



## 單相型絕緣冷卻液

### Single-Phase Dielectric Coolant ICE-15H

#### Product Description

TCLAD ICE-10H 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-10H 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

#### TCLAD

US [sales.us@tclad.com](mailto:sales.us@tclad.com)  
 APAC [sales.asia@tclad.com](mailto:sales.asia@tclad.com)  
 Europe [sales.eu@tclad.com](mailto:sales.eu@tclad.com)  
[www.tclad.com](http://www.tclad.com)



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### Characteristics

Item	Unit	Typical value	Test method
Color	APHA	<5	ASTM D1209
Acid Value	mg KOH/g	<0.01	ASTM D974
Water Content	ppm	20	ASTM D1533
Kinematic Viscosity	cSt@20°C	15.7	ASTM D445
	cSt@40°C	8.2	ASTM D445
	cSt@100°C	2.4	ASTM D445
Viscosity Index	-	107	ASTM D2270
Coefficient of Expansion 1/°C		0.00081	ASTM D1903
Pour Point	°C	-48	ASTM D97
Flash Point C.O.C	°C	194	ASTM D92
Fire Point, °C	°C	218	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	0.141	ASTM D7896
	W/m*K@40°C	0.138	ASTM D7896
	W/m*K@100°C	0.127	ASTM D7896
Item	Unit	Typical value	Test method
Heat Capacity	kJ/kg*K@20°C	2.318	ASTM D7896
	kJ/Kg*K@40°C	2.381	ASTM D7896
	kJ/kg*K@100°C	2.608	ASTM D7896

### TCLAD

US [sales.us@tclad.com](mailto:sales.us@tclad.com)  
 APAC [sales.asia@tclad.com](mailto:sales.asia@tclad.com)  
 Europe [sales.eu@tclad.com](mailto:sales.eu@tclad.com)  
[www.tclad.com](http://www.tclad.com)



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## Single-Phase Dielectric Coolant ICE-15H

Item	Unit	Typical value	Test method
Density	kg/m <sup>3</sup> @20°C	803	ASTM D4052
	kg/m <sup>3</sup> @40°C	790	ASTM D4052
	kg/m <sup>3</sup> @100°C	751	ASTM D4052

Item	Unit	Typical value	Test method
Viscosity	mPa*s@20°C	12.6	ASTM D445
	mPa*s@40°C	6.5	ASTM D445
	mPa*s@100°C	1.8	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	2.0	IEC 60247
	@RT/20~40GHz	2.0	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

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US [sales.us@tclad.com](mailto:sales.us@tclad.com)  
 APAC [sales.asia@tclad.com](mailto:sales.asia@tclad.com)  
 Europe [sales.eu@tclad.com](mailto:sales.eu@tclad.com)  
[www.tclad.com](http://www.tclad.com)



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## Single-Phase Dielectric Coolant ICE-15H

### Material Compatibility

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

\* Test condition and supplier dependent.

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US [sales.us@tclad.com](mailto:sales.us@tclad.com)  
 APAC [sales.asia@tclad.com](mailto:sales.asia@tclad.com)  
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