



單相型絕緣冷卻液

Single-Phase Dielectric Coolant ICE-15M

Product Description

TCLAD ICE-15M is a non-halogenated, eco-friendly fluid suitable for immersion cooling electrical systems. Its distinctive features allow it to offer excellent heat transfer performance, superior dielectric properties, and compatibility with electrical insulating materials. TCLAD ICE-15M is also suitable for single-phase immersion heat transfer applications, which don't require complex systems such as evaporators and condensers. It also provides a precise, stable, uniform thermal management system.

Key Feature

- Excellent heat transfer performance
- Superior dielectric properties
- Low viscosity
- Exceptional material compatibility
- Outstanding anti-corrosion
- High thermal stability
- Non-volatile
- Readily biodegradable
- Non-toxic and halogen-free
- GWP<1

Applications

- Aerospace/Military
- EV transmission fluid
- Charging station heat dissipation system
- High-performance computing liquid cooling
- Data center immersion cooling
- Immersion coolant for EV batter
- Servers and ASIC mining device

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Characteristics

Item	Unit	Typical value	Test method
Color	APHA	50	ASTM D1209
Acid Value	mg KOH/g	0.01	ASTM D974
Water Content	ppm	50	ASTM D1533
Kinematic Viscosity	cSt@20°C	14.9	ASTM D445
	cSt@40°C	7.6	ASTM D445
	cSt@100°C	2.2	ASTM D445
Viscosity Index	-	83	ASTM D2270
Coefficient of Expansion 1/°C		0.00081	ASTM D1903
Pour Point	°C	<-60	ASTM D97
Flash Point C.O.C	°C	204	ASTM D92
Fire Point, °C	°C	228	ASTM D92
Auto Ignition, °C	°C	>300	ASTM E659

The values above are typical and do not constitute a contractual commitment. The present technical data sheet replaces all previous editions.

Heat Transfer Properties

Item	Unit	Typical value	Test method
Thermal Conductivity	W/m*K@20°C	0.136	ASTM D7896
	W/m*K@40°C	0.133	ASTM D7896
	W/m*K@100°C	0.123	ASTM D7896
Item	Unit	Typical value	Test method
Heat Capacity	kJ/kg*K@20°C	2.126	ASTM D7896
	kJ/Kg*K@40°C	2.203	ASTM D7896
	kJ/kg*K@100°C	2.417	ASTM D7896

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Single-Phase Dielectric Coolant ICE-15M

Item	Unit	Typical value	Test method
Density	kg/m ³ @20°C	854	ASTM D4052
	kg/m ³ @40°C	841	ASTM D4052
	kg/m ³ @100°C	799	ASTM D4052
Viscosity	mPa*s@20°C	12.5	ASTM D445
	mPa*s@40°C	6.3	ASTM D445
	mPa*s@100°C	1.7	ASTM D445

Dielectric Properties

Item	Unit	Typical value	Test method
Breakdown Voltage	KV@RT	>70	IEC 60156
Volume Resistivity	GΩ*m@90C	>100	IEC 60247
Dielectric Constant	@90°C/1kHz	2.7	IEC 60247
	@RT/20~40GHz	2.2	IEC 62209
Dissipation Factor	@90 °C, %	0.1	IEC 60247

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Environmental features

Item	Unit	Typical value	Test method
Total S, P, Cl	ppm	<1	ICP-OES
PFAS	-	0	-
GWP	-	0	-
ODP	-	0	-
Biodegradability	%	>60	OECD 301F
Renewable Carbon*	%	65-100	Calculation

*Carbon is derived from renewable sources.

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Material Compatibility

Item	Materials	
Plastic	Acceptable	PPS, ABS, PC, PC/GF, PET, PMMA, POM
	Marginally Acceptable*	PP, PE, PVC, CPVC, PA, Epoxy
	Unacceptable	PS, Nylon
Rubber	Acceptable	PTFE, FFKM, Viton®ETP, FKM, TPU, Nylon, HNBR
	Marginally Acceptable*	NBR, SBR, PA
	Unacceptable	EPDM, ACM, AEM, PU, SBR, VMQ, CR, NR

* Test condition and supplier dependent.

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