



Renewable Lubricants, Inc.

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Bio-Corrosion Inhibitor™ (BCI™) & Bio-Volatile Corrosion Inhibitor™ (BVCI™) Products



"Biobased Lubricants that Perform Like Synthetics"

Bio-Medium Preservative Lubricant: Meets Mil-PRF-3150D

A BCI™ product that gives outstanding corrosion protection as measured by humidity cabinet and salt spray test. Provides protection on ferrous and non-ferrous metals and is non-staining. Excellent as a wire rope lubricant, preservative lubricant, etc. on sheet steel and steel parts and is more fire resistant than mineral base formulas with the same viscosity. Also, excellent on copper corrosion test (Passed Clean 1A).

TYPICAL TEST DATA

| | | |
|---|-----------------------------------|---|
| ASTM D-445 105 cSt @ 40°C | ASTM D-92 Flash Point 224°C | ASTM D-97 Pour Point -30°C |
| Humidity Cabinet ¹ Days/Fail | Sandblasted Steel Panels 60+days | Polished Steel Panels 60+days Polished Aluminum 24 days |
| 5% Salt Spray ² Hours/Fail | Sandblasted Steel Panels 48 hours | Polished Steel Panels 80 hours Polished Aluminum 240 hours |

¹ASTM D-1748 ²Federal Standard 791b Method 4001.2

Bio-Rust Preventative Fluids (Acid Fume):

The Bio- Rust Preventative Fluid is a Bio-Corrosion Inhibitor™ (BCI™) product that provides a corrosion inhibiting, waxy film that is especially effective in protecting ferrous metals in salt and acid fume (hydrochloric acid) environments and against high humidity. It is non-staining and water displacing and is also effective on galvanized steel. In addition to corrosion protection, this product is a non-chlorinated metal working fluid that provides extreme pressure, anti-wear, and lubricity performance in heavy duty stamping and drawing applications. This is an excellent BCI™ product that can be used in many industrial and commercial applications where corrosion inhibiting, waxy films are beneficial.

TYPICAL TEST DATA:

Med-Light Film ASTM D-445 40 cSt @ 40°C meets Ford Specification M-14B90A

Light Film ASTM D-445 5 cSt @ 40°C for easier cleaning

Med-Light Film

| | | |
|--|---|--------------------|
| Humidity Cabinet ¹ Days/Fail 40 | Water Displacement ² 1:1 Dilution-Pass | Water Storage-Pass |
|--|---|--------------------|

Light Film

| | | |
|---|---|--------------------|
| Humidity Cabinet ¹ Days/Fail 60+ | Water Displacement ² 1:1 Dilution-Pass | Water Storage-Pass |
|---|---|--------------------|

¹ASTM D-1748 using polished cold rolled steel panels ²Mil-C-16173

Dielectric Strength, (Avg) = 45 KV

Bio-Water Emulsifiable™ Corrosion Inhibitor:

An outstanding, water emulsifiable corrosion inhibitor with BCI technology that provides a light film. It may be used in many metalworking applications where excellent in-house corrosion protection and easy cleaning of parts is essential. When added to water, this BCI product provides the following typical test results.

TYPICAL TEST DATA

| | | |
|--------------------------|---|---------------------------------------|
| ASTM D-445 53 cSt @ 40°C | ASTM D-92 Flash Point 270°C | ASTM D-97 Pour Point -20°C |
| Emulsion Base | Humidity Cabinet ¹ Days/Fail | 5% Salt Spray ² Hours/Fail |
| in Water (%) | Sandblasted Panels | Polished Panels |
| 10.0 | 40 | 55 |
| 15.0 | 55 | 60+ |
| 20.0 | 60+ | 60+ |
| 25.0 | 60+ | 60+ |

¹ASTM D-1748

²Federal Standard 791b Method 4001.2

BCI™ & BVCI™ Products

Bio-Volatile Corrosion Inhibitors™: (BVCI™ Ultra Thin Film)

