ERGON



HyVolt BHT
/ Dielectric Fluids

HyVolt BHT

INHIBITOR
CONCENTRATE FOR
TRANSFORMER OILS

Your Transformer Deserves The Best Protection.

Maintain, Monitor and Extend Its Life With Our Inhibitor Concentrate.

PROTECT YOUR TRANSFORMER AND EXTEND ITS LIFE

Transformer insulation (cellulose) is particularly vulnerable to degradation caused by moisture and oxygen. When oxygen enters the insulating oil, it promotes acid formation and accelerates the aging of both the oil and the insulation system.

Our HyVolt BHT, which contains approximately 10% di-tertiary butyl para-cresol (DBPC), acts as a primary antioxidant, a sacrificial additive that reacts with alkyl radicals and alkyl peroxy radicals to prevent damage before it occurs. Maintaining the correct inhibitor level is essential to preserve performance and reliability, particularly in inhibited transformer oils, where antioxidant protection is critical to long-term stability.

INHIBITOR CONCENTRATION



WHAT IS AN OXIDATION INHIBITOR?

An oxidation inhibitor is a chemical additive that helps improve the stability of transformer oil by slowing down its aging process. Common types include DBPC (2, 6-di-tert-butyl-para-cresol, also known as butylated hydroxytoluene [BHT]) and DPB (2,6-di-tert-butyl-phenol). These inhibitors reduce the rate of acid and sludge formation inside the oil, helping extend the life of both the oil and the transformer insulation system.

STANDARDIZED INHIBITOR LEVELS

To ensure that your oil is meeting the standard, the target additive level should be just under the max inhibitor limits.

STANDARD	MAX INHIBITOR CONTENT
ASTM D3487 Type II	0.3%
IEC 60296 Type A	0.4%

HYVOLT BHT SPECIFICATION

HyVolt BHT is a prepared blend of 10% antioxidant (DBPC (2, 6-di-tert-butyl-p-cresol)) with a transformer base oil stock.

TEST DESCRIPTION	TEST METHOD	SPECIFICATIONS		TYPICAL VALUES
Electrical: Dielectric Dissipation Factor at 90°C	IEC 60247	-	Max: 0.005	0.001
Chemical: Antioxidant, wt %	IEC 60666	Min: 9.5	Max: 10.5	10.0

BENEFITS OF MAINTAINING PROPER INHIBITOR LEVELS

- Slows down insulation degradation
- Reduces acid formation
- Protects metal parts from corrosion
- Extends transformer service life
- Lowers overall maintenance and replacement costs

HOW TO MONITOR AND MANAGE INHIBITOR CONTENT

General Monitoring Practice

1. Best practice is to test inhibitor levels every **3–5 years** using method as per ASTM D4768, D2668 or IEC 60666.
2.1 For IEC oils, if inhibitor levels range from **0.08% to 0.24%**, consider re-inhibiting.
2.2 For ASTM Type II oils, if inhibitor levels range from **0.08% to 0.16%**, consider re-inhibiting.
3. If inhibitor levels are **below 0.08%**, the oil is considered uninhibited, taking into account acidity and IFT. Urgent action is required, such as reclamation or changing the oil.

IEC 60422 Testing Recommendation

An inhibitor content test is also required after filling or refilling oil, prior to energizing. Testing frequency may be adjusted based on life cycle analysis, operational risk and cost-benefit evaluations.

TRANSFORMER VOLTAGE CLASS	CLASSIFICATION	RECOMMENDED TESTING INTERVAL
Above 170 kV	Class A	Every 1–2 years
72.5 kV to 170 kV	Class B	Every 1–4 years
72.5 kV and below	Class C	Every 1–12 years

IEC 60422 Inhibitor Condition Limits and Actions

This guidance is applicable to originally inhibited oils and applicable to reclaimed uninhibited oils that have had inhibitor added.

INHIBITOR STATUS	INHIBITOR CONTENT	RECOMMENDED ACTION
Good	> 60% of original value	Continue normal sampling frequency.
Fair	40% – 60% of original value	Increase sampling frequency. If acidity ≤ 0.08 mg KOH/g oil and IFT ≥ 28 mN/m, consider re-inhibiting to baseline level.
Poor	< 40% of original value	Increase sampling frequency. If acidity is ≤0.08 mg KOH/g oil and IFT ≥28 mN/m, consider re-inhibition to baseline level. If acidity > 0.08 mg KOH/g oil or IFT < 28 mN/m, re-inhibition may not be effective. Consider oil reclamation or replacement.

Signs of Oil Oxidation

- Oil color darkening
- Increased acidity
- Formation of sludge
- Decreased interfacial tension (IFT)
- Higher dielectric dissipation factor (DDF)

IMPORTANT REMINDERS

1. Regularly monitor and adjust inhibitor levels to maintain protection.
2. Avoid oxygen and moisture ingress during maintenance.
3. Use only approved and tested inhibitors like HyVolt BHT liquid inhibitor concentrate.
4. Consult with service provider for proper handling and addition of the inhibitor concentrate.

HyVolt BHT | Dielectric Fluids

SCAN TO ACCESS THE INHIBITOR CALCULATOR.

ERGON



Headquartered in Mississippi, Ergon has a global footprint with operations in the U.S., Latin America, Europe, the Middle East, Africa and Asia. Ergon and its subsidiaries comprise a strategic collection of petroleum-related enterprises founded in 1954 by Leslie B. Lampton. Today, Ergon operates as a sophisticated crude oil processor, transporter and marketer of refined products. Employing over 4,200 people, Ergon maintains a network of strategically located terminals, allowing for efficient distribution worldwide.

Ergon markets products in more than 100 countries and remains committed to increasing our global presence through strong relationships and continued investments across all regions.

GLOBAL DISTRIBUTION

We know you need our products to keep your business running. And we are doing everything within our power to get them to you when you need them, just as we have done for seven decades.

Wherever you power, there's a HyVolt solution.

Ergon's vision is to be the world's preferred partner for dielectric fluid solutions. Our team of experts is dedicated to your success.

VISIT HYVOLT.COM FOR MORE INFORMATION AND TO EXPLORE YOUR OPTIONS WITH HYVOLT.

Please contact us for more information – technical or commercial – at ergonspecialtyoils.com/contact.

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