

## Alkyd Disruptive Pattern Paint (Vehicles & Equipment)

**Editorial Note** - This version of this specification removes references to GPC and incorporates a general format update.

APAS Document D188 should be read to obtain a broad overview of the Australian Paint Approval Scheme (APAS).

Manufacturers who wish to participate in APAS within Australia should consult APAS documents D177 (for Australian manufacturers), D178 (for overseas manufacturers) & D180 (for toll manufacturers).

Manufacturers who wish to participate in APAS within their own countries should consult APAS document D175.

APAS approval to this specification may be gained by compliance with the requirements detailed in this specification and those in document D192 "The APAS Product Approval System".

All APAS Documents may be downloaded from the APAS web site located at:

[www.apas.gov.au](http://www.apas.gov.au)

### 1. Scope

#### 1.1 Description & guide for users

A low gloss, heat and petrol resistant alkyd finishing enamel with specified infra red reflectance (IRR) properties for use on service vehicles and equipment to provide a disruptive pattern painting (DPP) system.

The paint system consists of alkyd primer to APAS 0162 and the alkyd finishing coats. It may be applied to new equipment or over existing aged alkyd or polyurethane paint to produce the disruptive pattern.

May be applied by brush or roller, or by conventional air spray when thinned with not more than 15% by volume of mineral turpentine. Surface dry in 30 minutes and may be overcoated after 18 hours.

#### 1.2 Sub-classes

This specification covers sub-classes:

165/1 - Conventional IR reflectance

165/2 - Near IR reflectance

#### 1.3 Basis of this specification

This specification is not based on any known specification or standard.

### 2. Other relevant documents

#### 2.1 Compliance

Paints approved under this specification are not described in either AS/NZS 2311 or AS/NZS 2312.

#### 2.2 Referenced documents

Reference is made to:

*Specification Army (Aust) 6477 for Paint System (Alkyd-DPP) for Defence Equipment* (has been incorporated into this specification).

*AS/NZS 1580 Paints and related materials - Methods of test*

available in Australia from Standards Australia in all capital cities (and on-line at [www.standards.com.au](http://www.standards.com.au)). In New Zealand, they are available from Standards New Zealand offices.

*Uniform Paint Standard (Appendix I of the Standard for the Uniform Scheduling of Drugs & Poisons)*, available from Australian Government Info bookstores in all capital cities.

### **3. Compositional Requirements**

#### **3.1 Binder**

The binder shall comprise an alkyd resin solution in solvent.

#### **3.2 Volatiles**

The volatile portion shall principally be comprised of hydrocarbons.

#### **3.3 Pigmentation**

The pigmentation shall be chosen to impart the properties detailed in Table 1 below.

#### **3.4 Colour requirements**

Available in the following *Australian Army Enamel, Alkyd - DPP (paint system) lustreless Camouflage colours;*

Black, Brown, Green & Pilbara Brown

Colour standards are available for purchase from Scientific Services Laboratory or commercial outlets.

### **4. Requirements for Product Approval**

#### **4.1 General requirements**

The product and its application for approval shall comply with the relevant requirements of APAS Document D192 during the life of the approval.

#### **4.2 Technical requirements**

The product shall comply with all the requirements of Table 1 below.

#### **4.3 Safety & environmental requirements**

The product shall comply with the requirements of clause 3.7 of APAS Document D192.

Read the Material Safety Data Sheet for the product before use and comply with the relevant state regulations.

Since the paint contains a hydrocarbon solvent, the paint is flammable and should be stored away from all sources of heat or ignition. Containers should be resealed

immediately after use and good ventilation provided during use to minimise the risk of fire or explosion and the long term toxic effects of absorption of the vapour into the lungs.

All pumping equipment should be adequately earthed.

A full face air fed respirator should be used when spraying.

