Galden® HT PFPE

Heat Transfer Fluids

SYENSQO
ADVANCING HUMANITY

Galden® HT PFPE Heat Transfer Fluids

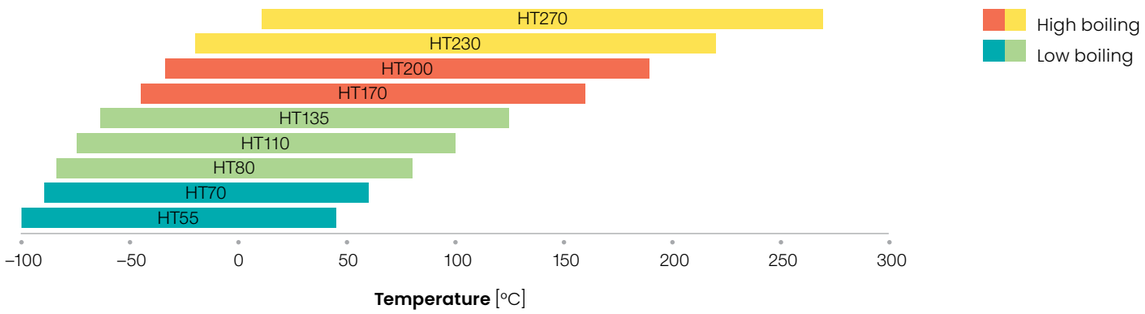
Syensqo offers a safe Heat Transfer (HT) media for deman ding applications, including:

- Semiconductor
- Chemical
- Pharmaceutical
- Vapor phase heating
- Transformer and super computer cooling
- Recirculating chillers
- Nuclear

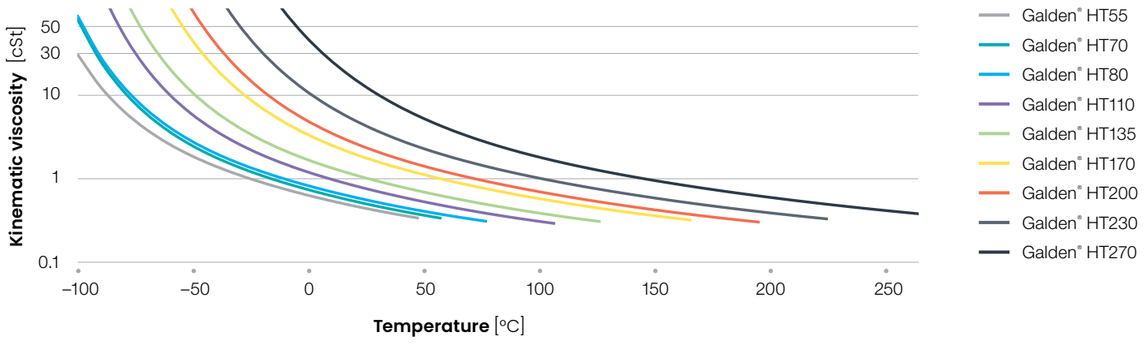
Galden® HT PFPEare inert, dielectric and high-perfor-mance heat transfer fluids with boiling points ranging from 55 °C to 270 °C. This range is broader than other fluorinated heat transfer fluids and enables PFPE to be used at end-use temperatures up to 290 °C.

Features	Benefits
Excellent thermal and chemical stability	No corrosion or reaction with construction materials
Good compatibility with materials	No formation or decomposition residues
Good heat transfer performance	No circulating pump seizure due to fluid degradation or corrosion
Grades with wide range of boiling point	Good temperature control
High boiling point with low pour point and low viscosity	Wide choice of grades to optimize performance
Low evaporation losses	High boiling grades reduce evaporation losses
No flash or fire points	without affecting performance
No explosion hazards	Low costs of ownership
No toxicity	Safe to use at high temperature
No auto-ignition point	Enhanced safety

