



Standard Methods for Conducting Machining Tests of Wood and Wood-Base Materials¹

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INTRODUCTION

One of the significant characteristics of wood is the facility with which it can be machined and fabricated. Different species, however, vary greatly in their behavior under cutting tools, so that some systematic method is needed for determining their suitability for uses where the character of the machined surface is of prime importance. Such uses include cabinetwork, millwork, and other products where favorable machining properties are essential to good finish. For such products as common boards, on the other hand, good machining properties are secondary, although still an asset.

The machining test procedures presented in these methods cover such common operations as planing, shaping, turning, boring, mortising, and sanding. They are the result of many years of extensive research and development and include practical methods for qualitatively evaluating and interpreting the results. Because of their satisfactory use with a wide range of materials, it is believed that the methods are equally applicable to species, hardwoods and softwoods, and to wood-base materials, such as plywood, particleboard, and hardboard.

1. Scope

1.1 These methods cover procedures for planing, shaping, turning, mortising, boring, and sanding; all of which are common wood-working operations used in the manufacture of wood products. These tests apply, in different degrees, to two general classes of materials:

1.1.1 Wood in the form of lumber, and

1.1.2 Wood-base panel materials.

1.2 Because of the importance of planing, some of the variables that affect the results of this operation are explored with a view to determining optimum conditions. In most of the other tests, however, it is necessary to limit the work to one set of fairly typical commercial conditions in which all the different woods are treated alike.

1.3 Several factors enter into any complete appraisal of the machining properties of a given wood. Quality of finished surface is recommended as the basis for evaluation of machining properties. Rate of dulling of cutting tools and power consumed in cutting are also important considerations but are beyond the scope of these methods.

1.4 Although the methods presented include the results of progressive developments in the evaluation of machining properties, further improvements may be anticipated. For example, by present procedures quality of the finished surface is evaluated by visual inspection, but as new mechanical or physical techniques become available that will afford improved precision of evaluation, they should be employed.

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

NOTE 1—The values stated in inch-pound units are to be regarded as the standard. The metric equivalents of inch-pound units may be approximate.

2. Definitions and Descriptions of Terms

2.1 A number of special terms relating to wood and to machining are used in describing the procedures for the various machining studies. Definitions and descriptions of a number of the important terms used are presented in Appendix X1.

3. Significance and Use

3.1 Machining tests are made to determine the working qualities and characteristics of different species of wood and of different wood- and wood-base materials under a variety of machine operations such as are encountered in commercial

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