PRODUCT DATA SHEET
X^2 MilTopcoat
FOR MILITARY MAINTENANCE APPLICATIONS

PRODUCT DESCRIPTION: The **X^2 MilTopcoat** is an easy to apply, user friendly, single component coating designed for military field and shop maintenance applications. The **X^2 MilTopcoat** is a durable, tough topcoat, that when applied over the black **X^2 AllMetallProtect** primer provides maximum longevity. **X^2 MilTopcoat** have excellent adhesion and can be applied as it's own primer (direct to metal) when short term protection (less than 6 months) is desired. This system is a flat or very low sheen system, depending on military requirements for each color, and incorporates special "infrared signature pigments" meeting military infrared spectrum requirements as detailed in MIL-C-46168D(ME). The finish has outstanding color retention and chalk resistance.

X^2 MilTopcoat **Standard Colors**

Green	Tan
Brown	Black

Typical Properties

% Solids by Weight: 62-66%	Viscosity: 650-830 m Pa-S (cP)
Weight Per Gallon: 12.8-13.6 lbs/gal	60° Gloss: Less than 3
% Solids by Volume: 49-53%	V.O.C.: Less than 275 grams/liter

APPLICATION PROCEDURE: See complete Military Corrosion Control Field Procedure for surface preparation and application of **X^2 AllMetallProtect** primer and **X^2 MilTopcoat .** Always mix coating materials with a mud mixer and drill motor apparatus. **X^2 MilTopcoat** can be applied by spray equipment, brush or roller. Spray cans are great for touch up or small area coating work. **X^2 MilTopcoat** For long term corrosion protection, prime with 2 coats of   Black **X^2 AllMetallProtect** 75 mm wet/coat with 30 minutes-3 hours flash off between coats prior to applying the **X^2 MilTopcoat** (100-125 mm wet, 49-65 mm dry).

For Short Term or Emergency Field Repairs-Use As a Direct-To-Metal Coating:
The **X^2 MilTopcoat** can be applied as a direct-to-metal system (without **X^2 AllMetallProtect** primer). However, it is always recommended to apply 2 coats of **X^2 MilTopcoat** for increased resistance to salt and moisture.

Adhesion to Aged Coatings: Both the **X^2 AllMetallProtect** primer and **X^2 MilTopcoat** will adhere to most aged coatings including themselves, as long as the surface is scuff-sanded to provide "tooth" or profile for adhesion. They will also adhere to most epoxies and urethanes as long as they are scuff sanded with sanding residue removed before application.
NOTE: For this discussion, an aged coating is defined as any solvent borne or 2K water-borne epoxy or water-borne urethane system that has cured longer than a couple of days.

X^2 MilTopcoat Spread Rate: Apply at 100-125um wet to yield 50-65um dry film thickness. Thicker applications are NOT better; thinner coats are always desirable for faster cure and maximum toughness and film strength. Always use a wet film and dry film gauges to check application. Do not apply over 150mm wet or higher sheen and slower cure can result. If undesirable sheen results, allow to cure 4-6 hours, scuff sand with 1000 grit scuffing pad or apply quick pass spray "dust coat" while holding spray tip 30-50 cm from surface.

Coverage: Theoretical coverage 7.9-10.4m^2/l at 50-6um dry film.

Dry Time: 30 minutes set to touch, 60 minutes tack free at 21° C & 50% relative humidity. Dry times will be longer in cooler temperatures or with higher humidity. Coatings will blush if applied in high humidity conditions. Dry rates will also be affected by film thickness, air movement and additional thinner content (type & amount). Recoat, if necessary, 1 hour at 27° C and 2-3 hours at 18° C.

Touch-Up of cured X^2 MilTopcoat (cured over 3 days): Scuff sand surface with scuffing pad or sand paper. Remove sanding residue. Apply at 75-100um wet film of desired **X^2 MilTopcoat** .

Thinner: Use Acetone or Oxsol 100 which are VOC exempt solvents.

Clean-Up: Xylene, Acetone or Oxsol 100.

Personnel and Perimeter Safety Precautions: 1) Read MSDS before applying system. 2) Always make sure that there is plenty of air circulation during mixing as well as during application as these materials are flammable. 3) Always wear respirators or have personal fresh air supply packs when applying coating materials. 4) Do Not Smoke within 100 feet of the materials. 5) Extinguish all flame sources in application area. 6) Do not operate engines in application area while applying coats or during curing phase. 7) Use grounding straps when pouring coating materials from one container to another.

MILITARY CORROSION CONTROL FIELD PROCEDURE:
SURFACE PREPARATION AND APPLICATION PROCEDURE FOR
X^2 AllMetallProtect PRIMER AND X^2 MilTopcoat

System Description: The **X^2 AllMetallProtect** primer and **X^2 MilTopcoat** form a high performance single component system for field or shop maintenance applications of equipment, vehicles, landing craft and machinery.   The toughness and corrosion control properties of this system will meet or exceed those of many multi-component systems.

Discussion On Surface Preparation: The **X^2 MilTopcoat** system has unique practical performance advantages over other coating systems in terms of adhesion, durability, resistance to undercut once damaged and adhesion to surfaces with less than perfect surface preparation. However, the **X^2 AllMetallProtect** and **X^2 MilTopcoat** system's longevity can be dramatically improved by increased efforts being placed into the surface preparation. Simply put, the better the surface preparation, the longer the **X^2 AllMetallProtect** and **X^2 MilTopcoat** system will last.

