Designation: D1554 – 10 (Reapproved 2023)

Standard Terminology Relating to Wood-Base Fiber and Particle Panel Materials[1]

This standard is issued under the fixed designation D1554; 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

The terms included in this terminology standard are intended to apply to a family of lignocellulosic panel materials specially manufactured for use industrially as components (core, facing, or panels) of furniture, cabinets, and the like, and in building construction as siding, sheathing, partitions, door cores and paneling, acoustical treatments, and as structural components there and elsewhere where the combination of thickness, panel size, and properties satisfy a particular need.

1. Scope

1.1 This terminology standard covers a repository of terms and classifications essential for the business of Subcommittee D07.03.

1.2 Terms and classifications for inclusion in this terminology standard when needed for general use in the conduct of the standards over which Subcommittee D07.03 has jurisdiction.

1.3 The terms in this standard pertain to cellulosic boards or panel products derived from wood and the woody tissue of such plants as bagasse, flax, and straw. They fall into two general groups: (*1*) those manufactured from lignocellulosic fibers and fiber bundles where in manufacture the interfelting of the fibers and a natural bond are characteristics, and (*2*) those boards manufactured from a wide range in size and shape of particles ranging from fine elements approaching fibers in size to large flakes which are blended with synthetic resin adhesive and consolidated into boards characterized by the resin bond and usually known as resin-bonded particleboards or more commonly as particleboards.

1.4 *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.*

2. Terminology

GENERAL DEFINITIONS

fibrous-felted boards—a felted wood-base panel material manufactured of refined or partly refined lignocellulosic fibers characterized by an integral bond produced by an interfelting of fibers and in the case of certain densities and control of conditions of manufacture by ligneous bond, and to which other materials may have been added during manufacture to improve certain properties.

medium-density fiberboard (MDF)—a composite panel product composed primarily of cellulosic fibers in which the primary source of physical integrity is provided through addition of a bonding system cured under heat and pressure. Additives may be introduced during the manufacturing process to improve certain properties. MDF density at the time of manufacturing, is typically between 500 kg/m^3 (31 lb/ft^3) and 1000 kg/m^3 (62 lb/ft^3), based on a reported moisture content at the time of weight and volume measurements.

particleboards—a generic term for a composite panel primarily composed of cellulosic materials, generally in the form of discrete pieces or particles, as distinguished from fibers, bonded together with a bonding system, and that may contain additives.

wood-base fiber and particle panel materials—a generic term applied to a group of board materials manufactured from wood or other lignocellulosic fibers or particles to which binding agents and other materials may be added during manufacture to obtain or improve certain properties. Composed of two broad types, fibrous-felted and particleboards.

[1] This terminology is under the jurisdiction of ASTM Committee D07 on Wood and is the responsibility of Subcommittee D07.03 on Panel Products.

Current edition approved Aug. 1, 2023. Published August 2023. Originally approved in 1958. Last previous edition approved in 2016 as D1554 – 10 (2016). DOI: 10.1520/D1554-10R23.

wood-cement board—a panel material where wood usually in the form of excelsior is bonded with inorganic cement.

CLASSIFICATION OF FIBROUS-FELTED BOARDS

cellulosic fiberboard—a generic term for a homogeneous panel made from lignocellulosic fibers (usually wood or cane) characterized by an integral bond produced by interfelting of the fibers, to which other materials may have been added during manufacture to improve certain properties, but which has not been consolidated under heat and pressure as a separate stage in manufacture, said board having a density of less than 31 lb/ft^3 (specific gravity 0.50) but having a density of more than 10 lb/ft^3 (specific gravity 0.16).

hardboard—a generic term for a panel manufactured primarily from inter-felted lignocellulosic fibers (usually wood), consolidated under heat and pressure in a hot-press to a density of 31 lb/ft^3 (specific gravity 0.50) or greater, and to which other materials may have been added during manufacture to improve certain properties.

medium-density hardboard—a hardboard as previously defined with a density between 31 lb/ft^3 and 50 lb/ft^3 (specific gravity between 0.50 and 0.80).

high-density hardboard—a hardboard as previously defined with a density greater than 50 lb/ft^3 (specific gravity 0.80).

