

### Description

PROTEAN Heat Transfer Fluid is designed for closed circuit and pressure less heat transfer systems. It is based on a careful blend of highly refined oils and additives chosen for their ability to meet the stringent requirements of the food industry. It can be used in both direct contact applications (Class HT1) and where there is potential for incidental food contact. Produced according to FLT Quality Standards, in facilities where Good Manufacturing Practice have been implemented and form part of the quality and hygiene management systems ISO 9001. Applications: Heat transfer systems with a bulk oil temperature range of approximately -10°C to max 325°C where the surface temperature of the heating elements (oil film temperature) should not exceed +340°C.

### Benefits & Features

- Wide temperature range for application
- High temperature and oxidation stability
- Neutral odour and taste
- Compatible with the elastomers, gaskets, seals and paints normally used in food machinery lubrication systems.

### Directions for Use

All food grade lubricants should be stored separately from other lubricants, chemical substances and foodstuffs and out of direct sunlight or other heat sources. Store between 0°C and +40°C. Provided that the product has been stored under these conditions we recommend using the product within 5 years from the date of manufacture. Upon opening a pack, the product must be used within 2 years (or within 5 years of date of manufacture, whichever is the sooner). Care should be taken to ensure sufficient flow rate to avoid even a temporary overheating of the PROTEAN Heat Transfer Fluid. The surface temperature of the heating elements (film temperature) should not exceed +340°C. For physical parameters of the oil necessary for the calculation of the heat transfer coefficient in the system, such as density, specific heat and coefficient of thermal conductivity please contact your local partner. To ensure maximum lifetime it is recommended to monitor the oil periodically.

### Technical Data

Category:	H1 – Lubricants with incidental contact
NSF Registration No:	162819
Allergens:	Does not contain allergens, genetically modified ingredients, nut oil or derivatives.
Appearance:	Colourless
Pour Point (ISO 3016):	-18°C
Density (ISO 12185):	869 at +15°C kg/m <sup>3</sup> , 865 at +20°C kg/m <sup>3</sup> , 840 at +60°C kg/m <sup>3</sup>
Specific Heat (ASTM-E-1269-01):	1,76 at +40°C kJ/kg.K, 2,03 at +100°C kJ/kg.K, 2,37 at +200°C kJ/kg.K
Coefficient of thermal expansion per °C:	0,000760
Relative Density:	0.88
Flash Point (ISO 2592):	218°C
Fire Point (ISO 2592):	256°C
Kinematic Viscosity:	35 at +40 °C mm <sup>2</sup> /s, 5,8 at +100 °C mm <sup>2</sup> /s
Maximum oil film temperature* °C:	340
Max. bulk oil temperature °C:	325
Coefficient of Thermal Expansion, %/°C (%/°F):	0.0915 (0.0508)
Solubility:	Insoluble
Operating Temperature Range:	-10°C to max 325°C
Pack Sizes:	20 Ltr (TF6520) 205 Ltr (TF6599)

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### Thermal Data

Property	Temperature			
	15°C (60°F)	38°C (100°F)	260°C (500°F)	316°C (600°F)
Density, kg/L (lb./ft <sup>3</sup> )	0.868 (54.2)	0.854 (53.3)	0.716 (44.7)	0.681 (42.5)
Thermal Conductivity, W/m K (BTU/hr. °F.Ft <sup>2</sup> )	0.138 (0.080)	0.136 (0.079)	0.124 (0.072)	0.121 (0.070)
Heat Capacity, kJ/kg K (BTU/lb. °F)	1.87 (0.45)	1.94 (0.46)	2.69 (0.64)	2.88 (0.69)
Vapour Pressure, kPa (psia)	0.00 (0.00)	0.00 (0.00)	3.01 (0.44)	14.28 (2.05)



The content of this data sheet is given in good faith but without warranty.