Formula 815 GD

The Cleaning Standard In Immersion & Ultrasonic Detergents

An unrivaled combination of cleanability, broad material compatibility, extensive industry approvals and recyclability produced in a safe formulation, Formula 815 GD is the product of choice in most immersion and ultrasonic cleaning applications.

- **Unsurpassed Cleanability**
- Recognized as the standard in immersion & ultrasonic detergents
- **“One Product” Parts Cleaner**
  - Cleans virtually all metals including steels, aluminum and titanium

**Benefits**

- **Aerospace Approved**
- **Independent Performance Documentation – Proven Quality Results**
- **Water-Based, Dilutable Formulation – For Environmental Safety & Economy of Use**
- **Extends Bath Life – Creates Labor Savings & Reduces Costs**
- **In-Process Corrosion Control**
- **Transmits Ultrasonic Cavitation at All Temperatures**
- **Free Rinsing – Cleaner Parts & Simplified Cleaning**

**Immersion & Ultrasonic Detergent**

An Aero Spec, Mildly Alkaline Detergent — Approved for a Wide Range of Industries

**Greener 13 Ways**

1. No Hazardous Ingredients as listed on the MSDS (w/OSHA PELS)
2. No SARA Title III, Section 313 Reportable
3. No Ozone Depleting Substances
4. No Global Warming Potential
5. No RCRA Reportable Ingredients or
   Characteristics
6. Low Caustic

**Industry Approvals & Conformance**

- **Airbus: AP1 09-01-003 Approved Alkaline Cleaner**
- **Airbus Industrie: Consumable Material List (CML) Item #1-004A**
- **Airbus UK: ABP 8-1290; Approved Alkaline Cleaner**
- **American Airlines: CPN410622**
- **American Eurocopter: AEC QA-DCR/10-06/01**
- **Bell/Textron: Material Bulletin 1608J**
- **Boeing: BAC 5740; Alkaline Cleaning**
- **Boeing (McDonnell Douglas): Item #11-024A**
- **Boeing: BAC 5763; Cleaning, Descaling, and Surface Preparation of Titanium and Titanium Alloys**
- **Boeing: BAC 5763; Emulsion Cleaning (PSD 6-62)**
- **Boeing: HP 9-25; Degreasing**
- **Boeing (McDonnell Douglas): DPM 6373**
- **Boeing (McDonnell Douglas): DPS 9.341-1**
- **Boeing (McDonnell Douglas): P.S. 12024; Cleaning, Aqueous Immersion Degreasing**
- **Bombardier Inc, Canadair: MPS 180-40; Aqueous Degreasing**
- **Bombardier (de Havilland): PPS 31.04, Issue 21, Aqueous Degreaser**
- **Ford: fox #150887**
- **General Dynamics, Electric Boat Division: Contract No. N0024-95-C 2103**
- **GE Aviation: SPN GEX9250 (CF6, GE90, CF34, CT7) 70-21-22, Method 1**
- **GE Aviation: SPM CFM-TP SP2 (CFM56) 70-21-18**
- **GE Aviation: List of Alloy Compatible Cleaners**
- **GM: FID Number - 261545**
- **Goodrich: ML 21304; Brake & Wheel Components**
- **Goodrich Aerospace (Rohr): RPS 17.23 Rev. AE**
- **Goodrich Aerostructures (Rohr): RP 17.23 Rev. AE; Metal Prep for Adhesive Bonding**
- **Honeywell (Allied Signal): EMS 53170**
- **Honeywell: Standard Practices Manual**
- **Hughes: SCG15 56039**
- **Hughes: 780202**
- **Lockheed Martin: EPS G32.016**
- **Lockheed Martin: LMA-82006, Rev B**
- **Lockheed Martin: STP-57301; Aluminum Cleaning**
- **National Stock Number: 07 Size; 6850-01-392-8439**
- **National Stock Number: 55 Size; 6850-01-392-8430**
- **Naval Shipyard: File No. 0006902; Cleaning Respirators and Paint Equipment**
- **Northrop: C-24**
- **Pratt & Whitney: PMC 1437-1; PS 422 Alkali Cleaner, Immersion**
- **Pratt & Whitney: SPMC 184, SP09 209 Immersion Tank (oper.1) and Spray-on/Rinse-off Cleaning (oper. 3); SPS 184**
- **Rockwell: LLDS65-0013-001**
- **Rolls Royce (Allison Engine): EPS-345**
- **Rolls-Royce: CSS 342 Type A**
- **Rolls Royce: E.A. AX-1800-001**
- **Rolls Royce: OMAT 1/24S**
- **Sikorsky Aircraft (United Technologies): SS 8423 Rev 5**
- **SNECMA: CFM56 Manual, CP2597**
- **South Coast AQMD: Certified as a Clean Air Solvent**
- **USDA A1**

