



Standard Specification for Polyvinyl Acetate-Based Emulsion Adhesives¹

This standard is issued under the fixed designation D4317; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

INTRODUCTION

This specification is a replacement for Federal Specification MMM-A-180C, Class B, August 6, 1979, Adhesive, Vinyl Acetate Resin Emulsion, which superseded MMM-A-193C, October 26, 1967. It has been expanded to include the more water-resistant polyvinyl acetate-based adhesives now on the market, in addition to the less water-resistant ones formerly covered by the Federal Specification.

1. Scope*

1.1 This specification covers polyvinyl acetate or polyvinyl acetate copolymer resin emulsion adhesives suitable for use on wood, wood-based substrates, or plastic laminates. It does not cover the group of polyvinyl-based adhesives which are suitable for bonding flexible films.

1.2 The adhesives are classified at three performance levels in accordance with water-resistance as shown in [Table 1](#) and [Table 2](#). See [Section 5](#) for a description of the expected exposure conditions for each class of adhesive. See [Table X1.1](#) for a classification of typical end products that are manufactured using adhesives at the three performance levels covered by this specification.

1.3 The following index is provided as a guide to the test methods portion of this specification:

	Section
Tests for Physical Properties	9
Viscosity	9.1.1
Density	9.1.2
Nonvolatiles	9.1.3
pH	9.1.4
Tests for Adhesive Bond	10
Block Shear Strength, Compression	10.2
Plywood Shear Tests	10.3

1.4 The values stated in SI units are to be regarded as the standard. The values given in parenthesis are for information purposes only.

1.5 The following safety hazards caveat pertains only to the test method portion, [Sections 9](#) and [10](#), of this specification: *This standard does not purport to address all of the safety*

concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

- [D905 Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading](#)
- [D906 Test Method for Strength Properties of Adhesives in Plywood Type Construction in Shear by Tension Loading](#)
- [D907 Terminology of Adhesives](#)
- [D1084 Test Methods for Viscosity of Adhesives](#)
- [D1490 Test Method for Nonvolatile Content of Urea-Formaldehyde Resin Solutions](#)
- [D1875 Test Method for Density of Adhesives in Fluid Form](#)
- [D2556 Test Method for Apparent Viscosity of Adhesives Having Shear-Rate-Dependent Flow Properties Using Rotational Viscometry](#)
- [E4 Practices for Force Verification of Testing Machines](#)
- [E70 Test Method for pH of Aqueous Solutions With the Glass Electrode](#)
- [E1953 Practice for Description of Thermal Analysis and Rheology Apparatus](#)

¹ This specification is under the jurisdiction of ASTM Committee [D14](#) on Adhesives and is the direct responsibility of Subcommittee [D14.30](#) on Wood Adhesives.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

*A Summary of Changes section appears at the end of this standard