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| **INTRODUCTION** |

**OIL-UK THERMALTRANS FG represents a breakthrough in heat transfer fluid technology with a market leading flash point of over 260°C, providing outstanding protection from thermal and oxidative breakdown, and free from the impurities that hinder the performance of other thermal fluids.**

The unique ultra-high purity composition of THERMALTRANS FG means that it is colourless, odourless and tasteless, helping food and pharmaceutical companies reduce the risk of oil contamination, and enabling them to comply with Hazard Analysis Critical Control Point (HACCP) principles in relation to potential contamination hot spots.

THERMALTRANS FG is fully approved by the National Sanitary Foundation (NSF) as HT1 as suitable for incidental food contact and is FDA Title 21 CFR 178.3570 and 178.3620 “Lubricants with incidental food contact” compliant.

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| **SUPERIOR THERMAL AND OXIDATIVE STABILITY** |

The superior thermal and oxidative stability of THERMALTRANS FG enables the fluid to operate at higher temperatures for extended periods without breaking down to form the by-products of oxidation such as compound deposits and varnishes which reduce system safety and efficiency and necessitate costly premature fluid replacement.

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| **APPLICATIONS** |

OIL-UK THERMALTRANS FG is recommended for use in closed and non-pressurised heat transfer systems operating within a bulk oil temperature range of approximately -15°C to 340°C max., and where the surface temperature of the heating elements (oil film temperature) does not exceed 360°C.

This product is suitable for all thermal system applications where a heat transfer fluid is required that provides outstanding protection from thermal and oxidative breakdown. THERMALTRANS FG is suitable for pharmaceutical applications and food processing applications such as central cooking facilities, drying, edible oil deodorising and the heating of deep frying oils. This product is also highly suitable for non-food environments and also for other food related applications such as the manufacture of plastic bottles, films and containers for the packaging of food products. THERMALTRANS FG IS FULLY MISCABLE WITH WHITE MINERAL OIL AND STANDARD MINERAL OIL BASED HEAT TRANSFER FLUIDS.

**HOW DOES THE FLASH POINT AND THERMAL STABILITY OF THERMALTRANS FG COMPARE?**

**SEE NEXT PAGE**

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| **HOW DOES THE FLASH POINT OF THERMALTRANS FG COMPARE WITH OTHER FOOD GRADE THERMAL FLUIDS?** |

* **Oil UK Thermaltrans FG has a higher COC Flash Point than other leading Food Grade thermal fluids**
* **Thermaltrans FG also has a higher COC Flash Point than leading mineral oil based thermal fluids such as Shell S2 and BP Transcal N.**

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| **COMPARISON OF VOLATILITY BETWEEN THERMALTRANS FG AND STANDARD MINERAL OIL BASED HEAT TRANSFER FLUID** |

* **In the internationally adopted oil industry standard ASTM D 5800 Noak volatility test, Oil UK Thermaltrans FG is up to 800% more thermally stable than standard mineral oil based heat transfer fluids**

**FEATURES AND BENEFITS – SEE NEXT PAGE**

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| **FEATURES AND BENEFITS** |

* **Higher thermal and oxidative stability than other leading food grade and non-food grade heat transfer oils.**
* **Highly resistant to oxidative breakdown and thermal degradation**
* **Extended oil life providing increased efficiency and reduced costs**
* **Minimises oil thickening and prevents the build-up of deposits and resins that can dramatically reduce system efficiency**
* **Lowest Pour Point of all leading food approved products enhances low temperature flow.**
* **NSF H1, HT-1, HX-1 Food grade Approved and FDA Compliant**
* **Enables compliance with** **Hazard Analysis Critical Control Point (HACCP) principles in relation to potential contamination hot spots.**
* **Ultra-high purity provides enhanced factory environment and worker health and safety**

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| **TYPICAL PHYSICAL DATA** |

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| **OIL UK THERMALTRANS FG** | **Typical Data** |
| Appearance | Water White |
| **Odour** | Virtually odourless |
| **Density at 15°C, kg/m3** | 828 |
| **Viscosity at 40°C, mm2/s**  | 43 |
| **Viscosity at 100°C, mm2/s**  | 7.6 |
| **Viscosity Index** | 140 |
| **Flash Point, COC °C**  | 280 |
| **Pour Point °C**  | -24 |
| **Auto-ignition temperature °C** | 390 |
| **Initial Boiling Point °C** | 440 |
| **Noak Volatility ASTM D 5800** | 2.0 |
| **Vapour Pressure @ 20°C** | <0.5Pa |
| **THERMAL DESIGN DATA** |

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| **Temp. °C:** | **-20** | **0** | **20** | **40** | **100** | **150** | **200** | **250** | **280** | **300** | **310** | **340** |
| **Density kg./m3** | 851 | 838 | 825 | 812 | 773 | 740 | 708 | 675 | 656 | 643 | 636 | 617 |
| **Thermal Conductivity W/mK** | 0.143 | 0.142 | 0.140 | 0.139 | 0.134 | 0.130 | 0.127 | 0.123 | 0.121 | 0.119 | 0.118 | 0.116 |
| **kJ/mhK** | 0.516 | 0.511 | 0.505 | 0.500 | 0.483 | 0.470 | 0.456 | 0.442 | 0.434 | 0.429 | 0.426 | 0.418 |
| **Heat Capacity KJ/kg. K** | 1.775 | 1.85 | 1.924 | 1.999 | 2.222 | 2.409 | 2.595 | 2.782 | 2.893 | 2.968 | 3.005 | 3.117 |

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| **PRE-COMMISSIONING INFORMATION** |

The system should be thoroughly tested for leaks prior to filling with fluid and commissioning. If the system is suspected of being contaminated with excess levels of debris which would not normally be being picked up by a suitable strainer, or if it has previously been filled with a fluid which is considered to be at the end of its working life, consideration should be given to flushing it with an OIL-UK Flushing Oil or OIL-UK Flushing Additive Concentrate to remove varnishes and oxidised materials. Water must not be used. If flushing is to be applied, the system should thereafter be drained completely and filled with new OIL-UK Thermaltrans FG heat transfer fluid up to a level in the expansion chamber which represents 30-45% of the level expected at operating temperature. All air must be evacuated from the system prior to the temperature reaching operating level. Oil expands when heated so an expansion chamber must be incorporated in the system and a suitable low level alarm switch is strongly recommended to be fitted on the expansion tank. This is the only location where the oil is likely to be in contact with the atmosphere. Precautions must be taken to ensure that exposure to air is minimised, especially if the temperature of the oil in the expansion chamber is likely to exceed 50°C. A floating cover can be used or the oil can be blanketed with inert gas.