

Chapter 2-4TEMPORARY PROTECTIVES

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Introduction

1 Temporary protectives provide protection over paint schemes that have deteriorated or suffered damage, or in particularly adverse environments such as on board ship. They may also be used to protect unpainted components prior to final assembly and painting. However, they must be thoroughly removed before any painting. Although readily removed by a wide range of solvents, some protectives (notably PX-32) are, in the absence of solvents almost as durable and protective as paints.

Protectives for use on airframes

2 PX-1 is a mixture of lanolin, white spirit and xylene with a green dye. It can be applied by brush, spray or dip, for short term preservation at moderate ambient temperatures. Evaporation of the solvent leaves a thin, soft film which softens further on ageing. Residue can be removed by white spirit, kerosene or trichloroethane, or by oils. PX-1 is used mainly on mechanical components and has little aircraft application.

3 PX-10 is primarily a water displacing fluid which possesses very short term corrosion resisting properties. It is used for the immediate dewatering of aircraft recovered after ditching and for dewatering surfaces prior to the application of PX-32. Application may be by brush, dip or preferably by spray. Natural rubber components should be masked if PX-10 is to be sprayed nearby. Any residual coating must be removed prior to painting or PX-32 application. Removal may be achieved by white spirit, kerosene or trichloroethane.

4 PX-24 is a water displacing fluid, which leaves an extremely thin oily film after evaporation of the solvent. This film has anti-corrosive properties persisting up to three months under indoor storage conditions. It should not be regarded as a substitute for either paint or PX-32 where long term protection is required, but may be applied to aircraft surfaces, painted or unpainted, as a regular anti-corrosive treatment. PX-24 is also specified for use on certain aircraft engines as an anti-corrosive medium following a compressor wash.

5 PX-24 is most effective when applied as a thin film, and must only be applied to clean surfaces. This is best achieved by application after aircraft washing and is normally specified as part of the Servicing Procedure for aircraft washing, which details specific application. Lightly wiping with a cloth sprayed with PX-24 is preferred for application to large dry surfaces.

In post wash situations or on wet surfaces, apply by fine spray directly on to the surface, followed by wiping with a clean cloth after water release and run-off. Care should be taken to ensure particles do not become embedded in the cloth, damaging the aircraft surface finish.

Notes...

- (1) PX-24 must not be allowed to contact oxygen equipment, pipes, cylinders hoses and valves. Ensure charging and LOX fill/vent points are not contaminated by PX-24.
- (2) PX-24 is flammable. Avoid contact with naked lights and sparks.
- (3) Avoid contact with wheel brakes, rotor brakes, commutators, slip rings and brushes, canopies and other transparencies, disconnected firewire couplings, control cables and rubber of all types.
- (4) PX-24 must be thoroughly agitated before use.
- (5) Recently applied films of PX-24 must be allowed 24 hours to dry prior to application of PX-32.
- (6) PX-24 does not have any deleterious effect on wet assembled rivetted joints.

6 PX-32 is a thixotropic material designed to provide anti-corrosive protection to supplement existing sound surface finishes. It may also be used as a protective for unpainted surfaces during storage. Water displacement qualities are not possessed by PX-32. It must only be applied to clean, dry surfaces. Seams and cavities should be blown out using compressed air, loose debris being removed by vacuum cleaning. Areas should be thoroughly degreased using white spirit and then dried using swabs or warm air blowers. Where it is impractical to ensure a dry surface by such methods, the area should be sprayed with PX-10 at least 24 hours prior to the application of PX-32 thus permitting release moisture to drain or evaporate. PX-32 must not be applied to damp surfaces, it will seal in moisture and accelerate corrosion.

7 Areas and components to which PX-32 may be applied are defined by the aircraft Engineering Authority. These would (typically) be as follows:

- 7.1 Pressure cabin bilge areas.
- 7.2 Fuselage underfloor areas.
- 7.3 Internal structure of wings and tail unit.
- 7.4 Undercarriage bays.
- 7.5 Pipelines and unions, excluding oxygen equipment.
- 7.6 Bonding clips and cleats.
- 7.7 Systems components susceptible to corrosion (such as air conditioning valves).
- 7.8 Jacking and picketing points must be reprotected after use.
- 7.9 Internal surfaces of control rods and tubular structure.
- 7.10 Bolts and fittings.
- 7.11 Any area where condensation and water collection occurs.

