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Technical Bulletin

LIST OF BLUE GOLD TESTS

Leberco Toxicological Laboratories
Tests done by an independent lab for inhalation (Federal Hazardous Substances Act), ingestion (to determine toxicity) and skin abrading (Acute Dermal Toxicity). All tests showed no adverse reactions or deaths to any of the animals and proves **Blue Gold** is non-toxic.

Allison Gas Turbine Engines
Allison Engines has authorized the use of **Blue Gold**, to be used in lieu of trichloroethylene (TCE). **Blue Gold** is also acceptable for use on titanium parts. The technical aspects of this information are FAA approved.

AMS 1526B Test
Test done by SMI on **Blue Gold** for aircraft exterior surfaces water miscible – pressure spraying type. Tests included are Sandwich Corrosion, Total Immersion Corrosion, Low-Embrittling Cadmium Plate, Hydrogen Embrittlement, Flash Point, Effect on Transparent Acrylic Plastics, Effect on Painted and Unpainted Surfaces, Performance and Quality. **Blue Gold** conformed to all tests.

AMS 1530 Test
Test done by SMI on **Blue Gold** for aircraft exterior surfaces wipe-on, wipe-off water miscible. Tested in concentrate and 10% solution. Tests included Sandwich Corrosion, Total Immersion, Cadmium Removal, Hydrogen Embrittlement, Flash Point, Effects on Plastics, Effects on Painted and Unpainted Surfaces, Abrasive Effects and Storage Stability. **Blue Gold** conformed to all tests.

AMS 1536
Testing for total immersion corrosion to **ASTM F-482**, **AMS 4037** for anodized aluminum; **AMS 4911** for titanium alloy and 1020 steel. Also includes tests to **ASTM F-482 -**Total Immersion Corrosion for Tank-Type Aircraft maintenance chemicals. Tested in concentrate and 5% solution. There was no pitting detected.

ARP 1755A and ARP 1795A Test
ARP 1755A shows **Blue Gold** safe with *ferrous* and *non-ferrous* metals. Tested by SMI in accordance with the Aerospace Material Specification**. ARP 1795A** (**now ASTM F-945**) is for stress corrosion of titanium alloys. All tests done with a 10% solution. **Blue Gold** conformed to all tests.

ASTM D-1331 Surface Tension
Test done comparing the surface tension on combinations of **Blue Gold**, Trim Sol and distilled water. Results indicate that when 10% Blue Gold is added to 10% Trim Sol and 80% Water solution the dynes/cm is 27, thereby giving you a BETTER cutting edge and reducing surface tension.

Automotive Painting Line (also Paint Adherence Testing)
The use of TCE and caustic soda to clean metal prior to painting left residue. The residue caused paint to bubble and peel. An additional and costly step of phosphatizing was added to insure the adherence of the paint. Scratch tests with **Blue Gold**, TCE and caustic soda were performed. At least four or more paint squares were removed on the TCE and caustic soda cleaned metal. There were only trace peelings of one square on the metal cleaned in **Blue Gold.** The paint adheres better to surfaces cleaned with **Blue Gold,** saves time, saves money and eliminates the additional steps for rinsing. **Blue Gold** also eliminates the need for costly phosphatizing.

Babcock & Wilcox (Nuclear Equipment Division) Approval
Blue Gold has been added to their N.E.D. approved list for cleaning gears, as a replacement for trichloroethane degreasing method resulting in a decrease of expenses and increase in safety.

Babcock & Wilcox (Nuclear Equipment Division) Approval
Blue Gold is used in the water treatment plant as a tank degreaser and general cleaning agent. **Blue Gold** is used in the cleaning cycle of the ultra-filtration unit for machine coolant separation. **Blue Gold** is also used to clean the leaves of their pressure filters. By using a 1:150 dilution, significant pressure reductions have been achieved. A reduction of maintenance hours has also been achieved.

Bell Helicopter Textron, Division of Textron Inc.
Blue Gold is listed on the Materials Bulletin 1608 J with an update as of 1-1-95. This specification is Bell Process Specification **BPS-4138.**

Boeing D6-17487 Revision H
SMI performed test on **Blue Gold** with 1 part product to 9 parts water for Sandwich Corrosion, Acrylic Crazing, Paint Softening and Hydrogen Embrittlement. **Blue Gold** conformed to all tests

Department of the Army
Modification #P00033 allows the use of Blue Gold in lieu of vapor degreasing at the Fixed Wing Division Headquarters, of U.S. Army Aviation Systems Command in St. Louis, Missouri.

Dissimilar Metals Corrosion Test (MIL-R-81294A)
A 10% solution of Blue Gold was tested to MIL-R-81294A for corrosion with dissimilar metals. **Blue Gold** conformed to all parts of the testing with no corrosion.

Federal Standards Test Method 536/6701 "Cleaning Efficiency Test"
This test determines the cleaning efficiency of hard surface cleaners. **Blue Gold** was tested at 1:3 dilution with water and 1:19 dilution with water on the removal of standard soil mixture. **Blue Gold**'s cleaning efficiency rating was 92%.

General Electric (Aircraft Engines) Approval Task 70-21-22-110-042
Blue Gold has been approved as an alternative to mineral oil and hydrocarbon based solvent cleaners. Additionally, **Blue Gold** is a safe alternative, when used as a degreaser prior to F.P.I. and M.P.I. **Blue Gold** is authorized to be used on all engine components.

