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**Attention: Editor**  
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**PRODUCT RELEASE**

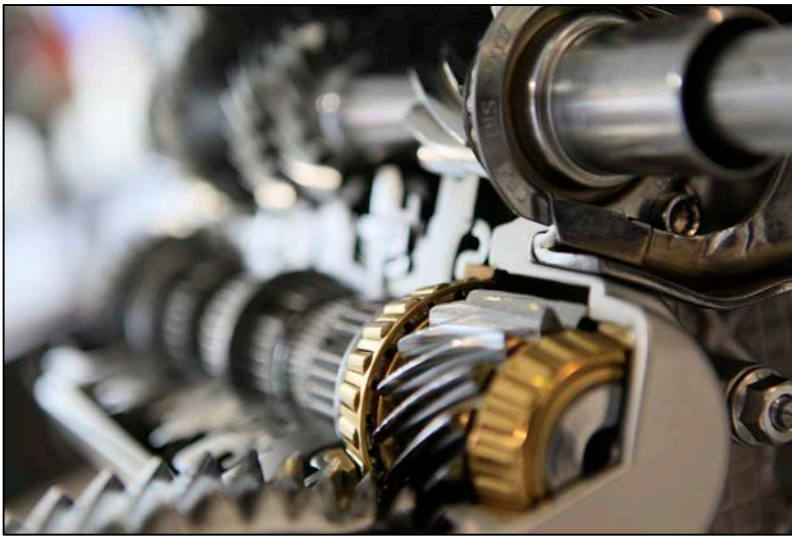


## Cortec® Designs Ashless Vapor phase Corrosion Inhibitor for Turbine Lay-Up

Cortec® has designed an ashless corrosion inhibitor to protect lubricating systems in turbines from corrosion during lay-up. Proper preservation of these multi-million dollar assets during lay-up is critical to minimizing downtime and costly repairs in the power generation industry. If not prevented, rust can lead to startup problems and costly time and labor to disassemble, clean, or replace rusted turbine components.



In addition to protecting against rust, it is important that the corrosion inhibitors for these sensitive systems be ashless and compatible with turbine oil to avoid complications at startup.



Cortec's M-531 T is an oil-based package of ashless corrosion inhibitors that can be added to petroleum and synthetic lubricants in turbine systems during lay-up. Using M-531 T in turbine oil and a wide variety of industrial lubricant applications protects systems (e.g., gear boxes and generators) from the rust that could otherwise lead to equipment failure. M-531 T is also good for applications that

require water resistance.

A unique advantage of M-531 T corrosion inhibitors is that they protect metal surfaces with which they are in direct contact while also releasing molecules in the vapor phase. These Vapor phase Corrosion Inhibitors form a protective molecular layer on metal surfaces above the fluid level, allowing economical and efficient rust protection at a low dose.

M-531 T provides outstanding non-staining properties and is effective in most hydrocarbon-based lubricants (including naphthenic, paraffinic, PAO, etc.). It is an excellent choice for industrial lubricant applications that require rust protection during lay-up.

Main advantages of M-531 T include the following features:

- Ashless
- Provides contact and vapor phase rust protection
- Designed for use with turbine oils
- Has little-to-no effect on pour point or viscosity at recommended dose
- Generally compatible with PAO and mineral-oil-based lubricants
- Suitable for lay-up conditions
- Economical dosage

When preparing a turbine for a period of inactivity, Cortec® M-531 T should be added to the system oil at 2% by weight for wet lay-up or fogged into the oil system at 1 ounce per cubic foot (1 L/m<sup>3</sup>) for dry lay-up. The turbine can be returned to operation after cycling flushing oil through the system, draining, and filling with operating oil. M-531 T is soluble in petroleum and synthetic lubricant base stocks and most common solvents. However, as with any additive, verifying its solubility in base oils and its compatibility with other additives is highly recommended before use.

To learn more about M-531 T, please visit:

<https://www.cortecvci.com/Publications/PDS/M-531%20T.pdf>

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Cortec® Corporation is the global leader in innovative, environmentally responsible VpCI® and MCI® corrosion control technologies for Packaging, Metalworking, Construction, Electronics, Water Treatment, Oil & Gas, and other industries. Our relentless dedication to sustainability, quality, service, and support is unmatched in the industry. Headquartered in St. Paul, Minnesota, Cortec® manufactures over 400 products distributed worldwide. ISO 9001, ISO 14001:2004, & ISO 17025 Certified.

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VpCI® METALWORKING PRODUCTS

### M-531 T

#### Oil Based Corrosion Inhibitor



**APPLICATION**

M-531 T can be used to prevent rust in lubricating systems for turbines, gear boxes, bearings, and a wide variety of oil-based lubricant applications that require rust protection and water resistance.

**Solubility and compatibility:** M-531 T is soluble in petroleum and synthetic lubricant base stocks and most common solvents. However, verifying its solubility in base oils and its compatibility with other additives is recommended before use. M-531 T is insoluble in water. It is not recommended for operating systems. Please contact Cortec® Technical Service with any questions on product compatibility.

Typical dosage rate: 2% by weight in lay-up.

**TYPICAL PROPERTIES**

Oil Characteristics	Tested Values
Appearance	Ashless Color
Specific Gravity	0.94
Viscosity (ISO 111)	40 °C (104 °F) 319 cP 100 °C (212 °F) 24.1 cP
	Index 141
Pour Point (ASTM D6799)	-37 °C (-33 °F)
Flash Point (ASTM D92)	126 °C (259 °F)
Fire Point (ASTM D92)	180 °C (340 °F)
Total Acid Number (ASTM D664)	mg KOH/g 53.0
	Oil, mL 0
	Water, mL 0
Oil Solubility (ASTM D1401) at 82 °C (180 °F)	Emulsion, mL 30
	Time, min 60
Foaming Characteristics (ASTM D892)	Seq. I 440/15/000+
	Seq. II 25/40/10
	Seq. III 355/5/299
Turbine Oil Rust Test (ASTM D665)	Method B Pass
Copper Corrosion (ASTM D130)	1h Pass
Vapor Phase Corrosion Protection (ASTM G5534)*	Pass

\*Passes listed above are typical of those obtained through normal production and do not constitute a specification. M-531 T is generally soluble in hydrocarbon based fluids. However, compatibility and solubility should be verified prior to use. Please contact Cortec® Technical Service for more information.

**PRODUCT DESCRIPTION**

M-531 T is an oil-based package of ashless corrosion inhibitors that can be added to petroleum and synthetic lubricants in turbine systems during lay-up. Using M-531 T in turbine oil or other industrial lubricant applications that require ashless oils protects systems from the rust that could otherwise lead to failure of equipment components. Corrosion inhibitors in M-531 T protect metal surfaces with which they are in direct contact and also release molecules in the vapor phase. These Vapor phase Corrosion Inhibitors form a protective molecular layer on metal surfaces above the fluid level, allowing economical and efficient rust protection at a low dose. M-531 T provides outstanding non-staining properties and is effective in most hydrocarbon-based lubricants (including naphthenic, paraffinic, PAO, etc.). It is an excellent choice for industrial lubricant applications that require rust protection during lay-up.

**FEATURES**

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