

VG-100® Fluid Innovation for energy and the environment





Powering reliable solutions for you

VG-100® is a biodegradable dielectric fluid developed by **Prolec GE**, with patents granted for its application in electrical transformers. **VG-100**® has been satisfactorily used in more than 500 units since its introduction in 2009, and is an excellent alternative to mineral oil for use in new transformers and retrofill applications.

VG-100® fluid is fully biodegradable, and has excellent fire resistance. It has the electrical, physical, and chemical properties necessary to perform as an effective cooling and insulating medium in distribution and power transformers.





VG-100® Fluid

Vegetable Oil for Electrical Transformers

PRODUCT OVERVIEW

VG-100® is a dielectric fluid derived from natural esters of edible seeds, formulated using a proprietary process for use in electrical transformers – both new and retrofill. It was developed by **Prolec GE** in 2009 as an environmentally-friendly alternative to existing dielectric fluids. It is 100% natural and biodegradable, and does not contain any synthetic antioxidant, petroleum, or toxic compounds.





VG-100® fluid complies with international standards and requirements for its application in electrical transformers, such as ASTM and IEEE, and is also certified by FM and UL.









First biodegradable dielectric fluid for transformers made in Mexico

TYPICAL PROPERTIES

VG-100® fluid fully complies with all standards and requirements established for dielectric vegetable oils used in transformers. 1,2,3

Table 1. Comparison of Typical Values of **VG-100**® with mineral oil and alternative fluids.

| Properties | Standard | ASTM D6871 New Fluid As-Received | VG-100 [®] fluid ³ | Natural ester fluid-1 | Natural ester fluid-2 |
|--|------------|-------------------------------------|---|--------------------------|-----------------------|
| Breakdown Voltage (kV) at 2mm | ASTM D1816 | ≥ 35 | >60 | >60 | >60 |
| Dissipation Factor (%) at 25°C | ASTM D924 | ≤ 0.2 | 0.08 | 0.06 | 0.15 |
| Density (g/cm³) at 25°C | ASTM D1298 | ≤ 0.96 | 0.916 | 0.92 | 0.91 |
| Viscosity (cSt) at 0°C at 40°C at 100°C | ASTM D445 | < 500 < 50 < 15 | 178 31 6 | 33 8 | 300 45 10 |
| Color | ASTM D1500 | L1.0 | L0.5 | L0.5 | L0.5 |
| Flash point (°C) | ASTM D92 | ≥ 275 | 330 | 330 | 330 |
| Fire point (°C) | ASTM D92 | ≥ 300 | 352 | 360 | 360 |
| Pour point (°C) | ASTM D97 | -10 | -12 to -15 | -21 | -15 to -25 |
| Biodegradability (%) | 0ECD 301F | N/A | 100 | 100 | > 97 |
| Toxicity | 0ECD 203 | N/A | Zero mortality | Zero mortality | Zero mortality |

^{1.} C57.147. IEEE Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers

^{3.} Typical data for new fluid. These values may vary depending on the handling. For more information, please contact Prolec GE at 1-800 43 77653



^{2.} ASTM D6871. Standard Specification for Natural Ester Fluids Used in Electrical Apparatus

VG-100® PERFORMANCE

Fire Safety

- High fire point (>300°C)
- FM and UL certifications
- Self-extinguishing
- Reduces fire risk
- Reduces costs for fire protection

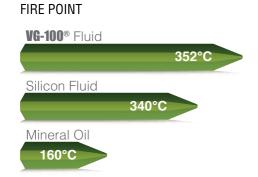
Increased Environmental Protection

- 100% natural
- Fully biodegradable
- Does not contaminate water
- Non-toxic
- Reduces or eliminates environmental risks

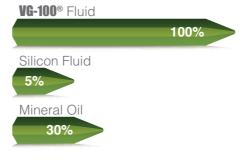
Enhanced Performance

- Transformer materials compatibility
- Free of corrosive sulphur and PCB compounds
- Alternative for retrofilling transformers filled with mineral oil
- Increases lifetime of cellulose insulation
- Higher capacity to absorb moisture





BIODEGRADABILITY









VG-100® APPLICATIONS

Distribution Transformers

- Residential (1 phase Pole and 1 phase Pad mounted)
- Commercial (3 phase Pad mounted)
- Industrial (Secondary Substation, Small power)

Power Transformers

- Generation
- Transmission

Renewable Energy Transformers

- Wind
- Solar

Retrofilling

 Transformers in service filled with mineral oil





Powering reliable solutions for you

For more information about our products and sales visit our website www.prolecge.com

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