

Molten Salt Heat Transfer Fluid

Process Applications

- Solar heat transfer fluid
- Thermal storage medium
- Environmental chambers
- Hot bath systems
- High-temperature reaction applications
- Preheating natural gas lines
- Metal alloy heat treatments

■ Dynalene MS-1 Overview

Dynalene MS-1 is a non-toxic molten salt heat transfer fluid which can be used in hot bath or solar thermal applications at very high temperatures. MS-1 can safely withstand temperatures up to 565°C (1050°F), higher than most commercially available heat transfer fluids on the market today.

Dynalene's molten salt fluids have excellent thermo-physical properties in the liquid state, such as low viscosity, high heat capacity, and high thermal conductivity. The high energy density of Dynalene's molten salts provides long-term heat storage for any high-temperature application. Our heat transfer salts provide excellent corrosion resistance with stainless and alloy steels, and exhibit minimal vapor pressures even near peak operating temperatures. This eliminates the need for expensive materials and high-pressure components, in addition to increasing the safety of your system.

■ Thermal Stability

The maximum operating temperature of MS-1 is 565°C. Above this temperature the fluid will slowly evolve into non-toxic, inert gases with very low vapor pressures. Prolonged exposure to temperatures higher than the recommended maximum operating temperature may lead to precipitate formation.

■ Corrosion Performance

Dynalene MS-1 has undergone repeated corrosion testing. Stainless steel samples were immersed in the salt for 36 days at 550°C (1022°F) and then evaluated for mass loss. The recorded corrosion rates for SS-304 and SS-316 are 21 µm/year and 16 µm/year, respectively.

■ Material Compatibility

Dynalene MS-1 can be used safely with carbon steel up to 400°C (842°F). Above this operating temperature, stainless steel, Inconel, or other corrosion-resistant alloys are recommended. Copper and bronze can be used up to 300°C (572°F).

Recommended Temperature Range:

250°C (482°F) to 565°C (1050°F)

■ Properties of Dynalene MS-1

A comprehensive list of all thermo-physical properties of Dynalene MS-1 can be found on page 2. For health and safety information or to request a Safety Data Sheet, contact our Dynalene sales representatives.

Composition:	Salt mixture
Appearance:	White solids
Odor:	None
Freezing Point:	225°C (437°F)
Max Operating Temp:	565°C (1050°F)
Latent Heat:	117 J/g
Thermal Conductivity*:	0.50 W/mK
Specific Heat*:	1.40 J/gK
Density*:	1.90 g/cm ³
Viscosity*:	4.0 cP
Freezing Contraction:	3%

*Measured at 300°C (572°F)

■ Benefits of Choosing Dynalene MS-1

- Non-toxic
- High thermal stability
- High energy density
- Low vapor pressure
- Cost-effective
- Available worldwide
- Proven performance

■ Quantity & Availability

Dynalene MS products are offered in 16, 50, 220, and 550-lb containers, and 2000 to 3000-lb super sacks. Pricing depends on quantity, and Dynalene, Inc. will work with you to try to fit your budget.

SI Units

Temp °C	Viscosity mPa·s	Thermal Cond. W/m·K	Specific Heat kJ/kg·K	Density kg/m ³
100			1.07	2030
150			1.19	1990
200			1.22	1960
250	5.9	0.49	1.39	1930
300	4.0	0.50	1.40	1900
350	3.1	0.51	1.41	1870
400	2.4	0.52	1.42	1840
450	1.9	0.53	1.44	1820
500	1.7	0.54	1.45	1790
550	1.3	0.55	1.45	1760

US Units

Temp °F	Viscosity cP	Thermal Cond. BTU/hr·ft·°F	Specific Heat BTU/lb·°F	Density lb/ft ³
212			0.26	127
302			0.28	124
392			0.29	122
482	5.9	0.28	0.33	120
572	4.0	0.29	0.33	119
662	3.1	0.29	0.34	117
752	2.4	0.30	0.34	115
842	1.9	0.31	0.34	114
932	1.7	0.31	0.35	112
1022	1.3	0.32	0.35	110

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