

# MAK HIVOLTOL

## High performance uninhibited electrical insulating oil

MAK Hivoltol is a high quality mineral uninhibited electrical insulating oil. It is manufactured from severely hydrotreated low aromatic oil and does not have polar compounds. It has very good dielectric property, high resistance to oxidation and aging. It has excellent low temperature property, low viscosity and provides efficient heat transfer. MAK Hivoltol has a high resistance to thermal and chemical degradation and offers very high breakdown voltage. Special care is taken to achieve very low water content in the oil. It is non-corrosive towards copper and does not require passivation.

### Applications:

MAK Hivoltol is recommended to be used as an electrical insulation medium in oil filled transformers and similar electrical equipment in which oil is required as an insulant and for heat Transfer.

*MAK Hivoltol is not suitable for use in oil filled cables or for special impregnation process.*

### Performance/ Benefits:

**Excellent Thermal and Chemical Stability** – high resistance to thermal and chemical degradation in presence of iron and copper. Reduces tendency to produce sludge and oil soluble oxidation products. Enhances operating life.

**Very High Dielectric Strength** – allows the oil to withstand electrical stress. Indicates the absence of oil contaminants like moisture, fibres and polar chemicals.

**Extended Oil Life** – offers inherent natural resistance to oxidation of oil and allows longer working life. Enhances equipment reliability.

**Extremely Low Water Content** – specially treated to achieve an extremely low water content and retain very high break down voltage. Offers high resistance to oxidation of oil.

**High System Efficiency** – circulates freely at low temperatures and ensures rapid heat transfer in transformers. It is able to quench arcs quickly in switchgear units. Maintains reliability of tap changers at low temperatures.

### Specification:

- IS 335:2018 (Type II) – Uninhibited

### Typical Physico-Chemical Data: MAK Hivoltol

Characteristics	Method	Value
Appearance	Visual	Clear
Colour	Visual	Transparent
Density, g/cc @29.5°C	IS:1448 (P-16)	0.8336
Kinematic Viscosity @0°C, cSt	IS:1448 (P-25)	83.74
Kinematic Viscosity @40°C, cSt	IS:1448 (P-25)	13.34
Flash Point, PMCC, °C	IS:1448 (P-21)	174
Pour Point, °C,	IS:1448 (P-10)	-15
Neutralisation Value, mg KOH/ g	IS:1448 (P-2)	0.0
Corrosive Sulphur	DIN 51353	Non-corrosive
Electric Strength (Break Down Voltage)	IS: 6792	
New Unfiltered Oil, kV		70
Dielectric Dissipation Factor (tan δ) @90°C	IS: 16086	0.00023
Oxidation Stability	IS: 12422,	
a) Neutralisation Value after oxidation, mg KOH/g	Method C, 164 hrs.	0.022
b) Total Sludge after oxidation, % by wt.		NIL
Water Content, ppm	IEC 60814	14
PCA, %	IP: 346	0.0
PCB, ppm	IS: 16082	ND
Presence of Oxidation Inhibitor	IS: 13631	Absent

ND – Not Detectable

### Storage & Handling:

Trace amount of contamination with foreign materials can severely endanger the critical properties of the oil. Commonly encountered contaminants are moisture, fibres, particles and surfactants. This product should be kept clean and dry and be stored indoor. Keep it properly sealed to avoid contamination. Shelf life is 3 yrs. under protected storage conditions.

### Health & Safety:

It is unlikely to be hazardous when properly used in recommended applications. Contamination of the oil from moisture, fibres, particles and surfactants can occur during the use. It should be avoided. It is free from polychlorinated biphenyls (PCB) and polycyclic aromatics (PCA). Regular monitoring of the in-use product is recommended.