



technical

BULLETIN

RECOMMENDATIONS FOR APPLICATION OF GENERAL-PURPOSE CONSTRUCTION PANELS

General-purpose construction panels include standard, tempered, service, and service-tempered hardboard product grades. These grades are covered by the ANSI (American National Standard Institute) standard A135.4, "Basic Hardboard". Construction hardboard panels are used in a variety of residential applications. They can be found in the living areas, in the basement, in the garage or in exterior structures, where they are used as paneling or linings in cabinetry, in ceilings, etc.

Although the recommendations provided in this bulletin are limited to the application of panels to open studs, solid backing or furring, the information presented here may also be useful in other hardboard construction applications. These recommendations represent the

best judgment of the industry as to the minimum requirements for the application and finishing of general-purpose construction panels. Applicable building codes or manufacturer's installation instructions should be followed if these are more stringent than the recommendations given in this bulletin. It is important to consult the manufacturer before beginning a project involving applications not covered by the recommendations in this bulletin.

All instructions should be reviewed before beginning installation; the dealer should be consulted to clarify any questions.

Cutting and Working with General-Purpose Construction Panels

General-purpose construction panels may be cut and fabricated using ordinary carpenter's tools and following standard woodworking methods. A crosscut saw is most suitable for making straight cuts. A coping or compass saw may be used for cutting irregular, curved or inside edges.

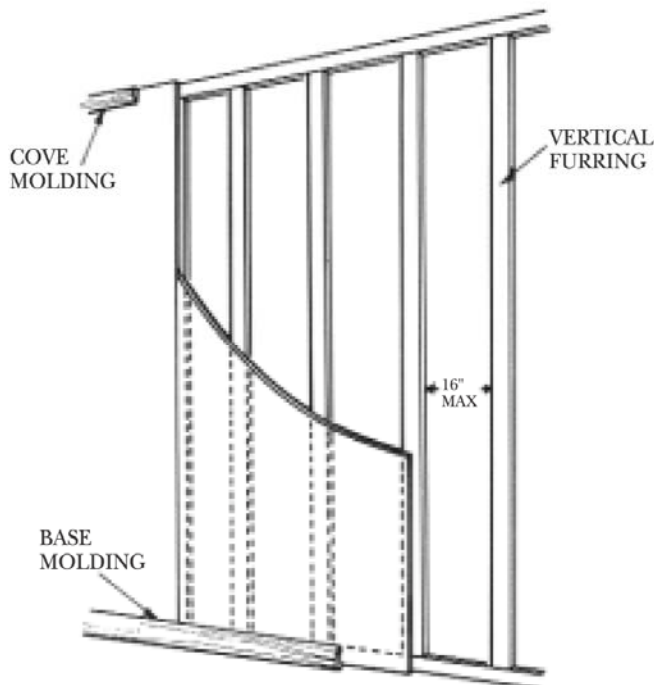
The use of a power saw is desirable for greater speed or extensive cutting. Beveled or rounded corners required for certain edge treatments may be obtained with the use of a carpenter's plane, or special beveling tools available for this purpose or by sanding.

Patterns and designs may be cut into the surface of the board with a scoring tool. Circular holes may be obtained with a twist drill or a brace and bit. Rough edges and irregularities may be dressed down with fine-grit sandpaper.

Application in Damp Areas

Above grade areas that are abnormally damp, such as found in new constructions where moisture is released from wet plaster, newly laid masonry or through similar temporary damp conditions, must be thoroughly dried before paneling is applied.

A continuous vapor barrier such as a polyethylene film should be applied between the paneling and the wall, when paneling is applied to exterior or masonry walls, either above or below grade (see illustration below for the application of general-purpose construction panels to a masonry or to an irregular wall).



A dehumidifier must be used to control moisture levels if the area of application is unusually damp.

