

MIVOLT®

LIQUID IMMERSION COOLING

- + Single-phase
- + High fire point (K-class fluid)
- + Readily biodegradable
- + High oxidation and moisture stability
- + Low pour point
- + Non-volatile
- + Halogen free
- + Non-toxic

CL300 Dielectric Liquid

Technical Brochure

INTRODUCING MIVOLT CL300

A new, immersive approach to cooling electrical systems.

MIVOLT CL300 is a new liquid for the immersive cooling of electrical systems. The unique chemistry of MIVOLT CL300 allows it to act as a dielectric coolant, removing heat directly from all areas of a component. Not only does this liquid have a high fire point (>310°C) and readily biodegradable status, but as a single phase coolant it does not require any of the complex systems necessary to evaporate and condense multiphase fluids.

Key Features:

- High fire point (K-class fluid)
- Readily biodegradable
- High oxidation and moisture stability
- Low pour point
- Non-volatile
- Halogen free
- Non-toxic

MIVOLT CL300 PROPERTIES

Thermal Properties	Units	Method	MIVOLT CL300
Density at 20°C	g/cc	ISO 3675	0.97
Specific Heat at 40°C	J/kg-K	ASTM E1269	1945
Thermal Conductivity at 40°C	W/m-K	ASTM D7896	0.146
Kinematic Viscosity at 40°C	mm ² /s	ISO 3104	29.5
Kinematic Viscosity at 100°C	mm ² /s	ISO 3104	5.3
Coefficient of Expansion at 40°C	1/K	ASTM D1903	0.00076
Pour Point	°C	ISO 3016	<-50
Chemical Properties			
Neutralisation Value	mg KOH/g	IEC 62021-2	<0.03
Net Calorific Value	MJ/kg	ASTM D 240-02	<31
Dielectric Properties			
AC Breakdown Voltage	kV	IEC 60156	>70
Volume Resistivity at 20°C	GΩ.m	IEC 60247	>80
Fire Safety			
Flash Point	°C	ISO 2719	>250
Fire Point	°C	ISO 2592	>310
Auto-Ignition Temperature	°C	ASTM E659	>400
Environmental Impact			
Biodegradability		OECD 301	Readily Biodegradable
Global Warming Potential	GWP		<1
Ozone Depleting Potential	ODP		0

MIVOLT CL300 MATERIALS COMPATIBILITY

Based upon testing with ester based dielectric liquids.

Application	Compatible Materials
Seals and 'O' Rings	Nitrile Rubber (BS2751), Silicone Rubber, Polyurethane Rubber, Fluorocarbon Rubber (Viton), PTFE (Teflon), Nylon
Gaskets and Jointings	Cork Bonded with Nitrile (Nebar Grey and Nebar Purple) / Cork Bonded with Neoprene Rubber (Nebar White and Nebar Orange)
Wire and Wire Enamels	Polyesterimide / Polyamide-imide Coated Copper (Synflex), Polyester, Epoxy, Polyurethane
Tank Enamels	Alkyd, Polyurethane Modified Alkyd, Polyurethane, Epoxy
Insulating Varnishes	Alkyd, Acrylic, Epoxy, Polyurethane, Polyimide
Metals	Copper, Phosphor Bronze, Aluminium, Iron, Brass, Zinc Plated Steel
Sleevings	Epoxy / Glass, Silicone Glass, Polyurethane / Glass, Polyester / Glass, Silicone Coated Glass Braided Sleeving (SCGB)
Plastics	boPET (Mylar), Cellulose Triacetate, Polyester (Melinex), Cotton / Epoxy Resin (TUFNOL 4F / 45), Cotton / Phenolic Resin (TUFNOL CARP), PVC Sheet (Sika-Trocal)*, Glass / Epoxy Resin (HGW), Polyetheretherketone Film (APTIV Grade 1000), Polymethyl Methacrylate (Perspex), Polycarbonate**, Polypropylene, Polythene, Fibre Reinforced Epoxy Glass (FRP), Acetal Copolymer (Ertacetal C), Close Cell Polymethacrylimide (PMI) Foam, Polyvinyl Alcohol (PVA), Nylon
Cable	Fluoropolymer (Raychem Flexlite), PVC (Soflex TQ)*, Cross Linked Modified Polyester (Raychem 99M)
Hose	Goodyear SAE J30R3 (inner only compatible), Gates Premoflex, Trelleborg Chemikler D-UPE (inner only compatible)
Adhesives / Sealants	Bisphenol F-Epoxy Resin (Araldite 2014), Dimethacrylate Ester (Loctite 601), Silicone Sealant (Loctite 5920), Gum Arabic Adhesive
Miscellaneous	Kraft Paper, Aramind Paper (Nomex), Pressboard, Phenolic Paper Laminate, Porcelain, Cotton Tape, Mica Insulation (Mica), Polyurethane Casting Resin, Diamond Patterned Epoxy Paper, Elephantide, Plywood, PVC Cable Sheathing*

* At elevated temperatures PVC may release plasticisers into MIVOLT CL300 and after prolonged immersion may become brittle.

** Certain amorphous polymers or those with a low degree of crystallinity (e.g. Polycarbonate, ABS and CPVC) may exhibit environmental stress cracking in contact with MIVOLT CL300. Use of these polymers for pipework or mechanically stressed components in contact with the liquid is not recommended.

ENVIRONMENTAL HEALTH & SAFETY

We advise that you read through the MIVOLT CL300 Material Safety Data Sheet (MSDS) before using this liquid. Please contact our technical team to request a copy.

T: +44 (0)161 864 5429

E: mivolttech@mimaterials.com

W: mivoltcooling.com

MIVOLT®

LIQUID IMMERSION COOLING

a product of  **M&I MATERIALS**

M&I Materials Ltd
Hibernia Way, Trafford Park
Manchester M32 0ZD
United Kingdom

T: +44 (0)161 864 5429
E: mivolttech@mimaterials.com
W: mivolt.com



Any recommendation or suggestion relating to the use, storage, handling or properties of the products supplied by M&I Materials Ltd or any member of its group, either in sales and technical literature or in response to a specific enquiry or otherwise, is given in good faith but it is for the customer to satisfy itself of the suitability of the product for its own particular purposes and to ensure that the product is used correctly and safely in accordance with the manufacturer's written instructions. © M&I Materials Ltd 2020. V1.