

ACRYLIC POLYURETHANE FINISHING SYSTEM FOR VEHICLES

1 SCOPE

A two-component full gloss or low gloss solvent-borne acrylic polyurethane finish. Applied by airless spray or conventional air spray as a multi-coat system over the appropriate primer and surfacer.

2 BACKGROUND

- To obtain a broad overview of the Australian Paint Approval Scheme (APAS), refer to APAS document AP-D001.
- To obtain an overview of restricted ingredients in APAS certified products, refer to APAS document AP-D123.
- To obtain the current list of APAS participating manufacturers (and suppliers) and resellers, refer to APAS document AP-D152.
- To obtain an overview of how to participate in the APAS, refer to APAS document AP-D177.
- APAS approval to this specification may be gained by compliance with the requirements detailed in this specification and those in APAS document AP-D192.

3 DESCRIPTION AND GUIDE FOR USERS

3.1 General Requirements

- A two-component full gloss or low gloss solvent-borne acrylic polyurethane finish. Applied by airless spray or conventional air spray as a multi-coat system over the appropriate primer and surfacer.
- Principally used as a refinish or repair system for vehicles and equipment finished in thermosetting acrylic or baked enamel finishes. The user should take note of any directions recommended by the manufacturer.
- Dry film thickness typically 35-50µm in 1 or 2 coats. Recoating time 10 minutes; time before buffing or polishing 16 hours unless force dried. The thickness of the metal primer and surfacer are not defined by this specification.
- Available in a range of colours including Army camouflage colours (SAE AMS STD 595): Camouflage Green, Camouflage Brown, Pilbara Brown and Black, Olive Drab, Deep Bronze Green and the manufacturers colour range.

3.2 Sub-Classes

- This specification incorporates the following sub-classes:
 - 0150/1:** Full gloss finishing coat
 - 0150/2:** Metal primer
 - 0150/3:** Primer surfacer
 - 0150/4:** Thinner
 - 0150/5:** Low gloss finishing coat

3.3 Basis of this Specification

- This specification is not based on any known specification or standard.
- Paints approved under this specification do not comply with any of the paint types referenced in either AS/NZS 2311 or AS/NZS 2312.

4 REFERENCED DOCUMENTS

- The following standards are referenced in this document:
 - AS/NZS 1580** – Paints and related materials: Methods of test.
 - AS/NZS 2311** – Guide to the painting of buildings
 - AS/NZS 2312** – Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings – Paint Coatings
 - SAE AMS STD 595** – Colours used in Government Procurement

These documents may be purchased through the Reference Standards Australia website:

<https://www.standards.org.au/>

- The Poisons Standard June 2021:** Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) No. 33, Part 2: Control on Medicines and Poisons, Section Seven / Appendix I Paint or Tinters

This document is available from the Australian Government Federal Register of Legislation web site at:

<https://www.legislation.gov.au/Details/F2021L00650>

- The following APAS documents are referenced in this document:
 - AP-D001 Rules Governing How APAS® Operates
 - AP-D123 Restrictions on Ingredients in Product Formulations
 - AP-D152 APAS® Participating Manufacturers and Resellers
 - AP-D177 Rules Governing How Product Manufacturers participate in APAS®
 - AP-D181 Volatile Organic Compounds (VOC) Limits
 - AP-D192 Rules Governing APAS® Product Certification Scheme

All APAS documents are available for download from the APAS website: <https://vs.csiro.au/apas/documents/>

5 COMPOSITIONAL REQUIREMENTS

5.1 Binder

- The binder in the finishing coats (sub-classes 0150/1 and 0150/5) shall typically consist of a resin polymerised essentially from acrylic monomers with an aliphatic isocyanate curing agent.
- There are no restrictions on the binder for the primers.

5.2 Volatiles

- The volatile component shall typically consist of hydrocarbon and oxygenated solvents.
- For VOC content restrictions, refer to APAS document AP-D181.



ACRYLIC POLYURETHANE FINISHING SYSTEM FOR VEHICLES

5.3 Pigmentation

- a) The pigmentation shall be chosen to impart the properties detailed in clause 7, Table 1 below.
- b) Some colours (e.g., reds, oranges or yellows) may variously contain lead or chromate-based pigments qualifying specific Schedule status according to the SUSMP. Such colours shall be clearly identified in accordance with local legislation and regulations.

5.4 Colour

- a) Products approved under this specification are normally available in a wide range of colours including disruptive pattern (DPP) or camouflage colours, Olive Drab, Deep Bronze Olive and others as specified.

6 PRODUCT APPROVAL REQUIREMENTS

6.1 General Requirements

- a) The product and its application for approval shall comply with the relevant requirements of APAS document AP-D192 during the life of the approval.