Conditioning of the Panels

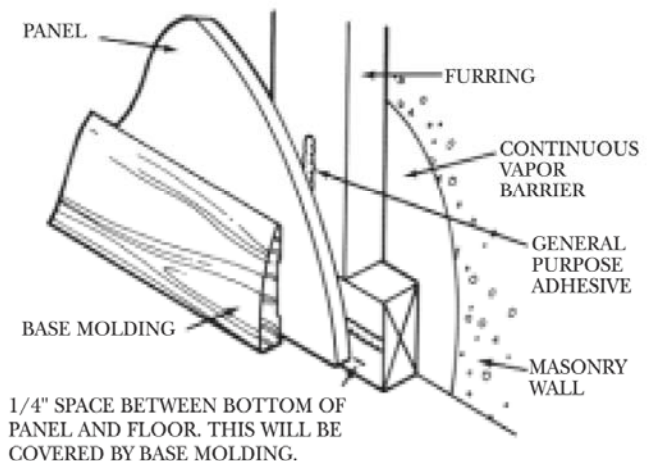
As with all wood paneling materials, panels should be conditioned for at least 48 hours prior to application, by standing the panels individually on their long edge, with their screen or backside out. Conditioning allows the panels to equilibrate with the existing room conditions before being applied.

Framing and Fastening

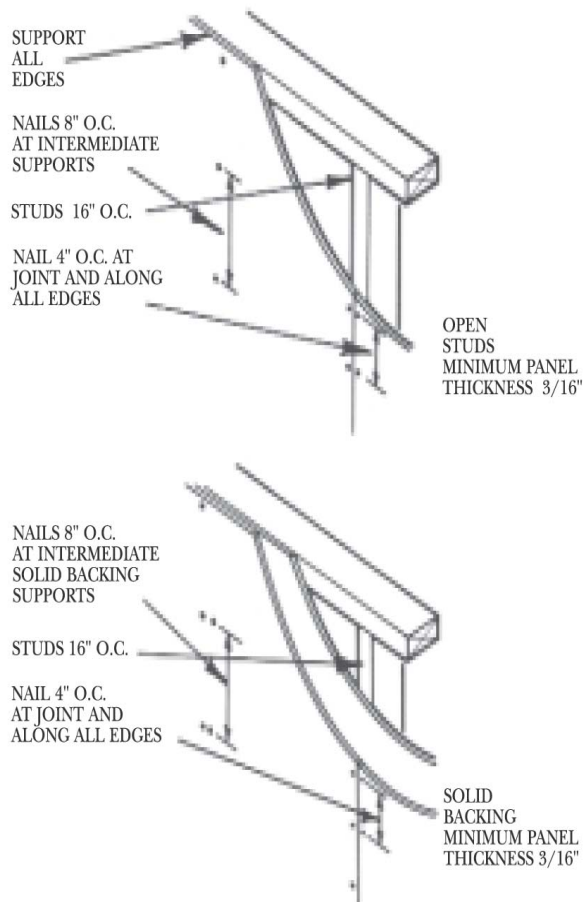
Panels should only be fastened to framing members that are straight, in the same plane and have adequate nail holding properties. Wall framing studs or furring strips should not be spaced more than 16" on center. The edges of all the panels should bear on a continuous support.

Solid backing is required for panels that are less than 3/16" in thickness.

APPLICATION TO MASONRY WALL OR IRREGULAR WALL



NAILING DETAIL



Nailing

The center of the panel should be fastened first and the rest of the panel fastened working away from the center, toward the edges. Panels should be brought into moderate contact and not butted together tightly.

Nails should be driven perpendicular to the surface and spaced 8" apart on intermediate supports and 4" apart around all edges. Toenailing should be avoided. Annular ring shanked nails should be used and the nails should be long enough to penetrate the nailing base by at least 3/4". Nail heads may be concealed by countersinking the nails slightly below the surface of the panel and filling the nail holes with a putty or other suitable material, prior to priming.

Pre-drilling is required when fastening with screws.

Nailing is not recommended for panels that are less than 3/16" in thickness.

