



COPAL STOVING VARNISH FOR AMMUNITION

1 SCOPE

A clear lead-free varnish which produces a tough yellow film after stoving.

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 clear lead-free varnish which produces a tough yellow film after stoving.
- Products are used on the interior and exterior of ammunition components.

3.2 Sub-Classes

- This specification does not incorporate any sub-class.

3.3 Basis of this Specification

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

4 REFERENCED DOCUMENTS

- The following standard is referenced in this document
 - AS/NZS 1580** – Paints and related materials: Methods of test.

This document 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 shall typically consist of oleoresinous varnish made from a rosin modified phenol formaldehyde resin containing not less than 14% of condensation product. These products also contain linseed oil.

5.2 Volatiles

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

5.3 Pigmentation

- Not applicable.

6 PRODUCT APPROVAL REQUIREMENTS

6.1 General Requirements

- 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

- The product shall comply with **all** the requirements of clause 8, Table 1 below.
- The manufacturers own quality control schedule of tests and limits shall be allowed subject to the approval of the Executive Officer (EO), APAS.
- On request, the EO may request the results of the tests for a batch and compare these with previous batches.
- Density and non-volatile content by weight (NVCW) figures for each production batch of the approved product shall be within $\pm 3\%$ of the actual (not theoretical) figures quoted in the original product approval submission (APAS document AP-D139).
- 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

- Shall not be a Schedule 1, Schedule 2 or Schedule 3 paint (SUSMP).



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- b) The manufacturer's Safety Data Sheet (SDS) must be studied closely prior to using the product and complied with during use of the product.
- c) Since the products covered by this specification contain hydrocarbon chemical solvents, the paint is flammable and should be stored away from all sources of heat or ignition.
- d) 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.
- e) Care should be taken to avoid contact with the skin by the use of protective clothing and barrier cream. All pumping equipment should be adequately earthed. A full-face air fed respirator should be used when spraying.
- f) 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.
- g) The product shall comply with all requirements of clause 6.3 and 6.4 of APAS document AP-D192.

7 APPENDIX A

Preparation of Stoved Film

- a) Tinplate panels shall be sanded in accordance with AS/NZS 1580.105.2.
- b) One coat of the varnish shall be applied by spray to produce a dry film mass of 25-28 g/m².
- c) After allowing to stand for 15 minutes under air drying conditions according to AS/NZS 1580.101.1, the panel shall be stoved for two hours at 150°C according to AS/NZS 1580.101.3.
- d) The panel shall then be conditioned for 24 hours under air drying conditions before testing.



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8 TABLE 1: PERFORMANCE PROPERTIES

TEST	AS/NZS 1580 METHOD	REQUIREMENTS
Preliminary Examination	103.1	To be readily reincorporated. Shall be free of coarse particles, gel and foreign matter.
Flash Point	AS 2106	Minimum to be stated.
Application Properties – Air Spraying	205.2	To show uniform appearance, no running or sagging.
Non-volatile Content by Volume (Volume Solids)	301.2	Minimum 45%. <ul style="list-style-type: none">Volume solids may be determined theoretically from raw material data except where solid constituents incorporate sealed air voids.
Properties of Stoved Film <ul style="list-style-type: none">FinishBend TestAdhesion (Knife Test)	Clause 7, Appendix A 603.1 402.1 408.2	The film shall be smooth, hard, firmly adherent, continuous and free of imperfections. No cracking or loss of adhesion when bent around a 12mm mandrel. The film shall be removable as a continuous film and not as brittle flakes.
Storage Properties <ul style="list-style-type: none">Preliminary ExaminationFinish of Stoved Film	103.1 603.1	After storage for 12 months at 16-26°C in a full 500mL container: No skinning, gelation or separation. The film shall be smooth, hard, firmly adherent, continuous and free from imperfections.
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 .



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9 APPENDIX B

Document History

Status: Current
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Document Version No.:	Date Published:	Summary of Changes:
9	27-08-2021	<ul style="list-style-type: none">• General format change to clause 1• Updated background information in clause 2• Updated SUSMP information• Updated APAS website information
8	16-11-2020	<ul style="list-style-type: none">• Addition of Appendix B 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
7	22-05-2003	<ul style="list-style-type: none">• Deleted reference to GPC numbering and incorporated a general format update
6	05-02-2001	<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-V-147)