



MIDEL Selection Guide

Choosing the right transformer liquid for your application



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MIDEL protects life, property and the environment. It saves money while enabling innovation. It's MIDEL. It's safety inside.



Which MIDEL?

The MIDEL family of transformer fluids comprises MIDEL eN 1215, MIDEL eN 1204 and MIDEL 7131. The “eN” prefix denotes natural esters, which are formulated using renewable base oils from different seed crops, whilst MIDEL 7131 is a synthetic ester fluid.

MIDEL eN 1215 is formulated from soya-beans grown in the USA. This product is a very cost effective general purpose liquid, ideally suited to non free-breathing distribution and power transformers for use in temperate climates or indoors.

MIDEL eN 1204 is formulated from rapeseed oil. It has a pour point around 13°C lower than the soya-based natural ester - making it a better choice in cooler climates.

In common with ALL natural esters on the market, both MIDEL eN 1204 and MIDEL eN 1215 are best suited for use in non-breathing equipment.

MIDEL 7131 is specifically formulated to be a fire safe, high performance fluid which provides all the benefits of an ester-based liquid, but is also extremely robust. It is the liquid of choice when the performance demands on the transformer fluid are higher, especially if located in a cold climate or when there is a risk of contact with air.

In addition to being suitable and widely used for distribution and power transformers, MIDEL 7131 is also ideal for high temperature, breathing type equipment. It has a long track record in demanding applications such as wind turbines and rolling stock, and is proven up to 433KV.

MIDEL 7131, MIDEL eN 1204 and MIDEL eN 1215 are all biodegradable.

Global experience with ester fluids

With operations in the UK, Europe, the Middle East, China, India and the USA, MIDEL's reputation as a trusted, global brand continues to grow. With further innovations underway, MIDEL continues to spearhead the adoption and development of ester transformer fluids.



**MIDEL 7131
IS PROVEN UP
TO 433kV**

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The data presented in this table are typical values. The product specifications are listed in the product brochures.

Property	ISO/IEC	Typical Values			
		MIDEL eN 1215	MIDEL eN 1204	MIDEL 7131	Mineral Oil
Physical					
Colour		0.5	0.5		0.5
Flash Point PMCC (°C)	ISO 2719	>260	>260	260	150
Flash Point COC (°C)	ISO 2592	>315	>315	275	160
Fire Point (°C)	ISO 2592	>350	>350	316	170
Net Calorific Value (MJ/kg)		37.2	37.5	30.8	46.0
IEC Classification	IEC 61039	K2	K2	K3	O1
Pour Point (°C)	ISO 3016	-18	-31	-56	-50
Density at 20°C (g/cm ³)	ISO 3675	0.92	0.92	0.97	0.88
Viscosity (mm ² /sec)	ISO 3104				
@100°C		7.6	8.3	5.3	2.6
@40°C		32	37	29	8.7
@0°C		206	232	233	70
@-20°C		Solid	1485	1440	400
Biodegradation	OECD 301	readily biodegradable	readily biodegradable	readily biodegradable	non biodegradable
Electrical					
Dielectric Breakdown (kV)		≥30	≥30	47	43
Dielectric Breakdown (kV)					
1mm gap		30	45	46	47
2mm gap		51	57	71	65
2.5mm gap	IEC60156	>75	>75	>75	>70
Gassing Tendency (µl/min)		-31.9	-46.1	+26.0	<+30.0
Dissipation Factor at 90°C	IEC60247	<0.03	<0.03	<0.008	<0.001
Chemical					
Corrosive Sulphur	IEC 62535	non-corrosive	non-corrosive	non-corrosive	non-corrosive
Water Content (mg/kg)	IEC 60814	50	50	50	10
Acid Number (mg KOH/g)	IEC 62021.3	≤0.04	≤0.04	<0.03	<0.01
PCB Content (mg/kg)		not detectable	not detectable	not detectable	not detectable

The displayed typical values are not to be identified as acceptance values.

MIDEL transformer fluids: choice, quality and proven performance

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[MIDEL®]
SAFETY INSIDE

The MIDEL range of transformer fluids

MIDEL has been leading the way in the development and deployment of ester-based transformer fluids since the 1970s. Selected by utilities and transformer manufacturers across the globe, MIDEL synthetic and natural ester fluids are acknowledged for their excellent fire safety and environmental protection properties, and their ability to extend the life of transformer cellulose insulation.

Is your transformer a piece of critical equipment? Is it located in a fire or environmentally sensitive location? What would be the consequence of asset failure? MIDEL's properties drive both installation savings as well as mitigating the risk of damage to life, property and the environment.

High fire point – delivering unsurpassed fire safety, saving on fire protection costs

Biodegradable – protecting the environment and reducing containment costs

Low pour point – our synthetic ester is the premier liquid for colder climates

High moisture tolerance – extending cellulose insulation life and reducing overall total cost of ownership

Used in mainstream distribution and power transformers worldwide (MIDEL 7131 is proven up to 433kV), MIDEL transformer liquids enable transformer manufacturers to develop innovative transformer designs for specific applications or locations. Examples include smaller transformers or transformers able to operate at higher loading compared to mineral oil; delivering real benefits in traction transformers, wind turbine transformers and mobile power transformers. In addition, transformers can be run at higher temperatures, producing higher grade usable waste heat.

MIDEL natural and synthetic esters offer a game-changing alternative to conventional transformer oils.



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