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SURFACE VEHICLE INFORMATION REPORT

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Glossary of Fiberboard Terminology

1. Scope—This information report presents the terminology and definitions as used in the fiberboard industry.

2. References—There are no referenced publications specified herein.

3. Definitions—See Scope.

3.1 Fiberboard

3.1.1 DESCRIPTION—A broad general term for fibrous structures produced on any of the several types of fiber forming machines. The primary composition of these boards is normally refined cellulosic or matted wood fibers which may or may not be supplemented by the use of synthetic materials or chemical additives. The manufacture of fiberboards normally involves the formation of a wet web of suspended fibers, which is subsequently pressed, dried, and often calendared or laminated to develop desired end use properties.

3.1.2 PHYSICAL/MECHANICAL PROPERTIES—Except for the characteristic fibrous structure, the physical properties may vary over a wide range. The term fiberboard is normally limited to thicknesses of 0.009 in (0.23 mm) or above.

3.1.3 APPLICATIONS—The normal uses for this material include nearly all automotive applications where fibrous board structures are specified.

3.2 Fiberboards Classified by Manufacture

3.2.1 HARDBOARD

3.2.1.1 Description—A generic term for a sheet manufactured primarily from interfelted lignocellulosic fibers (usually wood) consolidated under heat and pressure in a hot press to a density of 55–65 lb/ft^3 (880–1041 kg/m^3) (specific gravity 0.9–1.0) or greater, and to which other materials may have been added during manufacture to improve certain properties.

3.2.1.2 Physical/Mechanical Properties—This material is generally a stiff grade of fiberboard with isotropic physical properties.

3.2.1.3 Applications—The normal uses for this material include nearly all automotive applications where fibrous board structures are specified.

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3.2.2 PAPERBOARD

3.2.2.1 *Description*—A generic term for a sheet manufactured primarily from cellulosic fibers produced by conventional pulping and paper making process and equipment.

3.2.2.2 *Physical/Mechanical Properties*—Except for the characteristic fibrous structure, the physical properties may vary over a wide range. The paperboards are anisotropic with the board machine direction having greater strength and dimensional stability.

3.2.2.3 *Applications*—The normal uses for this material include nearly all automotive applications where fibrous board structures are specified.

3.2.3 CHIPBOARD

3.2.3.1 *Description*—A general term describing a type of fiberboard produced primarily from mixed grades of waste paper and most often produced on a cylinder machine. The final product may be sold as either a single ply or laminated board.

3.2.3.2 *Physical/Mechanical Properties*—The material is usually characterized by low density and gray color and is used where strength and quality are not required. The final product may be modified by the addition of nonfibrous components to impart water resistance or other special properties. The normal range of thickness is from about 0.009–0.045 in (0.23–1.14 mm) for single ply and 0.050 to over 0.200 in (1.27–5.08 mm) for laminated constructions.

3.2.3.3 *Applications*—Used in applications where appearance and ultimate strength are not important. Typical uses include visor cores, trim panel subfoundations, and some gasket applications.

3.2.4 LAMINATED BOARD

3.2.4.1 *Description*—A general term describing a board comprised of two or more single plies of board, paper, or other sheet materials in any combination, firmly adhered to each other by means of an adhesive between the plies. The adhesion and cohesion of the entire finished structure are such that it will function as a single unit.

3.2.4.2 *Physical/Mechanical Properties*—Except for the multiple structure, the physical characteristics of laminated boards vary over a wide range of properties. Because of the general nature of the term, there are few typical physical characteristics.

3.2.4.3 *Applications*—Typical uses include head liners, trunk liners, glove boxes, and door panels.

3.2.5 WET MACHINE BOARD (HOMOGENEOUS)

3.2.5.1 *Description*—This material is produced on a one cylinder wet machine. It is manufactured by the building up on a roll of a number of wet plies of paper stock (refined cellulose fibers) from a continuous web. The wet plies adhere mechanically to one another in the wet state and, when the desired thickness of board has been reached, the wet stock (approximately 40% solids) is removed from the make roll as a sheet. It is then pressed, dried, and calendared to the desired finished thickness. The pressing and drying operations develop strong fiber-to-fiber chemical and mechanical bonds within the plies and between the ply interfaces.

3.2.5.2 *Physical/Mechanical Properties*—This board is characterized by high density stiffness and strength. This material is commonly produced in galipers ranging from a minimum of 0.050 or 0.060 In (1.27 Or 1.52 mm) up to a thickness of 0.500–1.0 in (12.7–25.4 mm) for various applications. This material frequently contains nonfibrous components such as resins or asphalt to develop water resistance, formability, or other special properties.

3.2.5.3 *Applications*—Typical uses include tacking strips and dash insulators.

