

## TMC-7500

TMC-7500 is a clear, colorless, and nonflammable fluid. TMC-7500 is chemically inert and thermally stable. It is a viable option for replacing perfluorocarbons and perfluoropolyethers in many industrial applications.

### Features

- REPLACEMENT TO 3M™ NOVEC™ 7500
- LOW GLOBAL WARMING POTENTIAL (GWP)
- ZERO OZONE DEPLETION POTENTIAL (ODP)
- MISCIBLE WITH NOVEC™ 7500
- WIDE LIQUID RANGE
- VOC-EXEMPT SOLVENT (US EPA)
- RoHS COMPLIANT

#### Packaging Information

##### *Sold in:*

- ▶ 1 gal. Bottle - 12 lbs (5 kg)
- ▶ 5 gal. Pail - 44 lbs. (20 kg)
- ▶ 55 gal. Drum - 550 lbs. (250 kg)

### Applications

TMC-7500 is intended to replace ozone-depleting and high global warming potential chemicals for the following suggested industrial and electronic applications:

- Cooling fluid for semiconductor and electronic device manufacture process, testing equipment and facilities
- Heat transfer fluid
- Direct contact cooling fluid for supercomputers, high voltage transformers and power electronic
- Cooling fluid, special solvent, and process aid for chemical manufacture process
- Pharmaceutical manufacture process cooling liquid and freezing dry fluid
- Lubricant Deposition

### Materials Compatibility

TMC-7500 is compatible with most metals, polymers and plastics.

#### Environmental Properties

Ozone Depletion Potential (ODP)	0.00
Global Warming Potential (GWP)	90
Atmospheric Lifetime (years)	2.2
Volatile Organic Compounds (VOC)	No

Max operation high temperature for TMC-7500 replacement is 145°C or 295°F  
The recommended operation temperature range is from - 65°C to 125°C

## Specifications

Appearance	Clear colorless liquid
Purity (Methoxy Nonafluorobutane)	99.5% Min.

## Physical Properties\*

Molecular Formula	CF <sub>3</sub> CF(CF <sub>3</sub> )-CF(OC <sub>2</sub> H <sub>5</sub> )-CF <sub>2</sub> CF <sub>2</sub> CF <sub>3</sub>
Molecular Weight	414(g/mol)
CAS Number	297730-93-9
Boiling Point	129°C
Surface Tension	16 dynes/cm
Solubility in Water	<5ppm
Flash Point	None
Dielectric Constant	5.8
Viscosity	0.8 centipoise at 25°C
Viscosity, Kinematic, at 25°C, cSt, ASTM D 445.a,cSt	0.79
Thermal Conductivity @25°C, ASTM D 2717, W/m.K	<10

\*All values in above chart @ 25°C unless otherwise specified.

## Physical Properties

Melting Point	-100°C
Pour Point, ASTM D97, °F	<-100
Dielectric Breakdown Voltage, VDE Electrodes, ASTM D 1816, kV	40
Vapor Pressure - Temperature @100°C, ASTM D 2879, psia	0.436
Vapor Pressure - Temperature of Liquids by Isoteiscope @100°F, ASTM 4052, g/cm <sup>3</sup>	1.6219
Density	1.62 g/ml [@ 20°C]
Specific Gravity	1.62 [Ref Std: WATER=1]
Viscosity @40°C, ASTM D 7042, cP	1.046
Viscosity @100°C, ASTM D 7042, cP	0.525
Viscosity, Kinematic, at -20°C, cSt, ASTM D 445.a, cSt	1.61
Viscosity, Kinematic, at 0°C, cSt, ASTM D 445.a, cSt	1.26

## Distillation, ASTM D 86.b

	Results
Initial Boiling Point, °C	127
5% Recovered, °C	129
10% Recovered, °C	129
15% Recovered, °C	129
20% Recovered, °C	129
30% Recovered, °C	129
40% Recovered, °C	129
50% Recovered, °C	129
60% Recovered, °C	129
70% Recovered, °C	129
80% Recovered, °C	129

90% Recovered, °C	129
100% Recovered, °C	131
Percent Recovery, %	100.0
Percent Residue, %	0.0
End Point, %	100
Loss, %	0.0

