the design and usage of the system. If the system is well designed and not subjected to abnormal workloads, the life can be for many years.

It is important to monitor oil condition regularly as rates of change in physical characteristics are more significant than actual values. The properties that should be monitored are viscosity, acidity, flash point (open and closed) and insolubles content.

Advice on applications not covered in this leaflet may be obtained from your Shell representative.

Health and Safety

Guidance on Health and Safety are available on the appropriate Material Safety Data Sheet which can be obtained from your Shell representative.

Protect the environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Typical Physical Characteristics

| Thermia B | | | |
|---|--------------------|-------------|---------|
| Density at 15 °C | kg/m ³ | ISO 12185 | 868 |
| Flash Point PMCC | °C | ISO 2719 | 210 |
| Flash Point COC | °C | ISO 2592 | 220 |
| Fire Point COC | °C | ISO 2592 | 255 |
| Pour Point | °C | ISO 3016 | -12 |
| Kinematic Viscosity | | ISO 3104 | |
| at 0 °C | mm ² /s | | 230 |
| at 40 °C | mm ² /s | | 25 |
| at 100 °C | mm ² /s | | 4.7 |
| at 200 °C | mm ² /s | | 1.2 |
| Initial Boiling Point | °C | ASTM D 2887 | 355 |
| Autoignition Temperature | °C | DIN 51794 | 360 |
| Neutralisation Value | mgKOH/g | ASTM D974 | < 0.05 |
| Ash (Oxid) | %m/m | ISO 6245 | < 0.01 |
| Carbon Residue (Conradson) | %m/m | ISO 10370 | 0.02 |
| Copper Corrosion (3h/100 °C) | | ISO 2160 | class 1 |
| Coefficient of Thermal Expansion | 1/°C | | 0.0008 |

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

Typical Design Data - Thermia B:

| Temperature | °C | 0 | 20 | 40 | 100 | 150 | 200 | 250 | 300 | 340 |
|-------------------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Density | kg/m ³ | 876 | 863 | 850 | 811 | 778 | 746 | 713 | 681 | 655 |
| Specific Heat Capacity | kJ/kg*K | 1.809 | 1.882 | 1.954 | 2.173 | 2.355 | 2.538 | 2.72 | 2.902 | 3.048 |
| Thermal Conductivity | W/m*K | 0.136 | 0.134 | 0.133 | 0.128 | 0.125 | 0.121 | 0.118 | 0.114 | 0.111 |
| Prandtl No. | | 3375 | 919 | 375 | 69 | 32 | 20 | 14 | 11 | 9 |