BVCI™s are outstanding water displacing, non-staining rust preventatives. BVCI™s will rapidly separate water displaced from metal surfaces after machining operations or after alkali cleaning. Ultra thin, highly protective films can be applied easily by dipping, spraying, or brushing. These ultra thin films are effective in the protection of ferrous and non-ferrous metals from atmospheric corrosion even under conditions of high humidity. When BVCI™s are agitated vigorously with water or alkaline solutions, the water will separate completely and rapidly. (ASTM D-445 2 cSt to 7 cSt viscosity range- Non Flammable Flash Points)

TYPICAL TEST DATA ¹ASTM D-1748 using polished cold rolled steel panels ²MIL-C-16173E ³MIL-C-22235 BLP=Borderline Pass
Humidity Cabinet¹

| Thickness (mils) | Days/Fail | Water ² Displacement | Sandwich Stain Test ³ |
|------------------|-----------|---------------------------------|----------------------------------|
| 0.02 | 30+ | BLP | Pass |
| 0.03 | 40+ | Pass | Pass |
| 0.05 | 50+ | Pass | Pass |
| 0.06 | 60+ | Pass | Pass |

Bio-Concrete Mold Release™ Fluids (Soy Based):

A BCI™ product that is highly effective as a mold release or parting compound for cast concrete products. This biobased formula results in smooth finishes on concrete cast from slurries. In addition to its performance as a parting compound, the product is effective as a rust preventative, protecting the metal forms from rusting during use and storage. The absence of rust on the forms eliminates staining of the formed piece and serious loss of the forms themselves. It allows the metal forms to stay clean; “hang-up” or excessive deposits on the form edges are virtually eliminated. This product is also biodegradable, which is highly important because of loss into the environment. Because of the high flash, the product is safer than petroleum products (more fire resistant).

TYPICAL TEST DATA

ASTM D-445 5.3 cSt @ 40°C ASTM D-92 Flash Point 220°C ASTM D-97 Pour Point -10°C

Bio-Penetrating Lubricant/Corrosion Inhibitor (Fingerprint Removal Spec):

A light biobased lubricant that cleans and helps keep deposits from forming on weapons, while preventing corrosion. Provides a light lubricating film. Meets Mil-C-15074E Corrosion Preventative, Fingerprint Remover Specification. An excellent product for many industrial applications where a light penetrating lubricant/corrosion inhibitor is needed.

TYPICAL TEST DATA

ASTM D-445 9.4 cSt @ 40°C ASTM D-92 Flash Point 115°C ASTM D-97 Pour Point -20°C

Bio-Cleaning Compound/Corrosion Inhibitor (Gun Bore Cleaner):

The BCI product meets Mil-PRF372D Gun Cleaning Compound for bore of small arms and automatic aircraft weapons. Excellent for applications where cleaning and corrosion prevention are necessary. Better cleaning ability than Mil-C-15074E Corrosion Preventative Product.

TYPICAL TEST DATA

ASTM D-445 4.4 cSt @ 40°C ASTM D-92 Flash Point 110°C ASTM D-97 Pour Point -15°C

STABILIZED by Renewable Lubricants* is RLI's trademark on their proprietary and patented anti-oxidant, anti-wear, and cold flow technology. High Oleic Base Stock (HOBS) are agricultural vegetable oils. This Stabilized technology allows the HOBS to perform as a high performance formula in high and low temperature applications, reducing oil thickening and deposits.

* Trademark of Renewable Lubricants, Inc.

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| <u>Availability</u> | <u>F.O.B. :Hartville, Ohio, USA</u> | <u>1 Gallon</u> | <u>5 Gallon Pails</u> | <u>Drums</u> | <u>Bulk</u> |
|----------------------------|--|------------------------|------------------------------|---------------------|--------------------|
| RLI Product Item # | BCI | 86213 | | | |
| | BVCI | 86303 | | | |