Suggested operating temperature range



Kinematic viscosity vs. temperature



		Low Boiling					High Boiling			
Properties	**Units**	**HT55**	**HT70**	**HT80**	**HT110**	**HT135**	**HT170**	**HT200**	**HT230**	**HT270**
Boiling point	°C	55	70	80	110	135	170	200	230	270
Pour point	°C	<–125	<–110	–110	–100	–100	–97	–85	–77	–66
Density	g/cm³	1.65	1.68	1.69	1.71	1.72	1.77	1.79	1.82	1.85
Kinematic viscosity	cSt	0.45	0.50	0.57	0.77	1.00	1.80	2.40	4.40	14.00
Vapor pressure	torr	225	141	105	17	5.8	0.8	0.2	0.03	$<10^{-2}$
Specific heat	cal/g·°C	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Heat of vaporization at boiling point	cal/g	22	17	17	17	16	16	15	15	15
Refractive index	–	1.280	1.280	1.280	1.280	1.280	1.280	1.281	1.283	1.283
Coefficient of thermal expansion	cm³/cm³·°C	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Surface tension	dyne/cm	14	14	16	16	17	18	19	19	20
Thermal conductivity	W/m·K	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
Dielectric strength	kV (2.54 mm gap)	40	40	40	40	40	40	40	40	40
Dielectric constant	–	1.86	1.86	1.89	1.92	1.92	1.94	1.94	1.94	1.94
Volume resistivity	Ohm·cm	$1{\cdot}10^{12}$	$1{\cdot}10^{15}$	$1.5{\cdot}10^{15}$	$1.5{\cdot}10^{15}$	$1.5{\cdot}10^{15}$	$1.5{\cdot}10^{15}$	$6{\cdot}10^{15}$	$6{\cdot}10^{15}$	$6{\cdot}10^{15}$
Average molecular weight	amu	340	410	430	580	610	760	870	1,020	1,550
Dissipation factor (1 Khz)	–	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$	$2{\cdot}10^{-4}$
Solubility of water	ppm (wt)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Solubility of air	cm³ gas 100 cm³ liquid	26	26	26	26	26	26	26	26	26

All values determined at 25 °C unless otherwise specified

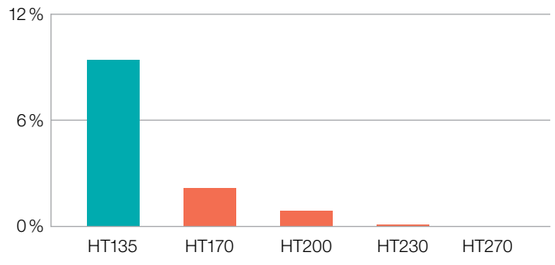
Galden® High Boiling (HB)

Galden® HT High Boiling is a line of dielectric fluids with boiling points ranging from 170 °C to 270 °C. These high per-formance fluids are a family of heat transfer fluids engineered for high temperature applications. Thanks to their high boiling point, they offer a significantly lower evaporation rate than that of low boiling point fluids.

Galden® HB fluids can also be used at moderate temperatures to replace fluids with higher evaporation rates, thereby reducing evaporation losses.

Evaporative loss comparison

According test method JIS C2101 (after 8 hrs at 40 °C)



Compatibility

Galden® HT PFPEfluids are compatible with the following materials:

Metals	Plastics	Elastomers
AISI 316, Copper, Brass, Iron, Nickel, Aluminum, Stainless steel, Bronze	PE low density, Polypropylene, Polycarbonate, ABS copolymer, Polyphenyloxide, PET, POM, PTFE, PVC, PMMA	Butyl rubber, NBR, EPDM, Natural rubber, Silicone rubber, Fluorosilicone

Seals and gaskets compatibility

More than 99 % of plasticizers used in the polymer industry are hydrocarbon-based compounds. Galden® HT PFPE fluids do not contain hydrogen in their chemical structure, so no affinity with hydrocarbon-based com-pounds is present.

Safety

Galden® HT PFPEHT PFPE fluids offer favorable environ-mental and worker safety properties: no toxicity, non-flammability, Zero Ozone Depletion Potential (ODP). The chemical inertness and non-corrosivity of Galden® HT PFPE fluids make them safe for workers to handle.

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