



Designation: D1990 – 19

Standard Practice for Establishing Allowable Properties for Visually-Graded Dimension Lumber from In-Grade Tests of Full-Size Specimens¹

This standard is issued under the fixed designation D1990; 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.

INTRODUCTION

Visual stress-grades of lumber manufactured in North America have evolved from the procedures of Practice D245. Allowable stress and modulus of elasticity values were determined for these grades using the procedures of Practice D245 and the appropriate clear wood values of Practice D2555. The clear wood values of Practice D2555 were developed from tests of small clear specimens.

Development of allowable stress and modulus of elasticity values from tests of full-size structural lumber as commercially produced and marketed has become possible with the development of suitable test equipment that permits rapid rates of loading to test large numbers of pieces from commercial lumber production. These tests can be carried out at the production sites or in a laboratory.

1. Scope

1.1 This practice covers the principles and procedures for establishing allowable stress values for bending, tension parallel to grain, compression parallel to grain and modulus of elasticity values for structural design from “In-Grade” tests of full-size visually graded solid sawn dimension lumber. This practice also covers procedures for periodic monitoring, and additional procedures, if needed, for evaluation and possible reassessment of assigned design values. This practice is focused on, but is not limited to, grades which used the concepts incorporated in Practice D245 and were developed and interpreted under American Softwood Lumber PS 20.

1.2 A basic assumption of the procedures used in this practice is that the samples selected and tested are representative of the entire global population being evaluated. This approach is consistent with the historical clear wood methodology of assigning an allowable property to visually-graded lumber which was representative of the entire growth range of a species or species group. Every effort shall be made to ensure the test sample is representative of population by grade and size (see 7.1.1 and 7.1.2).

1.3 Due to the number of specimens involved and the number of mechanical properties to be evaluated, a methodol-

ogy for evaluating the data and assigning allowable properties to both tested and untested grade/size cells is necessary. Sampling and analysis of tested cells are covered in Practice D2915. The mechanical test methods are covered in Test Methods D198 and D4761. This practice covers the necessary procedures for assigning allowable stress and modulus of elasticity values to dimension lumber from In-Grade tests. The practice includes methods to permit assignment of allowable stress and modulus of elasticity values to untested sizes and grades, as well as some untested properties. The practice includes procedures for periodic monitoring of the species or species group to quantify potential changes in the product and verification of the assigned design values through, evaluation, and reassessment.

NOTE 1—In the implementation of the North American In-Grade test program, allowable stress values for compression perpendicular to grain and shear parallel to grain for structural design were calculated using the procedures of Practice D245.

1.4 This practice only covers dimension lumber.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This practice is under the jurisdiction of ASTM Committee D07 on Wood and is the direct responsibility of Subcommittee D07.02 on Lumber and Engineered Wood Products.

Current edition approved Oct. 1, 2019. Published November 2019. Originally approved in 1991. Last previous edition approved in 2016 as D1990–16. DOI: 10.1520/D1990-19.