CLASSIFICATION OF PARTICLEBOARDS

low-density particleboard—a particleboard as previously defined with a density of less than 640 kg/m^3 (40 lb/ft^3) based on a reported moisture content at the time of weight and volume measurements.

medium-density particleboard—a particleboard as previously defined with a density between 640 kg/m^3 and 800 kg/m^3 (40 lb/ft^3 and 50 lb/ft^3) based on a reported moisture content at the time of weight and volume measurements.

high-density particleboard—a particleboard as previously defined with a density greater than 800 kg/m^3 (50 lb/ft^3) based on a reported moisture content at the time of weight and volume measurements.

NOTE 1—It is the industry practice to measure density of particleboards on the basis of moisture content and volume at time of test.

TERMS RELATING TO WOOD-BASE FIBER AND PARTICLE PANEL MATERIALS

air-felting—forming of a fibrous-felted board from an air suspension of damp or dry fibers on a batch or continuous forming machine (sometimes referred to as the dry or semi-dry process).

binder—an extraneous bonding agent, either organic or inorganic, used to bind particles together to produce a particle board.

chips—small pieces of wood chopped off a block by ax-like cuts as in a chipper of the paper industry, or produced by mechanical hogs, hammermills, etc.

curls—long flat flakes manufactured by the cutting action of a knife in such a way that they tend to be in the form of a helix.

factory-finished boards—boards with a factory-applied surface as, for example, powder or liquid coatings or overlays. These finished boards require no further field finishing.

factory-primed boards—boards with a factory-applied primer that requires subsequent finishing in the field.

fibers—the slender threadlike elements or groups of wood fibers or similar cellulosic material resulting from chemical or mechanical defiberization, or both, and sometimes referred to as fiber bundles.

flat-platen pressed—a method of consolidating and hot pressing a panel product in which the applied pressure is perpendicular to the faces.

flake—a small wood particle of predetermined thickness specifically produced as a primary function of specialized equipment of various types, with the cutting action across the direction of the grain (either radially, tangentially, or at an angle between), the action being such as to produce a particle of uniform thickness, essentially plane of the flakes, in over-all character resembling a small piece of veneer.

heat-treating—the process of subjecting a wood-base panel material (usually hardboard) to a special heat treatment after hot pressing to increase some strength properties and water resistance.

hot-pressing—process for increasing the density of a wet-felted or air-felted mat of fibers or particles by pressing the dried, damp, or wet mat between platens of hot-press to compact and set the structure by simultaneous application of heat and pressure.

particle—the aggregate component of a particle board manufactured by mechanical means from wood or other lignocellulosic material (comparable to the aggregate in concrete) including all small subdivisions of wood such as chips, curls, flakes, sawdust, shavings, slivers, strands, wood flour, and wood wool. Particle size may be measured by the screen mesh that permits passage of the particles and another screen upon which they are retained, or by the measured dimensions as for flakes and strands.

sawdust—wood particles resulting from the cutting and breaking action of saw teeth.

shaving—a small wood particle of indefinite dimensions developed incidental to certain woodworking operations involving rotary cutterheads usually turning in the direction of the grain; and because of this cutting action, producing a thin chip of varying thickness, usually feathered along at least one edge and thick at another and usually curled.

sizing agent—asphalt, rosin, wax, or other additive introduced to the stock for a fibrous-felted board, prior to forming, or added to the blend of particles and resin for a particle board, to increase water resistance.

slivers—particles of nearly square or rectangular cross-section with a length parallel to the grain of the wood of at least four times the thickness.

strand—a wood flake having a minimum predetermined length-to-width ratio of 2:1.

tempering—the manufacturing process of adding to a fiber or particle panel material a siccative material such as drying oil blends of oxidizing resin which are stabilized by baking or other heating after introduction.

wafer—a wood flake having a predetermined length of at least 1 3/16 in. (30 mm).

wet-felting—forming of a fibrous-felted board mat from a water suspension of fibers and fiber bundles by means of a deckle box, fourdrinier, or cylinder board machine.

wood flour—very fine wood particles generated from wood reduced by a ball or similar mill until it resembles wheat flour in appearance, and of such a size that the particles usually will pass through a 40-mesh screen.

wood wool (excelsior)—long, curly, slender strands of wood used as an aggregate component for some particleboards.

