

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

## Biobased Corrosion Inhibitors and Preservative Lubricants for Industrial and Metalworking Applications

The Bio-Corrosion Inhibitor™ (BCI™) and Bio-Volatile Corrosion Inhibitor™ (BVCI™) product lines are high-performance, readily biodegradable solutions designed to protect ferrous and non-ferrous metals in demanding industrial environments. These fluids offer rust prevention, water displacement, fingerprint removal, and light lubrication, while meeting military and industry corrosion protection standards. They are ideal for use in metalworking, preservation, and weapon maintenance applications.

### Benefits

- Readily biodegradable, non-toxic, and not bioaccumulative
- Provides light, waxy, or ultra-thin corrosion-resistant films
- Effective against salt spray, humidity, and acid fumes (e.g., HCl)
- Water-displacing, non-staining, and safe for ferrous and non-ferrous metals
- Meets multiple MIL-SPEC and ASTM test requirements
- Excellent for cleaning, lubricating, and preserving weapons and metal parts
- Compatible with many industrial processes including stamping, drawing, and machining
- Manufactured using Stabilized™ HOBBS technology for enhanced oxidative stability

### Application / New Filling

- **Product Use Cases:**
- **Bio-Water Emulsifiable™ Corrosion Inhibitor** (RLI #86200):
  - Ideal for in-house metalworking applications where emulsified water solutions and waxy films are preferred.
- **Bio-Medium Preservative™ Lubricants** (RLI #86010, 86040, 86050, 86060):
  - Suitable for long-term indoor corrosion protection of steel, aluminum, and copper parts.
- **Bio-Rust Preventative Fluids** (RLI #86100, 86110, 86140)
  - Designed to protect metals in acid fume (HCl) environments and high-humidity conditions
- **Bio-Volatile Corrosion Inhibitor™ (BVCI™)** (RLI #86300):
  - For ultra-thin film corrosion protection and rapid water separation in high-humidity storage or post-machining use.
- **Bio-Penetrating Lubricant™/Corrosion Inhibitor – FPR** (RLI #86500)

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- o For cleaning and preserving weapons; meets Mil-C-15074E for fingerprint removal.
- **Bio-Cleaning Compound/Corrosion inhibitor – Gun Bore Cleaner (RLI #86600):**
  - o Compliant with Mil-PRF-372D for firearm bore cleaning and corrosion protection.

## Specifications and Approvals

- ASTM D-445, D-92, D-93, D-97, D-117, D-1748 (Humidity Cabinet, Flash Point, Pour Point, etc)
- MIL-PRF-3150D, MIL-C-15074E, MIL-PRF-372D, MIL-C-16173 Class II Grade 3
- Federal Standard 791D Method 4001.3
- Meets Ford Specification M-14B90A
- Stabilized™ HOBS formulation: Patents 6,383,992; 6,534,454; 6,624,124; 6,620,772

## Bio-Water Emulsifiable™ Corrosion Inhibitor:

RLI Item # 86200

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

| TYPICAL TEST DATA              |                                          |                 |                                                                |                 |
|--------------------------------|------------------------------------------|-----------------|----------------------------------------------------------------|-----------------|
| ASTM D-92 Flash Point 160°C    |                                          |                 | ASTM D-97 Pour Point 0°C                                       |                 |
| Emulsion<br>Base in<br>Water % | Humidity Cabinet Days/Failed ASTM D-1748 |                 | 5% Salt Spray <sup>2</sup> (Fog) Hours/Fail 791D Method 4001.3 |                 |
|                                | Sandblasted Panels                       | Polished Panels | Sandblasted Panels                                             | Polished Panels |
| 10%                            | 40                                       | 55              | 24                                                             | 48              |
| 15%                            | 55                                       | 60+             | 40                                                             | 72              |
| 20%                            | 60+                                      | 60+             | 48                                                             | 96              |
| 25%                            | 60+                                      | 60+             | 72                                                             | 120             |

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

BCI™ product, that gives outstanding corrosion protection as measured by humidity cabinet and salt spray test. It 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. Excellent on copper corrosion test (Passed Clean 1A).

| TYPICAL TEST DATA                                                             |                                           |
|-------------------------------------------------------------------------------|-------------------------------------------|
| Bio-Med Preservative ISO 40 86040                                             | Bio-Med Preservative ISO 46 + Tack 86050  |
| Bio-Med Preservative ISO 10 86010                                             | Bio-Med Preservative ISO 100 + Tack 86060 |
| Humidity Cabinet <sup>1</sup> Days/Fail Sandblasted Steel Panels 60+days      | Polished Steel Panels 60+days             |
| <sup>1</sup> ASTM D-1748                                                      | Polished Aluminum 24 days                 |
| 5% Salt Spray <sup>2</sup> (Fog) Hours/Fail Sandblasted Steel Panels 48 hours | Polished Steel Panels 80 hours            |
| <sup>2</sup> Federal Standard 791D Method 4001.3                              | Polished Aluminum 240 hours               |