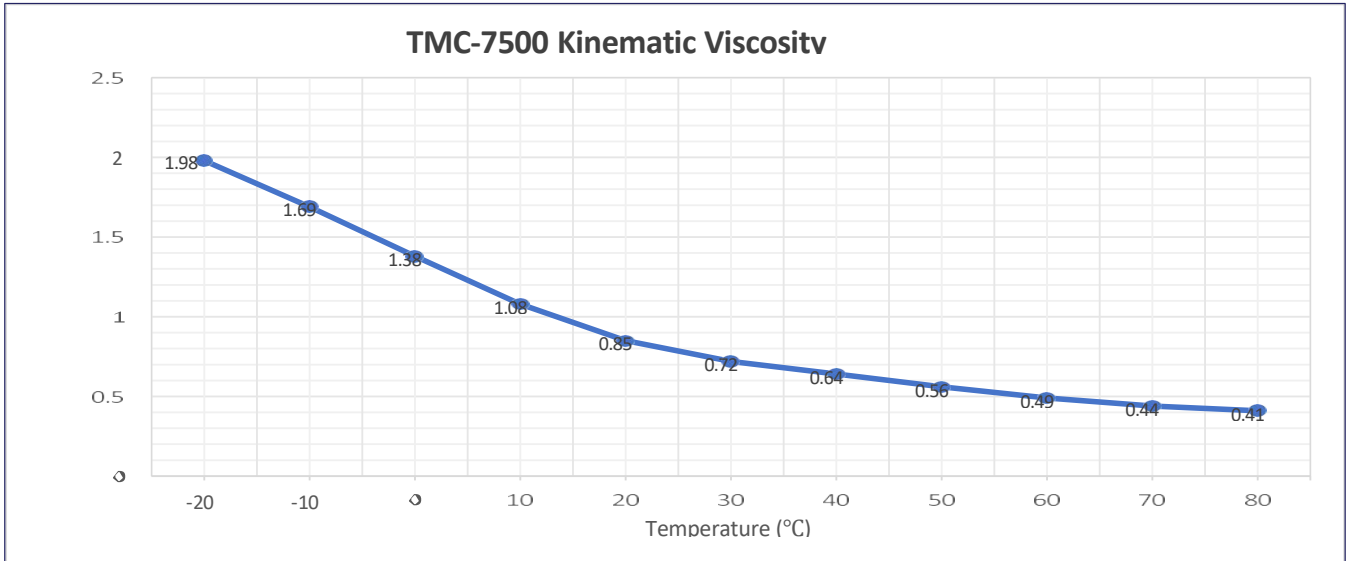
Test Item	Method	Temperature	Test Result
–	–	–	Submitted Samples
Boiling Point °C	OECD TG 103	–	128°
Dielectric Strength, 0.1" gap	ASTM D-877	20°C	41.5KV
		60°C	40.8KV
Viscosity (cSt) (-20°C~80°C)	ASTM D-445	-20°	1.98
		-10°C	1.69
		0°C	1.38
		10°C	1.08
		20°C	0.85
		30°C	0.72
		40°C	0.64
		50°C	0.56
		60°C	0.49
		70°C	0.44
Vapor Pressure (kPa) °C	ASTM D-323	80°C	0.41
		25°C	2.0
		60°C	8.7
		80°C	16.9

Property	Method	Results	Units	Min	Max	
<b>DDF (Tan d) / Rel. Permittivity / d.c. Resistivity</b>	IEC 60247:2004					
Temperature of Test		20	°C	–	–	#
Resistivity		1.11*10^9	Ohm.m	–	–	
<b>Thermal Conductivity, Diffusivity, and Volumetric Heat Capacity</b>	ASTM D7896-19					
Thermal Conductivity at -10°C (Average)		0.0733	W/m.K	–	–	#
Thermal Conductivity at 0°C (Average)		0.0725	W/m.K	–	–	#
Thermal Conductivity at 10°C (Average)		0.0715	W/m.K	–	–	#
Thermal Conductivity at 20°C (Average)		0.0701	W/m.K	–	–	#
Thermal Conductivity at 30°C (Average)		0.0693	W/m.K	–	–	#
Thermal Conductivity at 40°C (Average)		0.0679	W/m.K	–	–	#
Thermal Conductivity at 50°C (Average)		0.0668	W/m.K	–	–	#
Thermal Conductivity at 60°C (Average)		0.0656	W/m.K	–	–	#
Thermal Conductivity at 70°C (Average)		0.0645	W/m.K	–	–	#
Thermal Conductivity at 80°C (Average)	0.0640	W/m.K	–	–	#	

