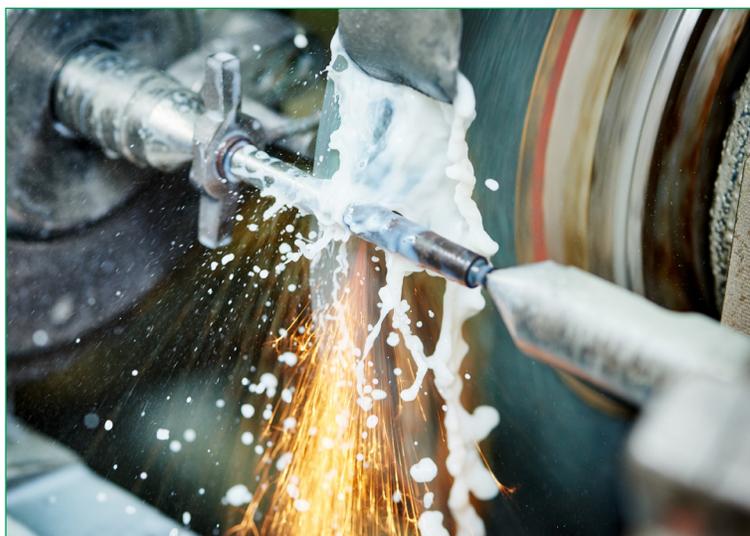


VpCI® METALWORKING PRODUCTS



VpCI®-347



PRODUCT DESCRIPTION

VpCI®-347 is a multifunctional corrosion inhibitor/heavy-duty lubricant concentrate for metalworking operations. High performance characteristics make VpCI®-347 ideally suited for heavy-duty cutting, milling, turning, drilling, boring, broaching, gear cutting, and other machining operations. VpCI®-347 contains lubricating and corrosion inhibiting compounds, and is resistant to rancid attack by bacteria. When used as directed, VpCI®-347 prevents corrosion during in-plant processing, storage, and export shipment for up to 24 months, while also eliminating problems caused by petroleum-based products.

FEATURES

- Low to no smoke or burning vapors
- Low foaming
- Prevents corrosive attack caused by chlorides, aggressive industrial gases and acidic atmospheres
- Effective in high humidity (laboratory tests of standard cold-rolled steel panels showed no signs of corrosion at 100% relative humidity after 2,000 hr. per ASTM D-1748)
- Provides excellent drawability, lubricity and wetting under pressure
- Displaces water and oil from metal surfaces, leaving a thin transparent film
- Economical (can be diluted up to 1 part VpCI®-347 to 40 parts water)
- Protects ferrous and non-ferrous metals
- Easy to remove from metal surfaces

- Contains no chlorinated compounds, chromates, or nitrites
- Eliminates cleaning and housekeeping problems associated with rust inhibiting oils
- No need for slushing oils
- Weldable in most cases.
- Resistant to rancid attack by bacteria
- Forms a transparent film
- NATO #6850-66-132-6101
#6850-66-132-6102
- NSN 6850-01-470-2740

TYPICAL APPLICATION

- Lubricant for heavy-duty rolling, drawing, extruding, stamping and cutting
- In-plant machining
- Protection of hot-rolled, cold-rolled, galvanized, and aluminized steel
- Corrosion protection for bearings, piping and tubular parts, housings, stampings, bar and roll stock, and structural steel during in-plant storage or domestic and export shipments
- Coolant for machining of castings, highly polished pieces and other parts; providing superior protection between machining operations and further processing or assembly

METALS PROTECTED

- Carbon steel
- Aluminum
- Cast iron
- Stainless steel
- Copper

TYPICAL PROPERTIES

| | |
|-----------------|-------------------------------------|
| Appearance | Brown to tan viscous liquid |
| Film Type | Non-drying |
| pH | 10-11 (1% water) |
| Pour Point | 21°F (-6°C) |
| Removal Methods | Alkaline cleaners (VpCI-410 series) |
| Viscosity | 7,000-13,000 cps |
| Density | 8.2-8.7 lb/gal (0.98-1.04 kg/l) |

APPLICATION

Product Preparation:

Add VpCI®-347 to water using a high dispersion mixing blade. Mix for at least 5-10 minutes. VpCI®-347 can be mixed in this manner at higher concentrations (20-50%) and then added into larger volumes of water.

Methods for monitoring solution:

Refractometer, pH

Recommended applicators and dilutions:

| | |
|------------------|--------------|
| Grinding disks | 1:40 |
| Draw bench | 1:30 |
| Straight and cut | 1:40 |
| CNCs | 1:30 to 1:40 |

Product cleanup:

Use soap and water to clean equipment.

Add VpCI®-347 to water as follows for:

| | |
|--|---|
| Short-term protection (1-6 months): | 1 part concentrate to 20-40 parts water |
| Medium-term protection (6-12 months): | 1 part concentrate to 15-20 parts water |
| Protection up to 2 years and/or lubricity: | 1 part concentrate to 10-15 parts water |

Shell 4-Ball E.P. Test (ASTM D-2783)

Cortec® VpCI®-347 in Tap Water

| | 2.5% | | 5% | | 10% | |
|---------|------|-----|-----|-----|-----|-----|
| | lb | kg | lb | kg | lb | kg |
| Seizure | 139 | 63 | 220 | 110 | 278 | 126 |
| Weld | 278 | 126 | 353 | 160 | 353 | 160 |

| | | | | | | |
|-----------------|----|----|----|----|----|----|
| Load Wear index | 65 | 29 | 97 | 44 | 88 | 40 |
|-----------------|----|----|----|----|----|----|

Shell 4-Ball Wear Test (ASTM D-2266)

Cortec® VpCI®-347 in Tap Water

| | 2.5% | 5% | 10% |
|---------------------------------|------|-------|-------|
| Average Coefficient of Friction | 0.88 | 0.108 | 0.101 |
| Average Scar Diameter (mm) | 0.90 | 0.69 | 0.81 |

Tapping Torque Test

Cortec® VpCI®-347 in Tap Water

| | 2.5% | 5% | 10% | Reference |
|----------------|------------|-----------|------------|------------|
| Torque | 77.87 | 10.35 | 10.20 | 12.53 |
| Torque (lb/kg) | 42.73-19.4 | 10.35-4.7 | 36.83-16.7 | 42.11-20.5 |
| % Efficient | 106 | 121 | 122 | 100 |

PACKAGING AND STORAGE

VpCI®-347 is available in 5 gallon (19 liter) pails, 55 gallon (208 liter) drums, liquid totes, and bulk. The product should be sealed and stored in a heated warehouse to avoid freezing. VpCI®-347 has a shelf life of 24 months.

Minimum storage temperature: 32°F (0°C)

Maximum storage temperature: 120°F (49°C)

STANDARD TEST METHODS

| | |
|------------------|-------------------------------|
| ASTM D-1748 | Humidity Test |
| ASTM D-4627 | Cast Iron Chip Test |
| ASTM D-2783 | 4-Ball E.P. Test |
| ASTM D5619 | Tapping Torque Test |
| ASTM G-31 | Immersion Corrosion Testing |
| NACE RP0487-2000 | Selection of Rust Preventives |

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