Goodyear Tire & Rubber Company
Blue Gold was tested and used as a mold release agent substitute cleaner. **Blue Gold** cleaned plastic car dashboards that come off the injection molds with molding agent residue.

Honeywell Engines & Systems Approval
Blue Gold has been tested and approved for use with Honeywell Engines & Systems in accordance with specification EMS 53170.

Lockheed Missiles & Space Company, Inc.
A three-year study on the Evaluation of Replacement Material for Ozone Depleting Chemicals. **Blue Gold** chosen as best performance of a general purpose cleaner on metal surfaces and selected as the replacement product. Some of the other brand names **Blue Gold** performed better than are Brulin, Daraclean, Oakite, Turco, Quaker and Simple Green. **Blue Gold**, both immersion and spray cleaner, can be replacements for Freon 113 and vapor degreasing.

Martin Marietta Energy Systems, Inc.
Under the direction of the United States Department of Energy. Evaluation of **Blue Gold** versus chlorinated solvents. **Blue Gold** was selected as the best solution from a field of fifty-two (52) vendors, with over two hundred (200) industrial cleaning/degreasing chemicals tested. This three-year study was concluded in May 1988.

Moore Business Forms, Inc. Approval
Cost savings per year using **Blue Gold** including revisions on equipment versus trichloroethane and reclaimed trichloroethane.

New United Motors Manufacturing Co., Ltd.
Blue Gold is being used as a substitute replacement for silicone soap. Tests indicate that tires applied with **Blue Gold** on the rims had less movement than with silicone soap.

Pratt & Whitney (Commercial Engine Division)
Internal wire to inform operators of the changes that have been made regarding Pratt & Whitney chemical cleaning requirements for the JT8D, JT9D, PW2000 and PW4000 engines. SPOP 3 (TCE) had been deleted and replaced with SPOP 208 and SPOP 209 (**Blue Gold**). Both of these SPOP's are effective September and October of 1991.

Pratt & Whitney, Canada
Blue Gold, listed as PMC 1284, PS 343 & PS 374-general purpose alkali cleaner, and **Blue Gold Spray Wash** listed as PMC 1250-1 (also listed as SPMC106) are in the PWA Turbojet Engine Standard Practice Manual as approved cleaner/degreasers. They are suitable for use in accordance with SPOP 208 and SPOP 209, which replaces SPOP 3 (TCE).

Raytheon Missile Systems
Blue Gold is used as a replacement for solvent degreasing agents and did not affect the subsequent plating or surface treatment, such as chromating, copper plating, anodizing and Electro-plating. Parts cleaned with **Blue Gold** were also subjected to baking, ten (10) day humidity and fifty (50) hour salt spray test and showed no adverse affects.

Rockwell International Test
An evaluation of **Blue Gold Industrial Cleaner** (TMC-501) as a replacement for chlorinated solvents. Titanium tubing (3AL-2.5V) used in the hydraulic system lines for the B-1B and fuel lines needed to be cleaned of forming lubricants. The lubricants used were Leeder 203Z and Titan Lube 1129. As a result of the evalution, Quality Engineering issued a report with specifications on proper cleaning methods that enabled them to save time and money.

Rolls Royce

Approval for the use of **Blue Gold** as a primary cleaner alternative for OP-102 (formally TCE). **Blue Gold** has been assigned OMAT No. 1/24 H and appears in the Rolls Royce maintenance manuals as of May 1992. Also approved, with proper rinsing, for use prior to penetrant crack test in TSD 594 OPS 210 &213.

TRW

Replacement for caustic soda used in plant soda kettles. Using **Blue Gold** as an alternative to caustic soda produced a 27% reduction in cost per year at TRW

United Airlines & Boeing specifications For Interior Cleaning

Blue Gold was tested to the specifications for interior cleaning. The main emphasis was the effects on such items as natural and silicone rubber, electric wiring insulation, neoprene, leather, vinyl plastics, naugahyde, upholstery fabrics, kydex polyplastex, polypropylene, royalite, polysulfone, polycarbonate and wool, nylon and acrylic carpet. No adverse reactions on any items except very slight blue hue on upholstery fabrics.

USDA

As of 1998 the USDA was discontinued. NSF now tests and lists approvals for meat and poultry plants. **Blue Gold** is accepted as a degreaser or carbon remover for food cooking or smoking equipment, utensils, or other associated surfaces in official establishments operating under the Federal meat, poultry, rabbit, egg shell and egg products inspection programs.

United States Environmental Protection Agency

Risk Reduction Engineering Laboratory for Design of a Full Scale Debris Washing System in Cincinnati, Ohio. **Blue Gold** was selected as the solution best suited for cleaning grease-laden, metallic debris at Hazardous Waste DumpSites. May 30, 1991.

United States Environmental Protection Agency

ICOLP is the Industry Cooperative for Ozone Layer Protection. **Blue Gold** is listed as a vendor for replacement of CFC-113 and Methylene Chloroform Solvent Cleaning Substitute in the ICOLP Manual, November 1990 draft.

These are just a few of the many tests and approvals for **Blue Gold**. We also have tests and approvals from many prominent overseas businesses. If you desire information on a perticular application not shown on the previous pages, please let us know the specifics.