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Standard Terminology Relating to Wood-Base Fiber and Particle Panel Materials¹

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INTRODUCTION

The terms included in this terminology 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. The usual alternative materials to these wood-base panel materials are wood in the form of lumber and plywood, plastics, inorganic fiber cement boards, and gypsum board.

The terms used and defined herein differ slightly from some practice. Modifications appeared to be desirable to clarify the nomenclature since confusion exists because of the similarity of some existing terms with those for other materials. The use of the terms herein will do much to standardize the terms pertaining to cellulosic fiberboard, hardboard, and particleboard, the principal materials included. The board or panel materials included are those 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.

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/m³(31

lb/ft³) and 1000 kg/m³(62 lb/ft³), 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.

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

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cane) characterized by an integral bond produced by inter-felting 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/ft³ (specific gravity 0.50) but having a density of more than 10 lb/ft³ (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/ft³ (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 and 50 lb/ft³ (specific gravity between 0.50 and 0.80).

high-density hardboard—a hardboard as previously defined with a density greater than 50 lb/ft³ (specific gravity 0.80).

CLASSIFICATION OF PARTICLEBOARDS

low-density particleboard—a particleboard as previously defined with a density of less than 640 kg/m³ (40 lb/ft³) 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 – 800 kg/m³ (40 – 50 lb/ft³) 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/m³ (50 lb/ft³) 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 siccativ 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 1³/₁₆ 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.