3.2.6 KRAFT PAPER

3.2.6.1 *Description*—Kraft is the generic name for paper of high strength which identifies the sulfate chemical pulping process from which the paper is made. The sulfate pulping process involves cooking wood fibers in an alkaline medium to produce strong, cellulosic fiber which is normally converted to paper on a Fourdrinier paper machine.

3.2.6.2 *Physical/Mechanical Properties*—The term paper is normally restricted to materials 0.009 in (0.23 mm) or under in caliper and usually less than 26 lb/1000 ft^2 (127 g/m^2). The kraft paper is characterized by a reddish-brown color in the unbleached state, but may be bleached to a very high brightness white for some applications. This material normally has high strength and is relatively dense.

3.2.6.3 *Applications*—Uses include wire wrapping, braided insulators, liner for laminated fiberboards, and water shields.

3.3 Fiberboards Classified by Manufacture

3.3.1 FOUNDATION BOARD

3.3.1.1 *Description*—A fiberboard, usually a hardboard or a laminated kraft paper board, that is used as a structural foundation or a supporting member in a trim panel assembly.

3.3.1.2 *Physical/Mechanical Properties*—Boards selected for foundation applications generally require a high degree of strength, rigidity, and dimensional stability; hence, most foundation boards are specified in thicknesses of 0.08 in (2.03 mm) or greater. Various applications may require this board to be coated to facilitate dielectric bonding or to be painted, embossed, or perforated for decorative purposes.

3.3.1.3 *Applications*—Typical applications include door and rear quarter panels, package tray panels, and headlining applications.

3.3.2 SUBFOUNDATION BOARD

3.3.2.1 *Description*—A fiberboard or liner used as a subfoundation in combination with a foundation board. It is used as a carrier for subsequent trim or product applications.

3.3.2.2 *Physical/Mechanical Properties*—These boards are often chosen for their flexibility and as a result caliper usually ranges from 0.010–0.030 in (0.25–0.76 mm). In some cases, the boards may be coated to facilitate dielectric bonding. They are usually characterized by medium strength, good plybond, good dimensional stability, and are usually treated for water resistance.

3.3.2.3 *Applications*—Typical automotive uses are in conjunction with door panels and real quarter panels.

3.3.3 FORMING BOARD

3.3.3.1 *Description*—A board suitable for shallow forming or forming into random three-dimensional shapes through the use of heat and pressure applied in a matched set of dies. This board may be one ply or a laminated combination of basic boards or a molded fiber pulp product.

3.3.3.2 *Physical/Mechanical Properties*—The primary composition of these boards is normally refined cellulosic fibers which may or may not be supplemented by the addition of some synthetic fibers. Usually these boards contain various amounts of thermoplastic or thermosetting resins to facilitate formability and to enhance the stability and rigidity of the formed part. Normal thicknesses range from about 0.070–0.120 in (1.78–3.05 mm).

3.3.3.3 *Applications*—Used in parts requiring three-dimensional shapes with rounded corners, such as formed arm rests, heater ducts, firewall components, and package trays.

3.3.4 BENDING BOARD

3.3.4.1 *Description*—A paperboard, either single ply or laminated, the components of which are comprised primarily of refined cellulosic fibers.

3.3.4.2 *Physical/Mechanical Properties*—This material is constructed in such a way that the liner or liners are capable of accepting a suitable score and can later be bent on this score to varying degrees with little or no fracture of the surface fibers. This requirement is usually satisfied by using relatively long, strong fibers on the bending surfaces. In some cases, the visual requirements of the bent scores are obtained by covering the surface with an extensible coating or by laminating a pliable film to the surface, prior to scoring and bending. Thickness is usually confined to the 0.016–0.100 in (0.41–2.54 mm) range.

3.3.4.3 *Applications*—Typical applications include scored glove boxes, package trays, visors, and trunk liners.

3.3.5 PROPERTIES

3.3.5.1 *Creasing*—Method of scoring without cutting. See definition of scoring, paragraph 3.3.5.3.

3.3.5.2 *Bending*—The folding movement applied to fiberboard, usually along impressed or cut scored lines. See definition for scoring, paragraph 3.3.5.3.

3.3.5.3 *Scoring*—The method by which fiberboard may be depressed, or partially cut in basically linear configurations in any direction, which will later facilitate bending along the depressed or cut scores into various three-dimensional shapes.

3.3.5.4 *Sizing*—Sizing is a broad term referring to the resistance of fiberboard to the penetration of liquids and to the process and chemicals for developing this resistance. Surface sizing (surface application) and beater sizing (internal application) are the methods of applying the sizing materials.

3.3.5.5 *Cohesive Strength*—The tensile strength required to fracture internal bonds with the force applied perpendicularly to the plane of the board. Also referred to as Z direction tensile or plybond.

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