**Test Compliance**

- **ARP 1755A: Stock Loss (Cat. 9)**
- **ARP 1755B: Stock Loss (Cat.10)**
- **ASTM F-483: Total Immersion Corrosion**
- **ASTM F-484: Stress Crazing of Acrylic Plastics**
- **ASTM F-485: Unpainted Aircraft Surfaces**
- **ASTM F-502: Painted Aircraft Surfaces**
- **ASTM F-519: Hydrogen Embrittlement (Type Tc)**
- **ASTM F-945: Titanium Stress Corrosion (AMS 4916 & 4911 Alloys)**
- **ASTM F-1110: Sandwich Corrosion**
- **ASTM F-1111: Low-Embritting Cadmium Plate**
- **Boeing: D6-7487 Rev. X; Exterior Cleaner**
- **Boeing (McDonnell Douglas): OSD 1; General Purpose Cleaner**
- **Contains No Cyanides or Sulfides**
- **GE Aviation: CT-882; Solvent Replacement**
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- **Honeywell (Allied Signal): EMS 53170**
- **Hughes: SCG15 56039**
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*Including BMS 8-276 substrate*
Substrates
Formula 815 GD is non-corrosive and non-staining to a wide variety of alloys. Some selected categories of materials compatible with Formula 815 GD include:

Ferrous Metals: Carbon Steel • Stainless Steel
Non-Ferrous Metals & Alloys: Aluminum • Cadmium Plating • Chrome Plating • Copper (Alloys & Plating)** • Hastelloy • Inconel • Magnesium & Magnesium Alloys • Monel • Ni-Cad Plating • Nickel, Nickel Alloys & Plating • Titanium & Titanium Alloys
Plastic & Composites: Acrylics • Epoxy Resin • High Density Polyethylene/HDPE • Nitrile Butadiene Rubber • Polypropylene/PP • Polyvinyl Chloride/PVC
Other: Glass • Painted Surfaces

Soils
Formula 815 GD removes a wide range of organic and inorganic soils. Some categories of soils that can be removed with Formula 815 GD include:

Buffing Compounds • Carbon • Coolants • Dirt (Particulate) • Fat • Flux • Grease • Oil (General, Cutting, Drawing Compounds, Forming, Honey, Hydrocarbon, Lubricants, Self Emulsifying, Silicone/Greases, Sulfur/Chlorinated, Water-Soluble)

*Material compatibility should always be confirmed via testing with specific contaminants under specific cleaning conditions. **Minor discoloration may occur under certain conditions.

Use Recommendations

System | Immersion & Ultrasonic Tanks
Dilution | 5-30%, typically used at 10%
Cleaning Temperature Range | 130-170°F (54-77°C), typically used at 140-150°F (60-66°C)
Cleaning Duration | 1-30 minutes: typical parts are clean in 3-10 minutes
Rinse Temperature | A heated rinse may improve overall performance. Some OEM process specifications may require a heated rinse.
Rinse Water Quality | Recommended conductivity of final rinse water:
- Ultra-Clean Applications: < 50 microsiemens
- Precision Cleaning: < 500 microsiemens
- Gross Cleaning: > 500 microsiemens
To avoid spotting, it is best if the parts remain wet between processing stages.

Typical Chemical Characteristics

<table>
<thead>
<tr>
<th>Physical Form</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Blue</td>
</tr>
<tr>
<td>Odor/Fragrance</td>
<td>Mild</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Water-thin</td>
</tr>
<tr>
<td>Weight</td>
<td>8.96lbs/gal (1.074 g/ml)</td>
</tr>
<tr>
<td>pH of Concentrate</td>
<td>12.0</td>
</tr>
<tr>
<td>pH of Working Solution</td>
<td>11.5</td>
</tr>
<tr>
<td>Flash Point (PMCC)</td>
<td>None to boiling</td>
</tr>
<tr>
<td>Foaming Tendency</td>
<td>Moderate to high</td>
</tr>
<tr>
<td>Calculated V.O.C</td>
<td>None</td>
</tr>
<tr>
<td>Freeze/Thaw</td>
<td>Reusable after thawing &amp; remixing</td>
</tr>
</tbody>
</table>

Concentration Verification

Brulin Titration Kit (Prod. No. XTRKIT)
- Sample Size: 5 mL
- Titrant: 1.0 N HCl Solution
- Indicator: Bromophenol Blue (2 Drops)
- Concentration %: Drops Titrant x 0.81

or
- Sample Size: 10 mL
- Titrant: 1.0 N HCl Solution
- Indicator: Bromophenol Blue (3 Drops)
- Concentration %: Drops Titrant x 0.42

Burette Test Method
- Sample Size: 50 mL
- Titrant: 0.5 N HCl Solution
- pH Endpoint: 3.80
- Concentration %: ml’s Titrant x 1.25

Packaging

SHIPPING: Non-hazardous for shipping by ground, sea, or air in all package sizes.

STORAGE: Store in well-ventilated areas at temperatures between 40-110°F (4-43°C). The recommended shelf life of this product is 24 months.

DISPOSAL: Biodegradable. Pretreat by skimming and/or filtering. Final sewerability is determined by the municipal sewer district covering the plant location.

AVAILABILITY:
- 2.5 Gal (9.5L)/2
- 55 Gal (208L) (~79,000L)
- 275 Gal Tote (1,041L)

Companion Products

Brulin 1990 GD (Product No. 301008)
The Industry Standard Spray Wash Detergent

Formula 815 MX (Product No. 111005)
The Legendary General Purpose Cleaner Degreaser