X^2 AllMetallProtect adheres to old coatings better than any other primer that we are aware of with a light scuff sand before application. However, there is always a risk of adhesion loss when **X^2 AllMetallProtect** is applied over other coatings that must be recognized. Adhesion testing is the best indication of proper adhesion. Removal of old coatings prior to **X^2 AllMetallProtect** application is always recommended for longest possible life.

SURFACE PREPARATION PROCEDURES FOR STEEL

1) Remove all mill scale, flake rust, loose powder rust, weld slag and loose paint. Power tool cleaning and sandblasting are preferred as more efficient cleaning and rust removal methods but intensive hand tool cleaning can be used when necessary. Degreasing with high strength degreasers may be necessary to remove oil and/or grease.

2) Remove all loose scale, rust and other cleaning residue from power tool or hand tool cleaning by power wash or soap & water scrub. If solvent wipe used, solvent must be non-recycled (virgin) and rags must be clean and oil free. Remove sandblast residue with high pressure air.

<h1 style="text-align:center">APPLICATION OF X^2 AllMetallProtect AND
X^2 MilTopcoat AS A DIRECT-TO-METAL COATING</h1>

1) X^2 AllMetallProtectPRIMER APPLICATION

A) For maximum corrosion protection, it is recommended that two **X^2 AllMatallProtect** black primer coats be applied with 30minutes - 3 hours flash off between coats. Each coat should be applied at 75-100 um wet film thickness for a 2 coat thickness total of 3-4 mils dry film thickness (DFT). When covering sandblast pattern or rough surfaces, remember you just cover the blast profile or texture before actual surface build will begin, possibly requiring an extra coat. Two coats of black **X^2 AllMetallProtect** should be used on all equipment, landing craft, vehicles and structural steel used immediately adjacent to or directly exposed to salt or fresh water. Wait 24 hours to apply topcoat allowing the two underlying layers to cure.

    a) Prior to applying the first full coat of **X^2 AllMetallProtect**, "Strip Coat" all edges and welds with **AllMetallProtect** black by brush or spray application of 75-100um wet film thickness (40-50um DFT). "Strip Coating" prevents edge rust by providing extra millage to overcome effects of coating shrinkage that occurs during the drying phase of the normal 1-2 coat applications. Allow to dry 1 hour before applying first full primer coat of **X^2 AllMetallProtect**.

    b) Dry Time. At 21° C and 50% humidity, allow 30 minutes-3 hours between coats. If cooler or more humid allow more time between coats.

    c) Film Thickness is Critical. Use wet and dry film thickness gauges to check for proper film thichness.

    d) Always stir or agitate **X^2 AllMetallProtect** and **X^2 MilTopcoat** prior to applying.
        When using 5 Liter containers, use a "mud mixer" with a drill motor to mix for maximum performance.

B) For less corrosive environments, a single coat of **X^2 AllMetallProtect** black can be applied at 100-125um wet film thickness which will dry to a film thickness of 50-65um DFT. Allow 2-4 hours dry time before top coating with **X^2 MilTopcoat** If more than 4 hours passes before the topcoat can be applied, wait 24 hours to apply topcoat.

    a) "STRIP COAT" all edges with black **X^2 AllMetallProtect** by brush or spray application at 75-100mm wet film thickness (40-50mm DFT). Strip coat before applying the full coat of **X^2 AllMetallProtect** to the entire surface. Flash off 30 minutes-3 hours before applying topcoat at 21° C.

NOTE: Other water-borne CARC paints, solvent-borne urethanes, epoxies, enamels and water-borne acrylic topcoats can be applied over **X^2 AllMetallProtect** black

primer when necessary. Depending on the solvent composition of these paints, primer re-coat window may vary.

2) X^2 MilTopcoat UNDERLINED APPLICATION

A) Apply 1-2 coats of **X^2 MilTopcoat** over black **X^2 AllMetallProtect** at 100-125 um wet film thickness per coat (50-65um DFT per coat). Normally one coat is sufficient. Coating is usually tack free in less than 20 minutes at 21° C and 50% relative humidity.

a) CURE TIMES: 1) Allow to cure 72-96 hours before being placed into service to facilitate development of coating film toughness. 2) Allow 7 days or longer before placing in service if would come in contact with water for an extended period of time.
b) For touch-up or re-application, scuff sand original coating with scuffing pad or 180 grit sandpaper to develop a "tooth", and apply the **X^2 MilTopcoat** at 100-125mm wet (50-65um DFT).

X^2 MilTopcoat DIRECT-TO-METAL COATING WITHOUT PRIMER:

A) VERY IMPORTANT!!! The **X^2 MilTopcoat** can be used as a direct-to-metal coating without **X^2 AllMetallProtect** primer for short- term applications or emergency re-coating. The **X^2 MilTopcoat** will perform very well in this manner since it incorporates many of the **X^2 MilTopcoat** features in its formulation. Apply 2 coats at 100-125um wet film thickness with1 hour flash off between coats for this direct-to-metal application.