



MIDEL 7131

For Traction Transformers

MIDEL 7131 synthetic ester transformer liquid is the premier solution found on rolling stock and high speed trains worldwide - where size, weight and reliability are crucial performance factors. MIDEL 7131 delivers long term stability at a wide range of operating temperatures, making it ideal for use in smaller and lighter traction transformers. This ability also helps designers when needing to relocate transformers to allow for multi-system solutions.

Fire safety is crucial in traction transformers, and MIDEL 7131 provides the reassurance of a high fire point, 100% fire safety record and FM Global® approval. Furthermore, the EN 45545 European Standard stipulates that only K-class fluids (i.e. those with a >300°C fire point) should be used on rolling stock. MIDEL has been widely adopted in countries with ambitious rail programmes and is the liquid of choice for use in very high speed trains.

TRAIN OPERATORS USING MIDEL 7131 INCLUDE:

- CRRC
- Transport for London
- Amtrak
- Deutsche Bahn AG
- First ScotRail
- NJ Transit
- RATP
- RENFE
- SNCF
- Swiss Railways SBB
- Trenitalia



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a product of  **M&I MATERIALS**

SAFER, GREENER TRAINS WITH MIDEL 7131

With a 100% fire safety record, a high fire point (>300°C) and K-class classification, MIDEL 7131 offers proven solutions in transformer protection and performance. It is also EN 45545 compliant and approved by UL® and FM Global®.

FOR TRACTION APPLICATIONS, MIDEL 7131'S ADVANTAGES INCLUDE:

- Robust and stable at high temperatures over long periods
- Allows for compact transformer design
- Suitable for hybrid and aramid designs
- Readily/fully biodegradable

MIDEL 7131 Fluid Properties



Property	Test Method	IEC 61099	MIDEL 7131
		Un-used new fluid property requirements	Typical Values
Physical			
Colour	ISO 2211	Max. 200 Hazen	125
Appearance		Clear, free from water and suspended matter and sediment	Clear, free from water and suspended matter and sediment
Density at 20°C (kg/dm³)	ISO 3675 or ISO 12185	Max. 1	0.97
Kinematic Viscosity (mm²/sec)	ISO 3104		
at 40°C		Max. 35	29
at -20°C		Max. 3000	1440
Flash Point PMCC (°C)	ISO 2719	Min. 250	260
Fire Point (°C)	ISO 2592	Min. 300	316
Pour Point (°C)	ISO 3016	Max. -45	-56
Crystallization	IEC 61099 (2010 Annex A)	No crystals	No crystals
Electrical			
Dielectric Breakdown (kV)	IEC 60156	Min. 45	>75
Dissipation Factor at 90°C	IEC 60247	Max. 0.03	<0.008
DC Resistivity at 90°C (GΩ.m)	IEC 60247	Min. 2	>20
Chemical			
Water Content (mg/kg)	IEC 60814	Max. 200	50
Acidity (mg KOH/g)	IEC 62021-1 or IEC 62021-2	Max. 0.03	<0.03
Oxidation Stability (164hr)	IEC 61125C		
Total Acidity (mg KOH/g)		Max. 0.3	0.02
Total Sludge (% mass)		Max. 0.01	<0.01

MIDEL 7131 is supplied in accordance with IEC industry standard acceptance values and test methods. The displayed typical values do not form part of this specification.

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