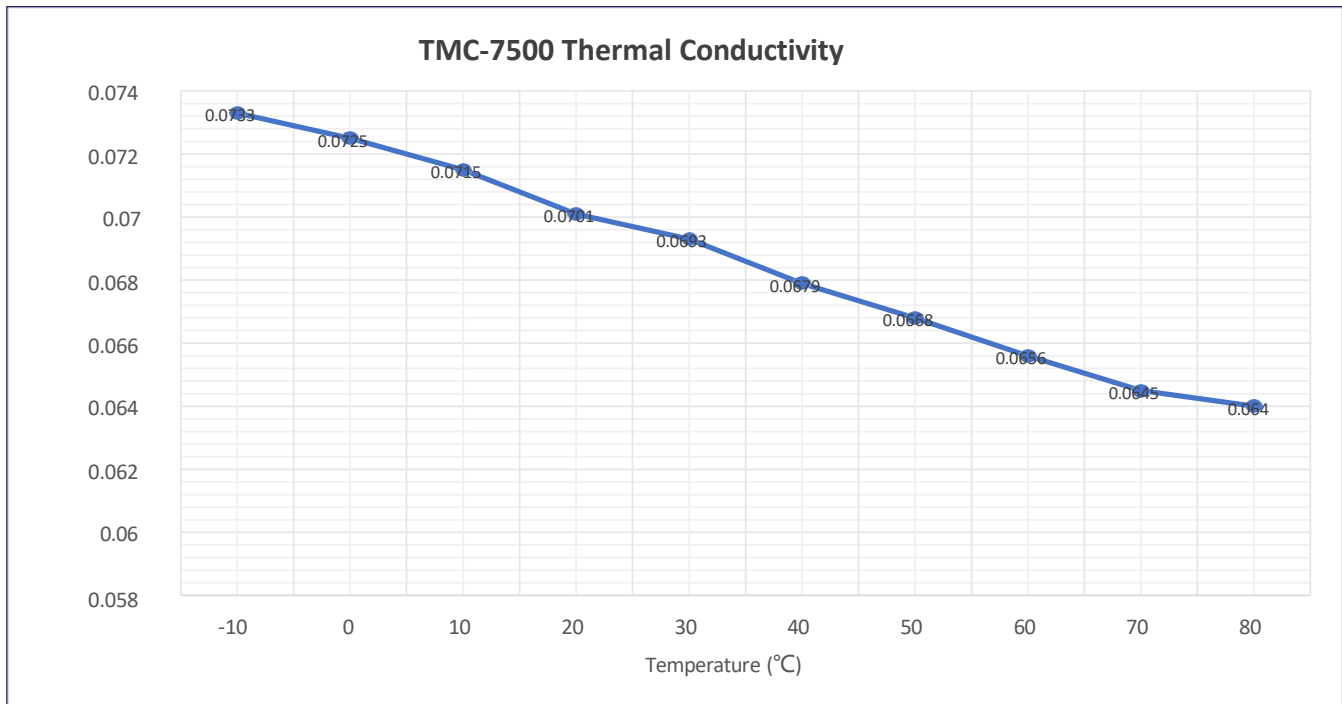
Item No.	Test Items	Test Results	Units	Test Method
1	Kinematic Viscosity	<u>-60°C</u> <u>10.95</u>	<u>mm<sup>2</sup>/s</u>	ASTM D445-21e2
		<u>-50°C</u> <u>6.121</u>	<u>mm<sup>2</sup>/s</u>	
		<u>-40°C</u> <u>3.897</u>	<u>mm<sup>2</sup>/s</u>	
		<u>-30°C</u> <u>2.681</u>	<u>mm<sup>2</sup>/s</u>	

Item No.	Test Items	Test Results	Units	Test Method
2	Thermal Conductivity	<u>-80°C</u> <u>0.111</u>	<u>W/mK</u>	ASTM E1461-13
		<u>-70°C</u> <u>0.116</u>	<u>W/mK</u>	
		<u>-60°C</u> <u>0.117</u>	<u>W/mK</u>	
		<u>-50°C</u> <u>0.120</u>	<u>W/mK</u>	
		<u>-40°C</u> <u>0.106</u>	<u>W/mK</u>	
		<u>-30°C</u> <u>0.086</u>	<u>W/mK</u>	

Kinematic Viscosity TMC-7500											
Temperature (°C)	-20	-10	0	10	20	30	40	50	60	70	80
Viscosity (cSt)	1.98	1.69	1.38	1.08	0.85	0.72	0.64	0.56	0.49	0.44	0.41



Thermal Conductivity TMC-7500										
Temperature (°C)	-10	0	10	20	30	40	50	60	70	80
Thermal Conductivity (W/m.K)	0.0733	0.0725	0.0715	0.0701	0.0693	0.0679	0.0668	0.0656	0.0645	0.064



## Recycle and Reclaim Options

TMC Industries Inc. reclaim service provides significant savings over the cost of new fluid and helps protect the environment by drastically reducing the amount of your waste stream.

Reduce your hazardous waste disposal and achieve better environmental stewardship. TMC Industries, Inc. properly disposes of the contaminants.

## Quality Assurances

We guarantee our reclaimed solvents to have new qualities and performance capabilities. To support our confidence, pre- and post-processing analytical data accompanies each shipment.

## Save on Disposal Costs

Reduce your hazardous waste disposal. Have TMC Industries reclaim your contaminated fluids to their original state and purity and return them to you at about 1/3 the cost of replacing them with new fluids.

## Safety, Storage and Handling

TMC-7500 Engineered Fluid is nonflammable and does not exhibit flammability characteristics under normal storage conditions. Store in a tightly closed original container. This fluid is highly resistant to thermal breakdown, and hydrolysis in storage and during use. Please read the Safety Data Sheet for additional information.



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