

TMC-40 ELECTRONIC LIQUID

TMC-40 Electronic Liquid is a direct replacement for 3M™ FC-40.

PRODUCT INFORMATION

TMC-40 Electronic Liquid is a non-conductive, thermally and chemically stable fluid ideal for single-phase heat transfer fluid applications, especially in the electronics and semiconductor industry for testers, CVD, and TFT manufacturing.

TMC-40 is a clear, colorless, non-conductive, non-flammable, residue-free, thermally and chemically stable liquid ideal for use in many heat transfer fluid applications. Its wide liquid range (-57 to 165 °C) and compatibility make it well-suited for a variety of electronic single- and two-phase heat transfer applications, including in the semiconductor market for etchers, ion implanters, testers, CVD, and TFT manufacturing. Because TMC-40 has a narrow boiling range, its composition will change little with time, keeping fluid loss to a minimum and ensuring consistent transport properties.

APPLICATIONS

- Dielectric Bath
- Electronic Testing
- Gross Leak Testing
- Heat Transfer
- Semiconductor Cooling
- Thermal Shock Testing

FEATURES

- Zero Ozone Depletion Potential (ODP)
- Non-Flammable
- High Boiling Point
- No Flash Point

MATERIALS COMPATIBILITY

TMC-40 fluid is compatible with most metals and plastics, with some limitations with elastomers.



PHYSICAL & ENVIRONMENTAL PROPERTIES COMPARISON

PROPERTY	UNITS	3M™ FC-40	TMC-40	TMC-40E
Type	—	Legacy	Replacement	Equivalent
Form	—	Liquid	Liquid	Liquid
Color	—	Colorless	Colorless	Colorless
Odor	—	Odorless	Odorless	Odorless
Boiling Point	°C	165	165	158
Freeze/Pour Point	°C	-57	-57	-55
Average Molecular Weight	g/mol	650	650	550
Thermal Conductivity	W/m-K	0.065	0.065	0.092
Vapor Pressure	kPa	0.29	0.29	3.756
Latent Heat of Vaporization	J/g	69	69	130
Liquid Density	kg/m ³	1855	1855	1820
Kinematic Viscosity	cSt	2.2	2.2	3.18
Absolute Viscosity	cP	4.1	4.1	5.52
Specific Heat	J/kg-K	1100	1100	1509
Coefficient of Thermal Expansion	1/°C	0.0012	0.0012	0.0054
Surface Tension	mN/m	4.1	4.1	4.1
Solubility of Water in Solvent	ppmw	<10	<10	Insoluble
Solubility of Solvent in Water	ppmw	<5	<5	<5
Dielectric Strength	kV	46	>40	40
Volume Resistivity	Ohm-cm	10 ¹⁵	10 ¹⁵	10 ¹⁰
Ozone Depletion Potential (ODP)	—	0.0	0.0	0.0
Global Warming Potential (GWP)	—	>5000	~6000	175
Flash Point	—	None	None	None
Refractive Index	—	1.29	1.29	1.29
Surface Tension	nM/m	16	16	17.51

Not for specification purposes. All values @ 25°C unless otherwise specified.

STANDARDS

- **MIL-STD-883:** Non-conductive thermal fluid for the complex electronics semiconductor industries — nondestructive leak and thermal shock testing. Liquid phase (-57°C to 165°C).

PACKAGING

TMC-40 is available in the following sizes and weights:

- **Jug** — 11 lb / 5 kg / 0.71 gal / 2.7 L
- **Pail** — 44 lb / 20 kg / 2.9 gal / 10.8 L
- **Drum** — 550 lb / 250 kg / 35.6 gal / 134.8 L
- **Sample** — 2.2 lb / 1 kg / 0.14 gal / 0.54 L
- **Tote** — Available Upon Request

SHELF LIFE & STORAGE

Shelf life is 5 years from the date of manufacture when stored in the original packaging materials and stored under normal conditions. TMC will re-certify material every 5 years up to 20 years.

Safety and Handling: Before using this product, please thoroughly read the current product SDS and label, following all applicable safety precautions described therein (e.g., recommended storage and safe handling, appropriate exposure controls and personal protective equipment (PPE), addressing accidental spills, disposal considerations, etc.).

Safety Data Sheet: Consult Safety Data Sheet before use.

Regulatory: For regulatory information about this product, contact your TMC representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that TMC believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond TMC's control and uniquely within user's control can affect the use and performance of a TMC product in a particular application. Given the variety of factors that can affect the use and performance of a TMC product, user is solely responsible for evaluating the TMC product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable TMC product packaging or product literature, TMC warrants that each TMC product meets the applicable TMC product specification at the time TMC ships the product. TMC MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

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Limitation of Liability: Except where prohibited by law, TMC will not be liable for any loss or damage arising from the TMC product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

DISPOSAL & RECYCLING

This fluid can be recycled and reused. Help protect the environment and don't pay for expensive disposal services.

TMC Industries can reclaim your used fluorinated fluids, restoring them to like-new condition, and save you up to 50% in replacement fluids while protecting the environment.

TMC Reclaimed Fluids are tested to meet new product specifications. It will be clear and odorless, and a Certificate of Analysis is issued with every order.

TMC Industries offers a **100% satisfaction guarantee** on all our reclaimed fluids. We back this up with a no-questions-asked refund policy. To learn more, [click here](#).

EXTERNAL DOCUMENTS

- [TMC Used Fluid Reclamation Service Brochure](#)