



Standard Test Methods of Static Tests of Wood Poles¹

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INTRODUCTION

One of the important factors involved in the design and economical use of poles for the support of aerial communication and power lines is the value of the maximum fiber stress for the different species of timber used for poles. In order to gain information on this characteristic, mechanical tests on pole size specimens have been made by numerous investigators. These tests have been made in various manners, such as the use of a testing machine, holding the pole butt horizontally in a crib and applying the load at the tip, setting poles in the earth and applying the load at the tip, etc. The amount of seasoning the test poles have received and the type of preservative treatment applied to the poles are additional variables. The result is that it is difficult, if not impossible, to obtain sufficient information pertaining to the various tests to permit accurate comparisons.

It is the purpose of these test methods to cover testing procedures in sufficient detail so that the results of tests made in accordance with the test methods defined will be comparable. It is, of course, not intended that using other test methods that may be better adapted to a particular investigation should be discouraged. However, experience gained from tests of several hundred poles has indicated the test methods specified are entirely practicable.

The data forms presented have been found to be convenient for recording the test data and for making the calculations necessary for the proper analysis of the test results.

1. Scope

1.1 These test methods cover determination of the bending strength and stiffness of wood poles. Knowledge of these properties is used in providing for reliable and economical design with poles of different species, size, or grade.

1.2 Two test methods are included: the cantilever test method, and the machine test method.

1.3 Provision is also made for extracting small clear specimens from the butt section and determining static bending and compression parallel to grain strength values in accordance with Methods D 143.

1.4 The procedures specified in these test methods apply to tests of either treated or untreated material.

1.5 The values stated in inch-pound units are to be regarded as the standard. SI values are given in parentheses and are provided for information only.

1.6 *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 appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

D 143 Methods of Testing Small Clear Specimens of Timber²

D 198 Test Methods of Static Tests of Timbers in Structural Sizes²

2.2 ANSI Standard:

O5.1 Specifications and Dimensions for Wood Poles³

3. Summary of Test Methods

3.1 Major Tests:

3.1.1 In the cantilever test method the pole is supported securely from butt to ground line in a horizontal position, and a load is applied near the pole tip by means of a pulling line.

3.1.2 In the machine test method, the pole is supported near the butt and tip, and a load is applied at the ground line by the moving head of a mechanical testing machine.

3.1.3 Determinations of age, rate of growth, moisture, and density are also made.

¹ These test methods are under the jurisdiction of ASTM Committee D-7 on Wood and are the direct responsibility of Subcommittee D07.04 on Pole and Pile Products.

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² *Annual Book of ASTM Standards*, Vol 04.10.

³ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

