Thermic Fluid

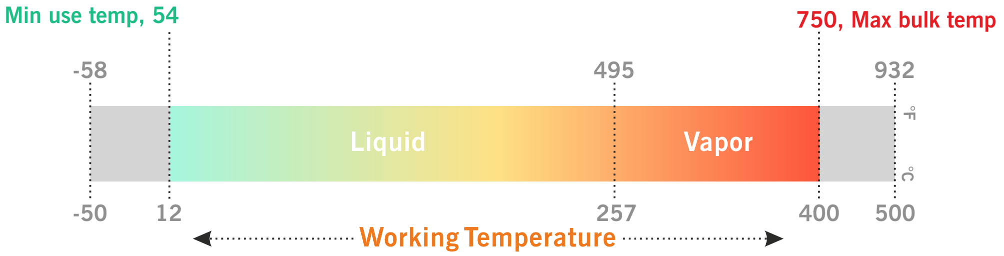
Product Information and Data Sheet

Hi-Tech THERM VP1

BIPHENYL / DIPHENYL BASE THERMIC FLUID

Product Description

Hi-Tech Therm VP1 /Schultz® S740 is a gas/liquid phase high temperature synthetic heat transfer fluid with outstanding thermal stability, which is operated in temperature range of 12°C to 400°C. Hi-Tech Therm VP1/Schultz® S740 has the highest operation temperature among synthetic heat transfer fluids due to its incomparable and irreplaceable high temperature performances. This product is featured by remarkable thermal stability, low vapor pressure and excellent temperature control.

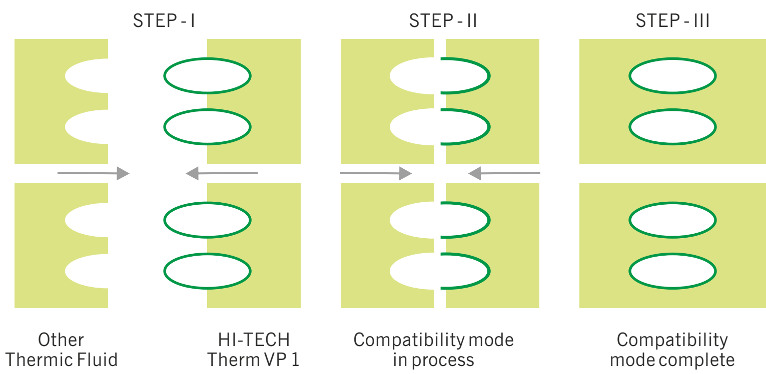


Physical and Chemical Properties

Hi-Tech Therm VP1 /Schultz®S740 is a mixture of two very stable chemicals, C_{12},H_{10}, and $C_{12}H_{10}O$, i.e. Biphenyl and Diphenyl Oxide. This product either used in liquid phase or vapor phase heating and its pressure range is from atmospheric to 10.8 kg.The low viscosity throughout the either operating temperature benefit in efficient heat transfer, start- up and pumping problems are minimized. Hi-Tech Therm VP1 /Schultz® S740 is non-corrosive to common metal and alloys. The air oxidation depends upon the chemical structure of the heat transfer fluid and temperature. System using Hi-Tech Therm VP1 /Schultz® S740 is protected by nitrogen blanketing, it is free from oxidization. Hi-Tech Therm VP1 /Schultz® S740 is thermal stable up to its maximum bulk temperature, it does not decompose readily at high temperature and can be used efficiently in either liquid or vapor phase system. For evaluating any change in physical and chemical properties it is advice to test thermic fluid in every three months for general parameter and every year for deep analysis.

Compatibility Process With Other Thermic Fluid

Hi-Tech Therm VP1/Schultz® S740 is Hydrogenated modified Biphenyl / Diphenyl base Thermic fluid and can be mixed with other Biphenyl / Diphenyl base fluid. Mixing of oil will not give any adverse effect on viscosity, vapour pressure and any physical parameter.



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HITECH SOLUTION
SPEED INNOVATION EXCELLENCE

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Nitrogen Blanketing

Nitrogen blanketing is a common practice used in thermic fluid expansion tanks to prevent the oxidation and degradation of the thermic fluid.
Here's how nitrogen blanketing works and why it is beneficial:
Objective: The expansion tank is used in thermic fluid systems to accommodate the volume changes that occur due to thermal expansion and contraction of the fluid. Nitrogen blanketing is employed in the expansion tank to create an inert atmosphere, replacing the oxygen-rich air above the fluid surface

Inert Atmosphere: By introducing nitrogen gas into the expansion tank, the oxygen content is reduced, creating an inert atmosphere. Nitrogen is an ideal choice for this purpose because it is inert, non-reactive, and does not support combustion or oxidation.

Oxygen Exclusion: Oxygen is a key factor in the degradation and oxidation of the thermic fluid. By blanketing the expansion tank with nitrogen, the oxygen is displaced, minimizing the contact between the fluid and the air. This helps to prevent the oxidation and thermal degradation of the thermic fluid.

Reduced Fluid Degradation: Oxidation reactions can lead to the formation of sludge, deposits, and acidic compounds, which can degrade the quality of the thermic fluid over time. Nitrogen blanketing helps to reduce these oxidation reactions, promoting the longevity and stability of the fluid.

Safety Considerations: In addition to preserving the quality of the thermic fluid, nitrogen blanketing also offers safety benefits. Nitrogen is non-flammable and non-reactive, reducing the risk of combustion or explosions in the expansion tank. This is particularly important in systems where the thermic fluid operates at elevated temperatures

Typical Properties

Appearance	Colorless transparent liquid
Maximum bulk temperature / °C	400°
Maximum film temperature / °C	430°
Normal boiling point / °C	257
Flash Point / °C	118
Autoignition Point / °C	600
Crystallization Point / °C	12
Density (20°C)/(kg/m^3)	1063
Acid Value (KOH)/(mg/g)	0.01
Carbon Residue / %	0.01
Moisture Content / (mg/kg)	114
Sulphur Content / (mg/kg)	3
Chlorine Content / (mg/kg)	4
Kinematic Viscosity (mm/s) 40°C	2.5
Kinematic Viscosity/(mm/s) 100°C	0.99

Thermal Expansion Coefficient (200°C) / °C	0.000979
Volume Shrinkage when Freezing / %	627
Volume Expansion when Fusion / %	6.69
Atmospheric Boiling Point / °C	257
Average Molecular Weight	166
Surface Tension (25°C) / (mN/m)	36.6
Resistivity (20°C) (Q.cm)	$6.4x10^{11}$
Heat of Fusion / (kJ/kg)	97.3
Heat of Vaporation (400°C) / (kJ/kg)	206
Pseudocritical Temperature / °C	499
Pseudocritical Pressure / bar	33
Pseudocritical Density / (kg/m^3)	327
Optimal Applicable Range / °C Liquid Phase	12-400
Optimal Applicable Range / °C Gas Phase	257-400

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