

# TECHNICAL DATA SHEET



EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU  
TMC-3283E is in line with EU regulation 1907/2006 REACH

## TMC-3283E

TMC-3283E is a clear, colorless, thermally stable, fully fluorinated liquid, ideal for use in many single-phase heat transfer applications in the semiconductor manufacturing industry. This makes it an ideal heat transfer fluid for etchers, ion implanters, testers, and others.

TMC-3283E is primarily a single compound, its composition will not shift or fractionate with time. This keeps fluid loss to a minimum and insures that heat transfer properties will not change with time.

### Features

- 3RD PARTY TESTED NO PFAS DETECTED
- EQUIVALENT TO 3M™ FC-3283
- MISCIBLE WITH 3M™ FC-3283
- ZERO OZONE DEPLETION POTENTIAL (ODP)
- LOW GLOBAL WARMING POTENTIAL (GWP)
- RECLAIMABLE BY TMC INDUSTRIES, INC.
- RoHS COMPLIANT

#### Packaging Information

*Sold in:*

- 1 gal. Bottle - 11 lbs. (5 kg)
- 3.6 gal. Pail - 55 lbs. (25 kg)
- 55 gal. Drum - 550 lbs. (250 kg)

### Applications

TMC-3283E is ideal for a variety of applications such as Heat Transfer, Semiconductor Cooling, Ion Implanters, Testers, Dielectric Bath and Etchers.

### Properties

Boiling Point	128°C
Appearance	Clear liquid
Color	Colorless
Dielectric Constant	1.96
Pour Point	-65°C (-85°F)
Latent Heat of Vaporization (at normal BP)	78 (J/g)
Dielectric Strength	52KV
Surfact Tension	12.7mN/m
Density	1.83g/ml
Saturated Water Content	50ppm
pH Value	7
Flash Point	None
Specific Heat 25°C	1.431 J/g°C
Thermal Conductivity 25°C	0.0834
Volume Resistivity 25°C	1.4*10 <sup>14</sup>
Heat of Vaporization	136 J/g°C
Viscosity 25°C	1.32cSt
Chemical Name	Perfluoro-compound
CAS	86508-42-1
Shelf Life	5 years
ODP	0
Low GWP	118

Temp (T, °C)	Density ( $\rho$ , kg m <sup>-3</sup> )	Kinematic viscosity ( $\mu$ , cSt)	Specific heat (Cp, J g <sup>-1</sup> C <sup>-1</sup> )	Vapor pressure (Pv, kPa)	Thermal conductivity (k, W m <sup>-1</sup> C <sup>-1</sup> )
-30	1.95	5.5	1.064	1.05	0.1021
-20	1.94	4.5	1.121	1.96	0.1017
-10	1.9	3.5	1.178	2.78	0.1015
0	1.88	2.5	1.202	5.2	0.1012
10	1.85	1.95	1.303	10.4	0.1009
20	1.82	1.55	1.367	14.6	0.1008
25	1.81	1.32	1.431	15.5	0.1007
30	1.81	1.25	1.485	18.6	0.1002
40	1.8	1.1	1.555	23.4	0.0914
50	1.8	1	1.616	28.6	0.0912
60	1.7	0.98	1.647	35.4	0.0959
70	1.7	0.97	1.675	44.1	0.0948
80	1.6	0.96	1.71	56.1	0.0945
90	1.5	0.95	1.741	71.1	0.0742
100	1.5	0.9	1.77	91.5	0.0941
110	1.4	0.85	1.865	250.35	0.0938
120	1.4	0.84	1.98	310.2	0.0932

## Materials Compatibility

TMC-3283E liquid is compatible with most metals, plastics, and elastomers.

## Environmental Properties

TMC-3283E has zero ozone depletion potential. Low GWP as an alternative, it is lower than FC-3283.

TMC Industries recommends that users of TMC-3283E further limit emissions by employing good conservation practices, and by implementing recovery, recycling and/or proper disposal procedures.

## Health & Safety

Before using this product, please read the current product Safety Data Sheet (available through your TMC Industries sales or technical service representative) and the precautionary statement on the product package. Follow all applicable precautions and directions. Electronic fluorinated liquid TMC-3283E liquid is non-flammable and is highly resistant to thermal breakdown and hydrolysis in storage and during use. Recommended handling procedures are given in the Safety Data Sheet.

## Recycle and Reclaim Options

TMC Industries Inc. reclaim service provides significant savings over the cost of new fluid and helps protect the environment by drastically reducing the amount of your waste stream. Reduce your hazardous waste disposal and achieve better environmental stewardship. TMC Industries, Inc. properly disposes of the contaminants.

## Quality Assurances

We guarantee our reclaimed solvents to have new qualities and performance capabilities. To support our confidence, pre- and post-processing analytical data accompanies each shipment.

## Save on Disposal Costs

Reduce your hazardous waste disposal. Have TMC Industries reclaim your contaminated fluids to their original state and purity and return them to you at about 1/3 the cost of replacing them with new fluids.



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