

M-Pro7™ Technical Datasheet

M-Pro 7 Gun Cleaner

Cleaning

M-Pro 7 Gun Cleaner is the best product on the market. MIL-L-63460 testing has indicated that M-Pro 7 Gun Cleaner removes at least 98% of imbedded fouling.

Source: CLP Product Evaluation, Canadian Military, Aug, 1999 Project #: A010599 Mil-L-63460D, Military specification, firing residue removal test

Conclusion: M-Pro 7 beat all other contenders including Breakfree CLP in clean-ability testing.

Toxicity

M-Pro 7 Gun Cleaner was tested in accordance with “Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms”, EPA/600/4-90/027.

Conclusion: The cleaning compound [will] have no adverse effect on the health of personnel or the environment when used for its intended purpose.

VOC Standards

The minimum standard for the State of Calif. Low VOC (Volatile Organic Compound) Products is 250 grams per liter (g/l). M-Pro 7 Gun Cleaner has been tested at 139 grams per liter.

Conclusion: M-Pro 7 falls significantly below the requirements of the State of California.

Disposal

Separate heavy metals or other hazardous content and test to determine its non-hazardous or hazardous classification. If solution is non-hazardous, the pH level should be checked and adjusted (9.5 pH Federal Maximum Standard) to comply with City, State, and Federal wastewater sewage regulations before discharging into the drain.

Conclusion: Deemed acceptable for discharge by multiple authorities including Hampton Roads Sanitation District (Virginia Beach, VA), who has the most stringent requirements in the United States.

Biodegradability

This test was based on dissolved organic carbon analysis. The procedure was used to determine the rate and extent of aerobic biodegradation that might occur when chemical substances are released to aquatic environments.

Findings: M-Pro 7 Gun Cleaner = 86.9% Bio-degradability in 28 days.

Conclusion: Since M-Pro 7 Gun Cleaner was found to be over 86.9% biodegradable based on the DOC analysis, it is reasonable to assume that the substance will undergo rapid and ultimate biodegradation in aerobic aquatic environments, also known as “ready biodegradability”.

Salt Water Corrosion

M-Pro 7 treated chemical test panels were subjected to a 5% salt spray test for 168 hours per ASTM B-117 and MIL C 5541E, paragraphs 3.6 and 4.5.1 except the significant surface was inclined approximately 6 degrees from the vertical. Results were evaluated per MIL C 5541E, paragraph 3.6.

Conclusion: Passed, no corrosion observed.

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Effect on Metals

Weight Loss

Weight loss (mg/cm²) after 168 hours for total immersion corrosion testing in accordance with ASTM F 483.

Metals	Max Allow Loss	Loss Found
Magnesium	0.70	+0.05
Aluminum	0.49	<0.01
Aluminum Alloy	0.49	<0.01
Titanium	0.35	<0.01
Steel Grade 1020	1.40	<0.01
Aluminum-Lithium	0.21	0.02
Silver Plated Steel	0.14	<0.01

Intergranular Attack

Solution may not cause intergranular attack in excess of 0.0002 inch.

Metals	Intergranular Attack	Loss Found (not to exceed 0.0002 inches)
Magnesium	0.0002	<0.0002
Aluminum	0.0002	<0.0002
Bare Alloy Steel	0.0002	<0.0002
Cad Plated Steel	0.0002	<0.0002
Titanium	0.0002	<0.0002
Nickel Based Alloy	0.0002	<0.0002
Ferrous Alloy	0.0002	<0.0002
Stainless Steel Alloy	0.0002	<0.0002

End Grain Pitting

Solution may not cause end grain pitting in excess of 0.001 inch.

Conclusion: M-Pro 7 Gun Cleaner caused 0.000 end grain pitting.

Effect on Plastics, Rubber & Misc.

Weight loss from corrosion after 1 hour in total immersion.

Material	Effect
Acrylic Plastics	Conforms
Polycarbonate Plastics	Conforms
Polymide Insulated Wire	Conforms
Polysulfide Sealants	Conforms
Urethane Rubber	Conforms
Natural Rubber	Conforms
Polychloroprene Rubber	Conforms
Butadiene Rubber	Conforms
Silicone Rubber	Conforms
Sandwich Corrosion	Conforms
Hydrogen Embrittlement	Conforms
Galvanizing Corrosion	Conforms
Cadmium Plate Corrosion	Conforms

All testing was performed by Scientific Material International Inc., an approved U.S. Government test facility.
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M-Pro7 Gun Oil LPX [lubricant protectant with non-solvent cleaner]

Field Cleaning

In garrison cleaning with M-Pro7 Gun Cleaner removes at least 98% of imbedded fouling and conditions the bore not to accept fouling as easily for up to 30 days. For field use, M-Pro7 Gun Oil LPX exceeds 80% fouling removal as per MIL-L-63460 revision E.

Conclusion: M-Pro7 Gun Oil LPX is adequate for field weapon maintenance.

Toxicity

M-Pro 7 Gun Oil LPX contains polyalpha olefin oils, which have low toxicity due to the absence of impurities and are used in some cosmetics and pharmaceuticals.

Conclusion: The oil [will] have no adverse effect on the health of personnel or the environment when used for its intended purpose.

VOC Standards

The minimum standard for the State of Calif. Low VOC (Volatile Organic Compound) Products is 250 grams per liter (g/l). M-Pro7 Gun Oil LPX has been tested at 0 grams per liter.

Conclusion: M-Pro7 Gun Oil LPX contains no VOC.

Flammability

M-Pro 7 Gun Oil LPX has a Flash Point of 462°F (219 °C).

Conclusion: M-Pro7 Gun Oil LPX will not flash off weaponry during use and does not pose a fire or explosion risk in transport or otherwise.

Biodegradability

M-Pro7 Gun Oil LPX contains polyalphaolefin oils, which biodegrade faster than solvent refined oils – 60% vs. 30% as measured by the CEC-L33-A-93 test procedure.

Conclusion: Since M-Pro7 Gun Oil LPX was found to be 60% biodegradable based on the CEC-L33-A-93 test procedure, it is reasonable to assume that the substance will undergo rapid and ultimate biodegradation.

Salt Water Corrosion

M-Pro7 Gun Oil LPX contains polyalphaolefin oils, which respond well to antioxidants giving superior resistance to oxidation. In addition, the formula contains high performance rust and oxidation inhibitor additives satisfying MIL-H-17672D.

Conclusion: M-Pro7 Gun Oil LPX has passed corrosion, humidity and salt spray testing per MIL-L-63460E.