## Bio-Rust Preventative Fluids (Acid Fume):

Bio-Rust Preventative Fluids (formerly Bio-Acid Fume) are Bio-Corrosion Inhibitor™ (BCI™) products that provide 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. They are non-staining and water displacing and effective on galvanized steel. RLI Item # 86140 is a specially designed Biodegradable no VOC formula that meets the corrosion protection film for MIL-PRF-16173, Class II, Grade 3. These are excellent BCI™ products that are environmentally non-toxic and can be used in many industrial and commercial applications where corrosion inhibiting, waxy films are beneficial. In addition to corrosion protection, the products are used as non-chlorinated metal working fluids that provide extreme pressure, anti-wear, and lubricity performance in stamping and drawing applications and can also be used as wire rope and chain lubricants. (Recommended cleaners: clean surfaces with Bio-Parts Cleaner/Degreaser™ or petroleum solvents; alkali water-based cleaners are not recommended).

| TYPICAL TEST DATA:                                                                    |                                                   |
|---------------------------------------------------------------------------------------|---------------------------------------------------|
| Med-Light Film RLI Item # 86110                                                       | ASTM D-445 40 cSt @ 40°C                          |
| Light Film RLI Item # 86140                                                           | ASTM D-445 15 to 30 cSt @ 40°C                    |
| Light Film RLI Item # 86100                                                           | ASTM D-445 5 cSt @ 40°C for easier cleaning       |
| Humidity Cabinet <sup>1</sup> Days/Fail 60+                                           | Water Displacement <sup>2</sup> 1:1 Dilution-Pass |
| <sup>1</sup> ASTM D-1748 using polished cold rolled steel panels                      | <sup>2</sup> Mil-C-16173                          |
| 5% Salt Spray <sup>2</sup> (Fog) ASTM D117 Hours/Fail Polished Steel Panels >80 hours |                                                   |
| <sup>2</sup> Federal Standard 791D Method 4001.3                                      |                                                   |
| HCl Acid Fume Rust Protection, Hours/Fail                                             | >120 hours                                        |

**BCI™ & BVCI™ Products**  
**Bio-Volatile Corrosion Inhibitors™:**  
**(BVCI™ UltraThin Film)**

RLI Item # 86300  
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 3 cSt to 5 cSt viscosity range- Non-Flammable Flash Points). These safe ultimate biodegradable products contain approximately 25 to 30% Volatile Organic Compounds (VOCs).

| TYPICAL TEST DATA <sup>1</sup> ASTM D-1748 polished cold rolled steel panels <sup>2</sup> MIL-C-16173E 3MIL-C-22235 Humidity Cabinet <sup>1</sup> |           |                                 |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------|----------------------------------|
| Thickness (mils)                                                                                                                                  | Days/Fail | Water <sup>2</sup> Displacement | Sandwich Stain Test <sup>3</sup> |
| 0.03                                                                                                                                              | 30+       | Pass                            | Pass                             |
| 0.07                                                                                                                                              | 40+       | Pass                            | Pass                             |
| 0.15                                                                                                                                              | 50+       | Pass                            | Pass                             |
| 0.60                                                                                                                                              | 60+       | Pass                            | Pass                             |

**Bio-Penetrating Lubricant™/Corrosion Inhibitor FPR (Fingerprint Removal):**

RLI Item # 86500  
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 for Corrosion Preventative and Fingerprint Removal. An excellent product for many industrial applications where a light penetrating lubricant/corrosion inhibitor is needed.

| TYPICAL TEST DATA     |               |
|-----------------------|---------------|
| ASTM D-445            | 22 cSt @ 40°C |
| ASTM D-93 Flash Point | 115°C         |
| ASTM D-97 Pour Point  | -20°C         |

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

RLI Item # 86600

This 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-C15074E Corrosion Preventative Product.

| TYPICAL TEST DATA     |               |
|-----------------------|---------------|
| ASTM D-445            | 10 cSt @ 40°C |
| ASTM D-93 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.

Patented Product: US Patent 6,383,992, US Patent 6,534,454, US Patent 6,624,124, US Patent 6,620,772 with additional Pending and Foreign Patents

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**Availability   F.O.B. :Hartville, Ohio, USA   1 Gallon   5 Gallon Pail   Drum   Totes   Bulk**