ElectroCool® Dielectric Coolants

Heat Transfer Fluids for use in Immersive Cooling of Electrical Devices

ElectroCool Single-phase Liquid Immersion Coolants are the highest performance, biodegradable, non-toxic, dielectric heat transfer fluids available for Immersive Cooling of electronic devices. ElectroCool Dielectric Coolants feature the broadest material compatibility, the highest dielectric strength, zero environmental impact, and the foremost health and safety for users.

Key Features:

- **High Dielectric Strength and Excellent Heat Transfer:** Ideal for Immersion Cooling of servers, circuit boards, power amplifiers, LEDs, LASER, fiber optics and other electrified components
- **Fire Resistant**: Higher flashpoints provide a significant safety margin
- **Non-Toxic, Biodegradable, Global Warming Potential = 0**
- **No Sulfur. No Phosphates. No PFAS.**
- **NSF Food Grade Certified**
- **Material Compatibility Warranty**
- **Exceptional Oxidation Stability in Use:** 10-Year Service Life
- **User Safety:** Non-allergenic. Can be used without extensive personal protective equipment

NSF
Nonfood Compounds
FOOD GRADE HT-1
HT1
#FK1228402
ISSUED
2024-11-12
2probity.eu

Composition: ElectroCool is made from synthetic hydrocarbons at Engineered Fluids' ISO 9001-Certified manufacturing facilities in Tyler, Texas USA from US sourced raw materials. ElectroCool is made under the tightest manufacturing controls; characteristics are stringently tested and verified before shipment with a certificate of analysis available for all products.

Applications: ElectroCool is designed specifically for use in full immersion thermal management of electrical devices. ElectroCool Dielectric Coolants have an extremely wide range of material compatibility which allows the use of electronic devices without any special coatings or modifications (see our website for our latest material compatibility guide). ElectroCool has extremely low vapor pressure and is intended for use in open and closed-loop systems without evaporation or off-gassing.

Typical devices used in immersive cooling systems with ElectroCool include:

- **Data Center Equipment:** Computer Servers, GPUs, FPGAs, ASICs, Routers
- **Wireless:** WIFI, 5G/6G & Satellite transceivers, RADAR. RF Power Amplifiers
- **Medical Devices:** MRI, X-ray and Ultrasound
- **Optical:** LEDs, LASER, Optical Fiber transceivers & amplifiers
- **Semiconductor:** Photolithography,

Efficient and effective heat removal coupled with exceptional material compatibility makes ElectroCool Dielectric Coolants the ideal choice for green, low impact, high-performance electrical cooling solutions, dramatically increasing device reliability and longevity.

Recycling, Recovery, Reprocessing and Disposal:
Engineered Fluids offers a full range of laboratory testing, maintenance, recycling, reprocessing and disposal services for all its Dielectric Coolants. This includes our unique 100% closed-cycle Coolant Collection and Reprocessing Program, eliminating waste and enabling 100% environmentally friendly operations. Contact your Engineered Fluids representative for more information.

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CHARACTERISTICS OF ELECTROCOOL DIELECTRIC COOLANTS

Product ID		EC-110	EC-120	EC-122	EC-130	EC-140
Typical Application		General Electronics Cooling	High Temperature Electronics	Lowest Viscosity, Microchannels & Actuators	Higher flash point offers an extra safety margin	Extreme Temp Semiconductor & highest flash point
Appearance		Clear				
Fluid Behavior		Non-Compressible, Isotropic, Newtonian				
Dielectric Strength[1]		>60kV				
Acid Value, mg KOH/g		<0.01 (pH = neutral)				
Resistivity (ohm-cm)		$>1x10^{14}$				
Conductivity, S/m		$1x10^{-12}$ (0.001 ps/m)				
Dielectric Constant		2.100	2.200	2.100	2.104	2.220
Refractive Index n_D^{20}		1.441	1.453	1.442	1.458	1.462
Pour Point (°C)		-60	-60	-65	-58	-54
Flash Point (°C)		**203**	**228**	**157**	**260**	**285**
ISO 4406 Particle Count		17/15/12	17/15/12	17/15/12	17/15/12	17/15/12
Total Sulfur (ppm)		0	0	0	0	0
Density, g/cc @ 20°C		0.82	0.82	0.81	0.83	0.84
Coefficient of Thermal Expansion, Vol/°C		0.00067	0.00065	0.00067	0.00065	0.00063
Kinematic Viscosity (cSt)	0°C	33.1	109.4	18.9	290.83	812.89
	40°C	7.25	16.10	5.02	36.10	67.10
	60°C	4.44	8.72	2.9	18.14	29.86
	100°C	2.22	3.70	1.7	6.80	9.63
Thermal Conductivity (W/m*K)	0°C	0.1397	0.1459	0.1383	0.1480	0.1584
	40°C	0.1374	0.1439	0.1359	0.1466	0.1568
	60°C	0.1363	0.1430	0.1342	0.1460	0.1561
	100°C	0.1340	0.1410	0.1325	0.1446	0.1545
Specific Heat (kJ/kg*C)	0°C	2.0605	2.0575	2.06	2.0833	2.0460
	40°C	2.2338	2.2060	2.21	2.2100	2.1912
	60°C	2.3205	2.2803	2.32	2.2733	2.2638
	100°C	2.4938	2.4288	2.44	2.4000	2.4090
Global Warming Potential		0	0	0	0	0
Biodegradability[2]		Readily Biodegradable (D5864 / OECD 301B)				Inherently Biodegradable
Materials Compatibility Warranty		Yes	Yes	Yes	Yes	Yes
Product Operational Warranties (Yrs)[3]		1, 5, 10	1, 5, 10	1, 5, 10	1, 5, 10	1, 5, 10

1) *Dielectric Strength is measured using ASTM D1816 method with 2mm electrode gap*
2) *Biodegradation is stated for a 28-Day Test Period. Biodegradation continues to occur after the initial test period.*
3) *See product specific warranty statement for terms and conditions. Shelf-Life duration is stated for an original sealed steel container, Shelf-life period is included in the warranty period..*

Need more information? Please contact us on sales@engineeredfluids.com or +1.725.218.1980

Manufactured in the United States