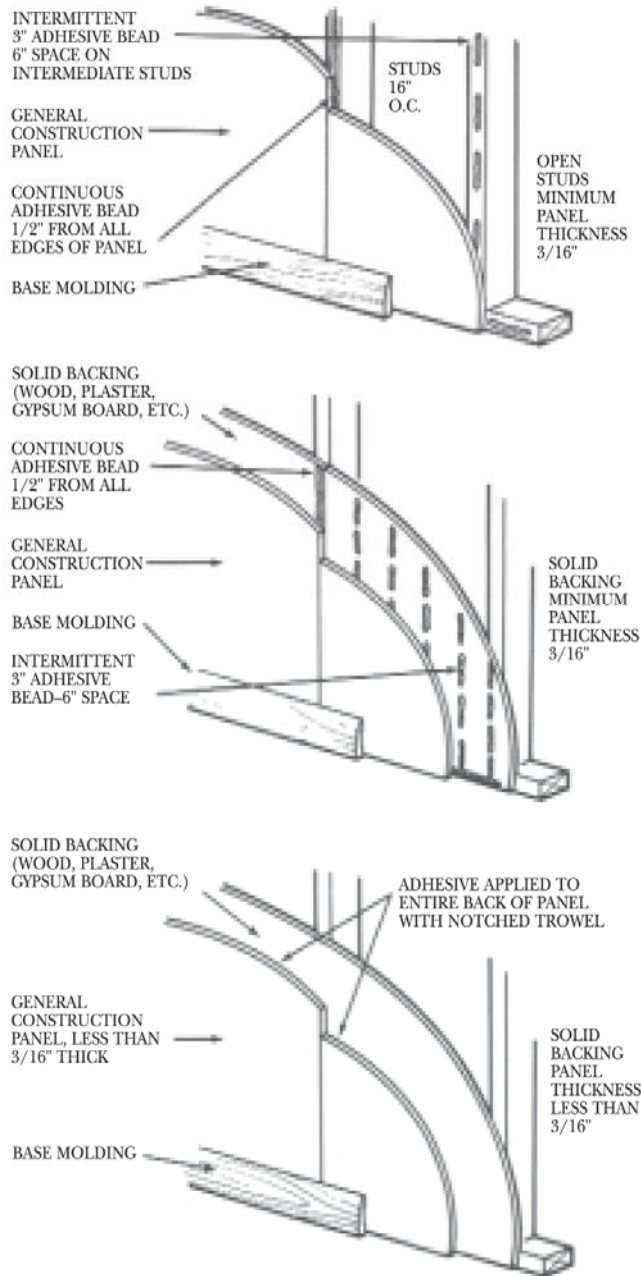
Adhesives

Application of panels using panel adhesives is indicated for greater application speed and is required for application of panels that are less than 3/16" in thickness. If panels are to be applied to paper-clad gypsum or wallpapered walls, the paper surface must be sealed or painted prior to panel installation. Additional details concerning the applications of panels using panel adhesives are given in the illustrations below.

When panels that are less than 3/16" in thickness are applied on a solid backing where persistent high moisture conditions will exist, the use of tile board cement is recommended. The adhesive should be spread using a 3/16" notched trowel over the entire back surface of the panel, according to the adhesive manufacturer's instructions. The use of an excessive amount of adhesive should be avoided; the adhesive-coated panel surface should be scraped firmly with the notched trowel to ensure that only "ridges" of adhesive are left on the panel surface. The adhesive-coated panel should be placed into position and pressed tightly against the wall to ensure complete contact of the adhesive with the wall. It may be necessary to inspect the applied panels sometime later, to verify that complete adhesion was achieved.

When applying panels in areas where normal humidity conditions exist, a cartridge paneling adhesive may be used. The adhesive should be applied as a continuous bead, 1/2" inside the edges, along the entire perimeter of the panel. Inside the perimeter, adhesive beads of 3" in length should be applied intermittently, on 6" centers and in an offset arrangement. A few nails may be used to hold the panels in place until the adhesive has set.

ADHESIVE INSTALLATION



Finishing – Preparation

All panel surfaces should be clean and dry. Soiled surfaces should be cleaned using warm water and a mild soap. The first coat is the most important component of the finish. It is essential that the first coat be compatible with subsequent top coats, whether a clear or a pigmented initial coat is used. Only quality products should be used and the manufacturer's instructions should be followed closely.

RECOMMENDATIONS FOR APPLICATION OF HARDBOARD UNDERLAYMENT

Hardboard underlayment is designed to be applied over wood or plywood sub-floors or over old wood floors; it should never be applied directly to concrete. Hardboard underlayment provides an excellent base for the application of various floor coverings. Underlayment panels are available in 3'x4' and 4'x4' dimensions and have a uniform minimum thickness of 0.200".

The following application recommendations represent the best judgment of the industry as to the minimum requirements for the application of hardboard underlayment panels. Applicable building codes or manufacturer's installation instructions should be followed if these are more stringent than the recommendations given in this bulletin. It is important to consult the manufacturer prior to the beginning of a project involving applications not covered by the recommendations in this bulletin.