**Table 1 – Performance Requirements**

TEST	AS/NZS 1580 METHOD	REQUIREMENTS
Preliminary examination	103.1	To be readily reincorporated. Shall be free of coarse particles, gel and foreign matter.
Fineness of grind	204.1	Maximum 25µm
Condition on extended storage	211.2	After storage for 18 months at 25± 5°C in full unopened containers, the paint shall be capable of being returned to a uniform homogeneous mixture by manual stirring.
	211.1	Settling shall not be rated at less than 6 and shall be readily reincorporated.
Consistency	214	To be within ± 5% of the stated value
Thinning Properties	208.1	The paint shall be capable of being mixed in all proportions with mineral turpentine (to AS1700).
Application properties - brushing - roller coating - conventional spray	205.1	To be readily applied and shall produce a uniform film free of defects.  For spray application, after thinning with no more than 15% mineral turpentine, to be readily applied and shall produce a uniform film free of defects.
	205.3	
	205.2	
Recoating properties	404.1	Using methods 205.1, 205.2 or 205.3, apply the paint in successive coats allowing 16 hours between coats. There shall be no working up of the previous coat or development of other film defects during application or drying.
Surface dry time	401.1	Not more than 30 mins
Hard dry condition (mechanical thumb test)	401.6	After 4 hours, the film shall not mark.
Dry hiding power - contrast ratio	213.2	Not less than 98% @ 16 m <sup>2</sup> /L
Gloss	602.2	7 - 10 units at 60°
Infra red reflectance	Note 3	Refer Table 2

TEST	AS/NZS 1580 METHOD	REQUIREMENTS
Colour <sup>1</sup>	601.1	Close visual match to the standard. Under D65 illumination; Green - less than 1.5 CIE units from Australian Army colour Olive Drab Lustreless 7650/ADE(M)146-1/1 Camouflage Tan - less than 2.5 CIE units from US Federal specification 595 colour 30219 Black - less than 2.5 CIE units from US Federal specification 595 colour 37038 Pilbara Brown - less than 2.5 CIE units from US Federal specification 595 colour 30109
Finish	603.1	One coat applied by brush to a sealed card shall give a smooth film of uniform appearance with only slight brushmarks.
Bend test	402.1	After air drying for seven days, the film shall show no sign of cracking or loss of adhesion after bending round a 6 mm mandrel.
Scratch resistance	403.1	After air drying for seven days, the needle shall not penetrate through to the underlying metal under a load of 800g
Resistance to impact - Falling weight test	406.1	After air drying for seven days, the film shall be subjected to both a direct and reverse impact of 4.5 joules. There shall be no cracking, flaking or loss of adhesion.
Resistance to natural weathering	457.1	No integrity failure after 12 months exposure at 45°N at a temperate site and the ratings for change in gloss, discolouration, colour change and chalking shall not exceed 1.  Infra Red Reflectance shall not decrease by more than 5% of the initial IR reflectance.
Resistance to accelerated weathering	483.2	No integrity failure after 500hrs and the ratings for change in gloss, discolouration, colour change and chalking shall not exceed 1.  Infra Red Reflectance shall not decrease by more than 5% of the initial IR reflectance.
Adhesion	408.4	Crosshatch adhesion result $\leq 2$
Water Resistance	455.1	After air drying for seven days, a panel immersed in distilled water for seven days then removed and allowed to dry for 18 hrs shall show no defects and appear identical to an unimmersed panel similarly prepared.

TEST	AS/NZS 1580 METHOD	REQUIREMENTS
Mineral Oil Resistance	454.1	After air drying for seven days, a panel immersed in mineral oil at 50°C ± 2°C for seven days then removed and wiped free of oil, shall show no defects and appear identical to an unimmersed panel similarly prepared.
Petroleum Spirit Resistance	453.1	After air drying for seven days, a panel immersed in petroleum spirit for seven days then removed, dried and examined, shall show no defects and appear identical to an unimmersed panel similarly prepared.
Heat Resistance	407.1	After air drying for seven days, a panel subjected to a temperature of 100°C ± 3°C for 24 hrs shall show no significant change in colour or gloss, cracking or loss of adhesion.

**Note 1:** Colour standards may be obtained from Scientific Services Laboratory (SSL) 177 Salmon St Port Melbourne VIC 3207 tel. 03-9248-4902; fax 03-9646-5165 or email on apas@agal.gov.au

**Note 2:** Unless otherwise stated, the paint shall be applied at 20 - 30 µm dry film build

**Note 3:** Infra-red reflectance measurement may employ any spectrophotometer capable of measuring reflectance at 800 nm.

## **Table 2 – IR Reflectance Requirements**

	Conventional IR (for 0165/1 only)	NIRR (for 0165/2 only)
Camouflage Green	40-50%	> 60%
Camouflage Tan	20-30%	> 70%
Black	Less than 10%	> 65%
Pilbara Brown	20-30%	> 70%