

Galden PFPE: Heat Transfer Fluids

Product Data Sheet

Solvay Solexis offers a safe Heat Transfer (HT) media for demanding applications, including:

- **Semiconductor**
- **Chemical**
- **Pharmaceutical**
- **Vapor Phase Heating**
- **Transformer and Super Computer Cooling**
- **Recirculating Chillers**

Galden HT is a line of fluids with boiling points ranging from 55°C to 270°C and pour points from -115°C to -66°C. Galden HT fluids therefore cover a wider liquid range than other fluorinated heat transfer fluids, with typical use range temperatures exceeding 300°C.

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Galden HT Fluids Application Chart

Industries	Applications	Benefits
Electronic	Direct Immersion	Compatibility (inert) High thermal stability
	Etcher (PVD, CVD)	Compatibility Dielectric Low viscosity at low temperatures Dielectric (non-conductive) Non-flammable
	Ion Implanter	High resistivity Environmentally safe
	Radar	Compatibility Thermal and oxidative stability
Electrical	Transformer Power Supplies	Non-flammable Environmentally safe Excellent dielectric properties
Nuclear	UF6 Production	Low viscosity Good radiation resistance
Chemical	Aggressive Conditions	High chemical and thermal stability, Inert Oxidative stability
Pharmaceutical	Freeze Dryer	Non-flammable Low temperature viscosity

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The following properties are equal for all Galden Heat Transfer grades:

Typical Property	Units	All Galden HT Grades
Specific Heat, 25°C	cal/g°C	0.23
Thermal Conductivity, 25°C	W/cm°C	0.0007
Coefficient of Expansion	cm ³ /cm ³ °C	0.0011
Dielctric Strength, 25°C	KV (2.54 mm gap)	40
Dissipation factor, 25°C (1Khz)	—	2x10 ⁻⁴
Solubility of Water	ppm(wt)	14
Solubility of Air	cm ³ gas/100cm ³ liquid	26

Galden HT Fluids

Available Grades and Typical Physical Properties

Typical Properties	Units	HT55	HT70	HT90	HT110
Boiling Point	°C	55	70	90	110
Pour Point	°C	<-110	<-110	<-110	<-110
Density, 25°C	g/cm ³	1.65	1.68	1.69	1.71
Kinematic Viscosity, 25°C	cSt	0.45	0.50	0.75	0.77
Kinematic Viscosity, 0°C	cSt	0.64	0.75	1.14	1.21
Kinematic Viscosity, -20°C	cSt	0.91	1.09	1.75	1.94
Kinematic Viscosity, -40°C	cSt	1.40	1.79	3.12	3.74
Vapor Pressure, 25°C	torr	225	141	48	17
Heat of Vaporization @ Boiling Point	cal/g	22	17	17	17
Refractive Index, 25°C	—	1.280	1.280	1.280	1.280
Surface Tension, 25°C	dynes/cm	10	14	16	16
Average Molecular Weight	—	340	410	460	580
Dielectric Constant 25°C (1Khz)	—	1.86	1.86	1.90	1.90
Volume Resistivity	Ohm-cm	1x10 ¹²	1x10 ¹⁵	1x10 ¹⁵	1x10 ¹⁵

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Available Grades and Typical Physical Properties

Typical Properties	Units	HT135	HT170	HT200	HT230	HT270
Boiling Point	°C	135	170	200	230	270
Pour Point	°C	<-100	-97	-85	-77	-66
Density, 25°C	g/cm ³	1.72	1.77	1.79	1.82	1.85
Kinematic Viscosity, 25°C	cSt	1.0	1.8	2.4	4.4	14.0
Kinematic Viscosity, 0°C	cSt	1.69	3.41	4.97	12.00	48.0
Kinematic Viscosity, -20°C	cSt	2.92	7.11	11.65	34.00	—
Kinematic Viscosity, -40°C	cSt	6.32	21.14	—	—	—
Vapor Pressure, 25°C	torr	8	<1	<1	<1	<10 ⁻²
Heat of Vaporization @ Boiling Point	cal/g	16	16	15	15	15
Refractive Index, 25°C	—	1.280	1.280	1.281	1.283	1.283
Surface Tension, 25°C	dynes/cm	17	18	19	19	20
Average Molecular Weight	—	610	760	870	1020	1550
Dielectric Constant 25°C (1Khz)	—	1.90	1.90	1.94	1.94	1.94
Volume Resistivity	Ohm-cm	6x10 ¹⁵	6x10 ¹⁵	6x10 ¹⁵	6x10 ¹⁵	6x10 ¹⁵

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