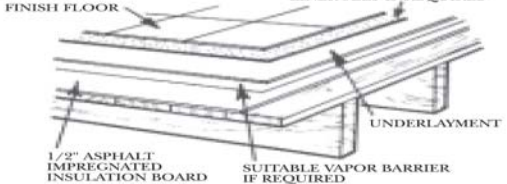
FIGURE 1 TYPES OF APPLICATION OVER WOOD SUB-FLOOR



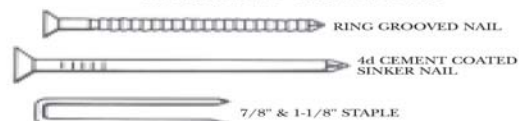
FIGURE 2 OVER OLD WOOD-FINISH FLOOR



FIGURE 3 OVER FILLER



UNDERLAY FASTENERS



All instructions should be reviewed before beginning installation; the dealer should be consulted to clarify any questions.

Preparation

The floor over which the underlayment is to be laid should be inspected to ensure it is securely fastened, dry, clean, and free of protruding nails. Underlayment panels can bridge small cups, narrow gaps, and cracks; however, floors that have an irregular surface over large areas will require that low areas be filled and/or high areas be sanded, to yield a more even surface. Joint filler materials are not recommended.

If humidity conditions are close to normal, panels should be conditioned for at least 48 hours prior to application, by standing the panels individually on their long edge, to allow them to equilibrate with the existing room conditions before being applied. If the atmosphere is abnormally damp due to the presence of wet plaster, wet concrete or due to other temporary conditions in the building, panel installation should be delayed until the room returns to normal humidity levels. If underlayment panels are to be installed directly over a damp basement or unheated crawl space floor, a suitable vapor barrier should be applied over the sub-floor (see figure 1) or wood floor (see figure 2) before installing the underlayment.

It is sometimes desirable to build up the new floor to the same height as that of an adjacent floor to avoid a step down where the floors join. Where normal traffic and average loads are anticipated, asphalt-impregnated fiberboard of the required thickness (1/2") may be used as filler material between the sub-floor and the underlayment (see figure 3). Depending on the installation, application of a vapor barrier over the fiberboard may be required. All joints in the vapor barrier should overlap by 2". If heavy, concentrated loads are expected, a denser filler material, such as additional layers of underlayment should be used. The filler material should be fastened to the sub-floor first; nails that are at least 1 1/4" in length should then be used

to fasten the underlayment over the filler material.

Application of Hardboard Underlayment

Either surface of the underlayment panel may face up and afford an excellent bond with the finishing floor covering or liner felt, if a liner is required by the flooring manufacturer. The floor manufacturer's recommendations should be followed if they specify that their floor covering should be applied to a specific face of the panel (smooth face or planed/sanded face).

The first panel should be laid down in one corner of the room, leaving a space of 1/4" between the base of the wall or of the baseboard and the underlayment (this gap will later be covered by the shoe of the baseboard). Placing an underlayment joint directly over a sub-floor or fiberboard joint should be avoided. Underlayment panels should be securely fastened using 1 1/4" ring-grooved underlay nails or 4d cement coated sinker nails. Nail heads should be driven flush with the surface of the panel. Nails should not be spaced more than 6 inches on center in any direction over the entire area of the panel and should not be closer than 3/8" from the panel edges. The center of the panel should be fastened first and the rest of the panel fastened working away from the center, toward the edges. Fastening with staples requires the use of 7/8" long, chisel point plastic-coated staples. The staples should be spaced no more than 6" on center throughout the body of the panel, no more than 3" on center around the edges of the panel and should not be closer than 3/8" from the panel edge. If underlayment is installed over an old floor covering, 1 1/8" staples should be used; the center of the panel should be stapled first and the rest of the panel stapled working away from the center, toward the edges.

The next panel should be laid so that the continuous underlayment edges are perpendicular to the direction of the boards in the sub-floor or old floor. A space of 1/16" should be left between panel edges (the thickness of a penny or a 3rd nail). The

panel should be fastened securely as directed above and additional panels applied across the room. The panels in subsequent rows should be laid such that the underlayment joints are staggered. Panels should never be forced into place. Care should be taken to ensure proper fitting of the panels around fixtures or other elements. Joint fillers should not be used.

After the underlayment has been installed, the room should be swept clean and the installation checked for smooth, flush joints. Rough edges should be removed with sandpaper or a block plane and the room swept clean again.

The surface floor covering should be applied in accordance with the manufacturer's instructions. Joints in the surface floor covering should not fall directly over joints in the underlayment.