6.2 Technical Requirements

- a) Tests are to be carried out under the routine conditions of AS/NZS 1580.101.5 unless otherwise specified.
- b) Panels are to be cured for 24 hours before testing unless otherwise specified.
- c) **Finishing Products:** sub-classes 0150/1 and 0150/5 - all testing shall be performed in accordance with clause 7, Table 1 below.
- d) **Priming Products:** sub-classes 0150/2 and 0150/3 - initial testing shall be performed in accordance with the tests detailed in clause 7, Table 1 under the heading **Individual Component Testing**.
- e) The primer shall subsequently be included in some tests involving the coating system and satisfactory test results as part of the coating system tested will allow granting of approval to the particular primer used.
- f) Subject to compliance with all the requirements of this specification, the level of Approval appropriate to the application shall be given to the system.

6.3 Health and Safety Requirements

- a) The manufacturer's Safety Data Sheet (SDS) must be studied closely prior to using the product and complied with during use of the product.
- b) 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.
- c) Finish coats at least contain isocyanates and thus care should be taken to avoid contact with the skin by the use of protective clothing and barrier cream. Isocyanates can cause severe irritation to eyes and respiratory tract

- necessitating strict attention to safety. All pumping equipment should be adequately earthed. A full-face air fed respirator should be used when spraying.
- d) Products intended for sale in Australia shall comply with all the requirements of the SUSMP. Products intended for sale in other countries shall comply with all local WHS and environmental requirements.
 - e) The product shall comply with all requirements of clause 6.3 and 6.4 of APAS document AP-D192.



SPECIFICATION AP-S0150



ACRYLIC POLYURETHANE FINISHING SYSTEM FOR VEHICLES

7 TABLE 1: PERFORMANCE PROPERTIES

TEST	AS/NZS 1580 METHOD	REQUIREMENTS
Individual Component Testing - To be carried out on both Part A and Part B components - Applicable to ALL sub-classes except 0150/4		
Preliminary Examination	103.1	To be readily reincorporated. Shall be free of coarse particles, gel and foreign matter.
Density	202.1	To be recorded.
Non-volatile Content	301.1	To be recorded.
Fineness of Grind	204.1	0150/1: Maximum 10µm. 0150/5: Maximum 25µm.
Reincorporation after Storage	203.1 Method B	After storage for 18 months at ambient temperature, there shall be no curdling, gelling or seeding. Manual stirring shall produce a uniform product.
	211.1	The settling rating shall not be less than 6.
VOC Content	APAS AP-D181	Refer to APAS document AP-D181 for method and limits. If the APAS specification is not listed on AP-D181, a declaration of VOC content is still required.
Finishing Paint Testing – applicable to sub-class 0150/1 and 0150/5		
Consistency - Flow Cup	214.2	To be within ± 5% of stated value. Other appropriate methods of test may also be used by prior consultation with the Executive Officer, APAS.
Application Properties - Spraying	205.2 205.4	To produce a smooth film free from defects.
Surface Dry Condition	401.1	Maximum 30 minutes.
Hard Dry Condition (Mechanical Thumb Test)	401.6	Maximum 16 hours.
Specular Gloss - 60°	602.2	0150/1: Minimum 85. 0150/5: 7 – 10.
Finish	603.1	Shall be smooth, even and free from defects.
Colour	601.1	Shall be a close match to the specified standard.
	601.2	To be within 1.5 NBS units.
Reincorporation after Storage	101.4	To retain the above properties after storage for 18 months under routine conditions.



SPECIFICATION AP-S0150



ACRYLIC POLYURETHANE FINISHING SYSTEM FOR VEHICLES

TEST	AS/NZS 1580 METHOD	REQUIREMENTS
Complete Coating System		
Resistance to Artificial Weathering - (Fluorescent UV - condensation type instrument)	483.2	After 1000 hours (continuous alternating cycles of 4 hours UV @ 60°C and 4 hours condensation @ 50°C), no integrity failure and ratings shall not be greater than:
	481.1.2	Discolouration 2
	481.1.5	Gloss Change 2
	481.1.11	Chalking 1
	481.1.12	Colour Change 2
Resistance to Natural Weathering	457.1	After 24 months exposure at 5°N, no integrity failure and ratings shall not be greater than:
	481.1.2	Discolouration 2
	481.1.5	Gloss Change 2
	481.1.11	Chalking 1
	481.1.12	Colour Change 2



SPECIFICATION AP-S0150



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8 APPENDIX A

Document History

Status: Current
Version: 10
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Document Version No.:	Date Published:	Summary of Changes:
10	30-08-2021	<ul style="list-style-type: none">• General format change to clause 1 and 6.2• Updated background information in clause 2• Updated SUSMP information• Updated APAS website information
9	16-11-2020	<ul style="list-style-type: none">• Addition of Appendix A Document History and removal of the Editorial Note previously used in specification versions• Updated document to the current format• Updated internal and external document references• Inclusion of VOC Content requirement to Table 1 Performance Properties• Addition of "People + Product = Protection" to Footer
8	08-10-2003	<ul style="list-style-type: none">• Deleted reference to GPC numbering and incorporated a general format update
7	07-03-2002	<ul style="list-style-type: none">• Incorporated additional colours, specifically Army camouflage colours
6	05-03-2001	<ul style="list-style-type: none">• Initiated the second stage of the move to new specification numbering with prominence given to the new number (previously GPC-E-150)