8 The following areas are unsuitable for application of PX-32 (overspray should be removed using white spirit where this would not cause further damage, and the NCO IC servicing informed):

- 8.1 Commutators, slip rings and brush gear.
- 8.2 Fire wire couplings.
- 8.3 Oxygen system pipelines and components.
- 8.4 Strontium/calcium bags or capsules.
- 8.5 Wheel and rotor brake assemblies.
- 8.6 Canopies and transparencies.
- 8.7 Rubber components of natural or chloroprene base.
- 8.8 Materials composed of polyethylene and polyvinylchloride.
- 8.9 Exposed lubricated surfaces, eg screwjacks on flap systems.
- 8.10 Silicone based greases. Replace contaminated grease.
- 8.11 Aircraft flying control cables.
- 8.12 Areas where temperatures in excess of 110°C (230°F) are likely to be encountered. Above this temperature, PX-32 coatings will sag and run.
- 8.13 Aircraft control surfaces where the weight of PX-32 may compromise the mass balance.

Note...

For widespread application, the weight of PX-32 must be considered. Wiring looms other than those protected by materials stated in paras 8.7 and 8.8 above do not suffer damage when sprayed with PX-32.

Application of PX-32 (RAF only)

9 The application of PX-32 is best achieved by spray and is the responsibility of Trade Group 13 (Painter and Finisher) personnel. Detection of coating failures, and first aid rectification where specialist aid is not available, is the responsibility of Trade Group 1 (Airframe) personnel. Such first aid application may be by brush only. If too thick, PX-32 can be thinned by vigorous stirring. Full details for the application of PX-32 are contained in AP 119A-0601-0.

Other temporary protectives

10 Other temporary protectives in use are:

- 10.1 PX-7. A soft petrolatum used for the protection of battery terminals, certain torpedo mechanisms and spare parts.
- 10.2 PX-13. A solution of petroleum wax and special additives including corrosion inhibitors in a mixture of mineral oil and petroleum spirit. Used for the preservation of aircraft engine cylinder bores, valves and springs.
- 10.3 PX-26. This is a corrosion preventive oil used for certain aircraft hydraulic systems during storage.
- 10.4 PX-27. A mineral oil with special additives, formulated to neutralise the corrosive effects of leaded gasoline combustion products. Corrosion preventive oil for aircraft piston engines, circulated during final test bed running and in installed engines prior to storage. Also used in certain helicopter gearboxes during storage.
- 10.5 PX-28. This compound has largely been superseded for aircraft use by PX-32 and is now mostly regarded as 'ground use only' ie MT vehicles.

GSE etc. Areas of aircraft to which PX-28 may be applied are specified in the Air Publications as defined by the Aircraft Engineering Authority.

10.6 PX-29. A water displacing fluid intended for use on electrical equipment of low voltage (up to 120 volts). It can be applied by brush or spray and is removed by wiping. Excessive use of PX-29 must be avoided and excess PX-29 must be removed from non-wiping switch contacts.

10.7 OM-11. A light mineral oil containing a small quantity of stearic acid. Used as an inhibiting oil in stored aircraft fuel systems.

11 In emergency a film of oil type or solvent deposited short term protective may be the only alternative to the specified paint scheme, but more permanent protection should be provided at the first opportunity. Furthermore, oily or greasy films pick up dirt and grit, this debris promoting corrosion. Such films are to be removed from aircraft about to operate in desert conditions.

12 Ball and roller bearings, articulated joints and other moving parts require a lubricant which prevents or reduces wear and, displacing water and filling air spaces, acts as a barrier against corrosion. Hinges, latches and sliding surfaces are apt to be neglected; they require lubrication and should be actuated to ensure the lubricant has penetrated. Lubricants are renewed not only to make up for losses but also to replace contaminated oil grease.

Safety precautions

13 The following precautions must be observed when applying temporary protective treatments irrespective of the method of application.

13.1 Before work begins, the operator must wash and carefully dry hands and forearms then apply barrier cream.

13.2 An adequate supply of hot water, soap and towels must be available at or near the place of work.

14 When applying protective by dipping, observe the following precautions:

14.1 The building in which dipping takes place is to be well ventilated.

14.2 The bath containing the protective should have an efficient exhaust ventilating system which should be in operation at all times when the bath contains protective.

14.3 Mechanical handling of articles dipped in the bath should be used whenever possible.

14.4 Rubber gloves and aprons are to be worn by personnel working at the dipping bath.

15 When applying protectives by brushing or spraying, the following precautions must be observed:

15.1 The workshop must be well ventilated and contain a mechanical exhaust ventilating system near ground level. Ill ventilated or warm workshops favour the concentration of toxic fumes.

15.2 Air inlets, 10 feet from ground level should be installed in the workshop wall opposite to that in which the mechanical system is installed.

15.3 Overalls, approved type of respirator and eye protection should be worn.

- 15.4 The component being sprayed should be positioned between the operator and the exhaust ventilating system.
- 15.5 The apparatus used for spraying should be set at the minimum practicable pressure.
- 15.6 Adequate fire precautions must be enforced.
- 15.7 When working in confined spaces, remote airline breathing apparatus is to be worn and a safety man positioned.