RECOMMENDATIONS FOR THE APPLICATION OF PERFORATED HARDBOARD

Perforated hardboard is frequently applied to walls in workrooms, recreation rooms and garages, for the purpose of hanging tools, equipment, displays, etc. A variety of hangers designed to fit most requirements are available from building supply dealers. Perforated hardboard that is 1/8" in thickness is used in most residential and display applications or wherever the hanger load is not too great. For unusually high hanger loads, a 1/4" perforated hardboard should be used.

The following application recommendations represent the best judgment of the industry as to the minimum requirements for the application and finishing of perforated hardboard panels. Applicable building codes or manufacturer's installation instructions should be followed if these are more stringent than the recommendations given in this bulletin. It is important to consult the manufacturer before beginning a project involving applications not covered by the recommendations in this bulletin.

All instructions should be reviewed before beginning installation; the dealer should be consulted to clarify any questions.

Cutting and Working with Perforated Hardboard

Perforated hardboard panels may be cut and fabricated using ordinary carpenter's tools and following standard woodworking methods. A crosscut saw is most suitable for making straight cuts. A coping or compass saw may be used for cutting irregular, curved or inside edges. The use of a power saw is desirable for greater speed or extensive cutting. Beveled or rounded corners required for certain edge treatments may be obtained with the use of a carpenter's plane, or special beveling tools available for this purpose or by sanding. Patterns and designs may be cut into the surface of the board with a scoring tool. Circular holes may be obtained with a twist drill or a brace and bit. Rough edges and irregularities may be dressed down with fine-grit sandpaper.

Application in Damp Areas

Above grade areas that are abnormally damp, as found in new constructions where moisture is released from wet plaster, newly laid masonry or through similar temporary damp conditions, must be thoroughly dried before paneling is applied. A continuous vapor barrier such as a polyethylene film should be applied between the paneling and the wall, when paneling is applied to masonry walls, either above or below grade. In addition to the vapor barrier, dehumidifying equipment may be required to control moisture levels.

Conditioning of The Panels

Where humidity conditions are normal, such as in above grade living areas, panels should be conditioned for at least 48 hours prior to application, by standing the panels individually on their long edge, to allow them to equilibrate with the existing room conditions.

Framing and Fastening

Panels should only be fastened to framing members that are straight, in the same plane and have adequate nail holding properties. Wall framing studs or furring strips should not be spaced more than 16" inches on center. The edges of all the panels should bear on a continuous support. Panels should be brought into moderate contact and not butted together tightly. The illustrations below provide details on application with nails or with an adhesive.

Nailing

Nails should be driven perpendicular to the surface and spaced 8" apart on intermediate supports and 4" apart around the panel edges. Toenailing should be avoided. Ring shanked nails should be used and the nails should be long enough to penetrate the nailing base by at least 3/4". Nail heads may be concealed by countersinking the nails slightly below the surface of the panel and filling the nail holes with a putty or other suitable material, prior to priming. Pre-

drilling is required when fastening with screws. The center of the panel should be fastened first and the rest of the panel fastened working away from the center, toward the edges.

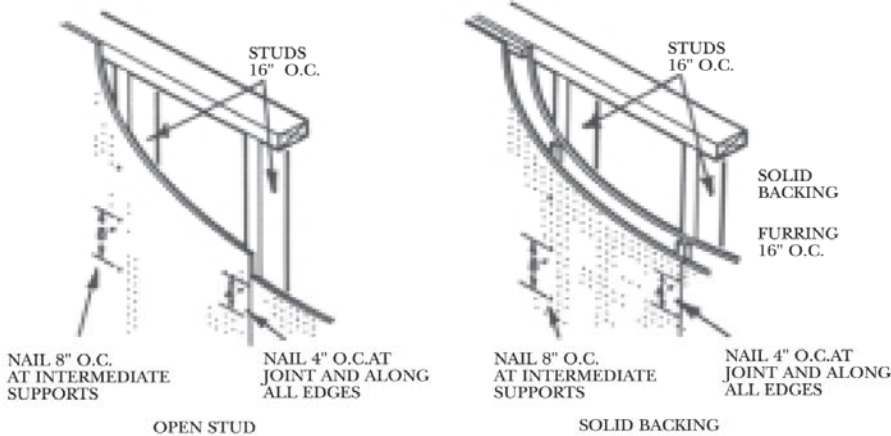
Adhesives

Application of panels using panel adhesives is the most desirable method of application when installation speed is important. A variety of panel or construction adhesives are available from building supply dealers.

