



Product Information

HT-110 HIGH-TEMP SILICONE BATH FLUID

Polydimethylsiloxane with iron-siloxane additive...enhanced thermal stability



Remains stable in open system baths @ 199°C / 390°F

DESCRIPTION

Clearco HT-110 High Temp Silicone Bath Fluid is a polydimethylsiloxane (CAS # 63148-62-9) formulated with an iron-siloxane additive to enhance thermal stability and resistance to oxidation. It can be used as a heat transfer in baths exceeding 500°F for extended periods. The product can withstand high temperatures and remain stable with little viscosity change and exhibits a high resistance to oxidation and gumming.

In the presence of oxygen or air, the Silicone Bath Fluid has a greater resistance to high temperatures (see Table 1),

Effects of Temperature

Clearco Silicone Bath Fluid does not boil or flash at temperatures as high as 288°C, and withstands long heat exposure without gumming or oxidizing. The maximum service temperature of Clearco Silicone Bath Fluid will vary with each specific application.

Clearco Silicone Bath Fluid remains pourable to -40°C. In addition, the fluid shows very little change in viscosity and flow characteristics over a wide temperature span.

Typical Properties

Parameter	Unit	Value
Flash Point – open cup	°C	>288
Pour point1 (ASTM D-97)	°C	-65
Specific gravity at 25°C		0.960
Viscosity at 25°C	cSt	100
Viscosity-temperature coefficient, 1-(viscosity at 99°C/viscosity at 38°C)		0.60
Coefficient of expansion per °C unit volume/unit volume		0.00095
Vapor pressure at 204°C	pa	~330
Thermal conductivity at 25°C, W/m.K2		0.11
Volatility, % weight loss 3		<2
Refractive Index		1.4030
Specific heat at 98.8°C	J/kg.K	1423

Table 1: Typical Oxidation Stability

<u>Weight Loss at 249°C</u>	
After 4 hours %	2.0
After 24 hours %	4.5
After 48 hours %	7.0
<u>Gel Time (hours)</u>	
At 199°C / 390°F	>19,000 hrs.
At 288°C / 550°F	>5,000 hrs.
<u>Weight Loss at 288°C</u>	
After 4 hours %	3.0
After 24 hours %	9.4
After 48 hours %	11.5

Pricing

1-gallon.....	3.6 kg / 8 lbs.
5-gallon pail.....	18kg / 40 lbs.
55-gallon drum.....	200kg / 440 lbs

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Effects of Shear

Clearco HT-110 High Temp Silicone Bath Fluid provides stability and uniform performance in mechano-fluid devices and controls. Because uniform flow characteristics under shear are rigidly controlled, uniform performance from lot to lot is assured. Even after repeated or long service at high shear rates, this fluid has little or no permanent change in viscosity, and the damping effects remain nearly constant.

At low shear rates, Clearco Silicone Bath Fluid behaves like a Newtonian fluid, showing little appreciable drop in apparent viscosity with increasing shear.

At extreme shear rates above 2000/s, Silicone Bath Fluid shows slight deviation from Newtonian behavior.

Any change in the apparent viscosity of HT-110 High Temp Silicone Bath Fluid due to shear is only temporary. When the shear stress is removed, the viscosity returns to its original value.

Effects of Temperature

Clearco Silicone Bath Fluid does not boil or flash at temperatures as high as 288°C, and withstands long heat exposure without gumming or oxidizing. The maximum service temperature of Clearco Silicone Bath Fluid will vary with each specific application.

Suitability of this fluid must be individually qualified by the customer for a given use. Clearco Silicone Bath Fluid remains pourable to -40°C.

In addition, the fluid shows very little change in viscosity and flow characteristics over a wide temperature span. The graph (see Figure 1) gives

temperature vs. viscosity relationships for Silicone Bath Fluid.

Solubility

Clearco HT-110 Silicone Bath Fluid is soluble in most aliphatic hydrocarbon solvents and chlorinated solvents, including gasoline, heptane, VM&P naphtha, xylene, toluene, methylene chloride, perchloroethylene, ethyl ether and hexyl ether.

It is partially soluble in such solvents as 99% isopropyl alcohol, heptadecanol, acetone and insoluble in such liquids as water, ethyl alcohol, 70% isopropyl alcohol, ethylene glycol, propylene glycol and diethylene glycol stearate.

Handling Precautions

Clearco Silicone Bath Fluid may cause slight temporary discomfort of accidentally rubbed into the eyes. It is essentially non-irritating to the skin.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. READ

PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABEL FOR SAFE USE.

Usable Life & Storage

When stored at or below 60°C in closed but vented containers, this product has a usable life of 60 months from date of production.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

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