TERMS DESCRIBING WOOD-BASE FIBER AND PARTICLE PANEL PRODUCTS

acoustical board—a low-density, sound absorbing cellulosic fiberboard having a factory-applied finish and a fissured, felted-fiber, slotted or perforated surface pattern provided to reduce sound reflection. Usually supplied for use in the form of tiles.

building board—a natural finished multi-purpose cellulosic fiberboard.

extruded particleboard—a particleboard manufactured by forcing a mass of particles coated with an extraneous binding agent through a heated die with the applied pressure parallel to the faces and in the direction of extruding.

hardboard underlayment—a service-grade hardboard made or machined to close thickness tolerances for use as a leveling course and to provide a smooth surface under floor covering materials.

insulating formboard—a specially fabricated cellulosic fiberboard designed for use as a permanent form for certain poured-in-place roof constructions.

insulating roof deck—a cellulosic fiberboard product designed for use in open-beam ceiling roof construction. The product is composed of multiple layers of structural insulating board laminated together with water-resistant adhesive.

intermediate fiberboard sheathing—a cellulosic fiberboard sheathing product, approximately 22 lb/ft^3, used in frame construction under masonry veneer, siding, shingles, and stucco.

mat-formed particleboard—a particleboard in which the coated particles are formed first into a mat having substantially the same length and width as the finished board before being flat-platen pressed.

nail-base fiberboard sheathing—a specially manufactured cellulosic fiberboard product, approximately 25 lb/ft^3, designed for use in frame construction to permit the direct application of certain exterior siding materials such as wood-based or composite shingles.

particleboard corestock—common name given to particle board manufactured for use as a core for overlaying.

particleboard panel stock—common name given to particle board manufactured primarily for use as panel material, and in which the surfaces may be treated to obtain decorative effects.

particleboard underlayment—an underlayment grade particleboard made or machined to close thickness tolerances for use as a leveling course and to provide a smooth surface under floor covering materials.

perforated hardboard—hardboard with closely spaced factory punched or drilled holes.

planed-to-caliper hardboard—hardboard that is machined to a close thickness tolerance.

roof insulation board—structural insulating board fabricated for use as above-deck roof insulation.

service hardboard—a hardboard of about 55 lb/ft^3 (specific gravity 0.88) density intended for use where standard strength board is not required and better dimensional stability is desired.

screen-back hardboard (S1S)—hardboard with a reverse impression of a screen on the back produced when a damp or wet mat is hot-pressed into a board and dried in the press.

sheathing—cellulosic fiberboard for use in housing and other building construction, which may be integrally treated, impregnated or coated to give it additional water resistance.

shingle backer—a specially fabricated sheathing-grade cellulosic fiberboard used as a backer strip in coursed shingle construction.

sound-deadening board—a specially manufactured cellulosic fiberboard product for use in building construction in wall and floor assemblies to reduce sound transmission.

smooth - two - side hardboard (S2S)—hardboard produced from a dry mat pressed between two smooth hot platens.

standard hardboard—hardboard substantially as manufactured at the end of hot pressing, except for humidification to adjust moisture content, trimming to size, and other subsequent machining, and having the properties associated with hardboard meeting specifications for that quality product.

tempered hardboard—a hardboard subjected to tempering as previously defined or specially manufactured with other variation in usual process so that the resulting product has special properties of stiffness, strength, and water-resistance associated with boards meeting specifications for that quality product.

tempered service hardboard—service hardboard, as previously defined, which has been given a tempering treatment to improve such properties as stiffness, strength, and water resistance.