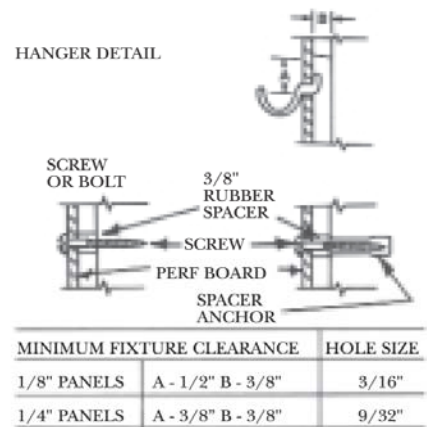
Finishing – Preparation

All panel surfaces should be clean and dry. Soiled surfaces should be cleaned using warm water and a mild soap. The first coat is the most important component of the finish. It is essential that the first coat be compatible with subsequent top coats, whether a clear or a pigmented initial coat is used. Only quality products should be used and the manufacturer's instructions should be followed closely.

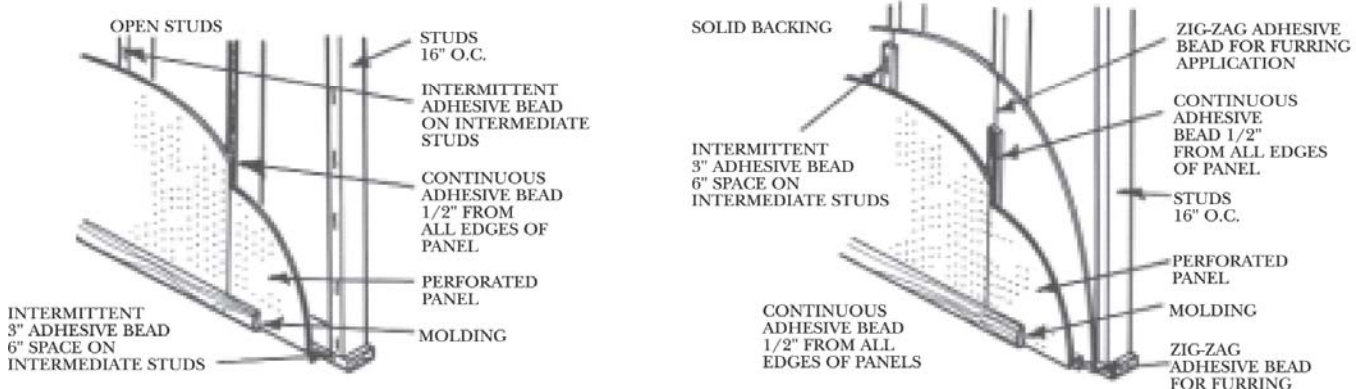
NAILING



SPACER & FIXTURE DETAILS



ADHESIVE APPLICATION



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Composite Panel Association

The Composite Panel Association (CPA), founded in 1960, represents the North American composite panel industry on technical, regulatory, quality assurance and product acceptance issues. CPA General Members include 39 of the leading manufacturers of particleboard, medium density fiberboard and hardboard. Together they represent nearly 95% of the total manufacturing capacity throughout North America. CPA also brings together the complete value chain affiliated with the composite panel industry. CPA's 200 members worldwide, primarily in the US and Canada, are committed to product advancement and industry competitiveness. Associate Members include manufacturers of furniture, cabinets, decorative surfaces and equipment, as well as laminators and distributors.

CPA is a vital resource for both producers and users of industry products. As an accredited standards developer, CPA writes and publishes industry product standards. It also participates in the standards development work of ANSI, ASTM and others, sponsors product acceptance activities and works with federal and state agencies and model building code bodies. In addition, CPA conducts product testing and third-party certification programs, while helping manufacturers create in-plant quality control programs. CPA offers the first ANSI accredited Environmentally Preferable Product (EPP) certification program, which certifies composite panel products that are 100 percent recycled and low emitting. Downstream manufacturers who use EPP certified substrates will also be able to market their products as environmentally preferable through this program, which offers an alternative to "for profit" green certification programs. Outreach and education are also focal points of the CPA. The Association publishes industry performance data, produces a series of technical bulletins and develops publications to inform key audiences about the attributes of industry products.