# EOS® PREMIUM
# Regenerated Insulating Oil

## Description

Produced from selected used insulating oil meeting the operational requirements of IEC60296:2012 for Unused Mineral Insulating Oil and exceeding the requirements of BS148:2009.

## Application

Perfect for use in all maintenance and refurbishment activities including oil filled switchgear, tap changers and transformer top ups

| Property | Test method | Limits |
|---|---|---|
| **1 – Function** | | |
| Viscosity at 40 °C | ISO 3104 [a] or ASTM D7042 | Max. 12 $mm^2/s$ |
| Viscosity at –30 °C [b] | ISO 3104 [a] | Max. 1 800 $mm^2/s$ |
| Pour point | ISO 3016 | Max. –40 °C |
| Water content | IEC 60814 | Max. 30 mg/kg [c] / 40 mg/kg [d] |
| Breakdown voltage | IEC 60156 | Min. 30 kV / 70 kV [e] |
| Density at 20 °C | ISO 12185 [a] or ISO 3675 or ASTM D7042 | Max. 895 $kg/m^3$ |
| DDF at 90 °C | IEC 60247 [a] or IEC 61620 | Max. 0,005 |
| **2 – Refining / stability** | | |
| **Colour** | ISO 2049 | Max. 1,5 |
| Appearance | – | Clear, free from sediment and suspended matter |
| Acidity | IEC 62021 | Max. 0,01 mg KOH/g |
| Interfacial tension | IEC 62961 [a] or ASTM D971 | Min. 40 mN/m |
| Corrosive sulphur | DIN 51353 | Not corrosive |
| Potentially corrosive sulphur | IEC 62535 | Not corrosive |
| DBDS | IEC 62697-1 | Not detectable (< 5 mg/kg) |
| Inhibitors of IEC 60666 | IEC 60666 | Uninhibited (U): not detectable (< 0,01%)<br>Trace inhibited (T) >0,01 <0,08%<br>inhibited oils (I): 0,08 % – 0,40 % |
| Metal passivator additives of IEC 60666 | IEC 60666 | Not detectable (< 5mg/kg), or as agreed upon with the purchaser |
| Other additives | | See [f] |

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| Property | Test method | Limits |
|---|---|---|
| 2-Furfural and related compounds content | IEC 61198 | Not detectable (< 0,05 mg/kg) for each individual compound [g] |
| **3 – Performance** | | |
| Oxidation stability | IEC 61125<br>Test duration [h]<br>(U) Uninhibited oil: 164 h<br>(T) Trace inhibited oil: 332 h<br>(I) Inhibited oil: 500 h | For oils with other antioxidant additives and metal passivator additives, see standard |
| - Total acidity [i] | 4.8.4 of IEC 61125 | max. 1,2 mg KOH/g |
| - Sludge [i] | 4.8.1 of IEC 61125 | max. 0,8 % |
| - DDF at 90 °C [i,f] | 4.8.5 of IEC 61125 | max. 0,500 |
| **4 – Health, safety and environment (HSE)** [j] | | |
| Flash point | ISO 2719 | Min. 135 °C |
| PCA content [k] | IP 346 | < 3 % |
| PCB content | IEC 61619 | Not detectable (< 2 mg/kg) |

[a] Reference method

[b] This is the standard LCSET for a transformer oil (see 6.1) and can be modified depending on the climatic condition of each country. Pour point should be minimum 10 °C below LCSET.

[c] For bulk supply.

[d] For delivery in drums and IBC.

[e] After laboratory treatment (see 6.4).

[f] The supplier shall declare the function and chemical family of all additives and their concentrations.

[g] In agreement with the customer, oils with a higher furfural content can be delivered, when these values do not jeopardise the application.

[h] In Canada and the USA, where requirements for oxidation resistance are lower for some applications, test durations can be reduced to: (T) trace inhibited oil: 164 h; (I) inhibited oil: 332 h. These requirements are of a permanent nature.

[i] At the end of oxidation stability tests.

[j] In some countries there can be additional requirements, e.g. REACH in the EU

[k] Some individual PAH compounds can be determined by EN 16143

NOTE Stray gassing is not included as a normative test for mineral oils Type B, because there has been insufficient data to determine appropriate limits. The requirement for a stray gassing test, as well as the limit values, if stipulated shall be negotiated between the user and supplier.