# ICBO Evaluation Service, Inc.

5360 WORKMAN MILL ROAD • WHITTIER, CALIFORNIA 90601-2299

*A subsidiary corporation of the* International Conference of Building Officials


# EVALUATION REPORT



**ER-2728**

*Reissued March 1, 1999*

**Filing Category: EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) (062)**

**DYRVIT OUTSULATION® EXTERIOR INSULATION AND FINISH SYSTEM**

**DRYVIT SYSTEMS, INC.**
**ONE ENERGY WAY**
**POST OFFICE BOX 1014**
**WEST WARWICK, RHODE ISLAND 02893**

## 1.0 SUBJECT

Dryvit Outsulation® Exterior Insulation and Finish System.

## 2.0 DESCRIPTION

### 2.1 General:

The Dryvit Outsulation Exterior Insulation and Finish System is applied to buildings having a construction other than framed walls of Type V construction. The Dryvit Outsulation system is a five-component system that may be applied to vertical substrates of masonry, concrete, exterior plaster, and water-resistant core gypsum sheathing complying with ASTM C 79-92. The five components consist of an adhesive, molded expanded polystyrene insulation board, a woven glass fiber fabric, a base coat, and a synthetic plaster finish. See Figure 1 for typical installation details.

### 2.2 Materials:

**2.2.1 Dryvit Adhesives:** The Dryvit adhesives consist of one of the following materials:

1. Dryvit ADEPS Adhesive: Dryvit ADEPS adhesive is a premixed, fully formulated, water-based acrylic copolymer. Shelf life of the product is one year when stored in a cool, dry location.
2. Dryvit Primus/adhesive: The Dryvit primus/adhesive is a copolymer dispersion with a quartz sand aggregate that is to be mixed with Type I portland cement. Shelf life of the product is one year when stored in a cool, dry location.

**2.2.2 Insulation Board:** The insulation board is a molded, rigid expanded polystyrene insulation board with a nominal density of 1 pound per cubic foot (16 kg/m$^3$), a flame-spread rating not exceeding 25 and a smoke-density rating not exceeding 450 when tested in accordance with UBC Standard 8-1. The board is available in thicknesses ranging from $^3/_4$ inch (19.1 mm) to 4 inches (102 mm), and with a maximum width of 24 inches (610 mm) and a maximum length of 4 feet (1219 mm).

**2.2.3 Dryvit Base Coat:** The Dryvit base coat consists of one of the following base materials applied to the outside surface of the insulation board:

1. Primus/adhesive mixture, which consists of primus/adhesive mixed at a ratio of 1:1 by weight with Type I portland cement.
2. NCB base coat, which is a fully formulated water-based product applied without the addition of portland cement. Shelf life of the product is one year when stored in a cool, dry location.

**2.2.4 Dryvit Reinforcing Fabric:** The Dryvit reinforcing fabric is a balanced open-weave glass fiber, made from twisted multiend strands and treated for compatibility with the other materials. The mesh weighs a minimum of 4.3 ounces per square yard (51 g/m$^2$), with a 12 by 6 thread count. Other reinforcing mesh types are available for use where supplementary impact resistance is required in accordance with the manufacturer's instructions.

**2.2.5 Dryvit Finish:** The Dryvit finish is composed of natural mineral aggregates and fillers, colored pigments and an acrylic latex emulsion. Shelf life of the product is two years when stored at 40°F (4.4°C).

### 2.3 Application:

**2.3.1 General:** All exposed edges of insulation board must be wrapped with the reinforcing mesh fully embedded in the base coat.

**2.3.2 Substrates:** The substrates are to be structurally sound, clean, dry and smooth, with all dust and deleterious materials removed. There are to be no planar irregularities exceeding $^1/_4$ inch (6.4 mm) in a 4-foot (1219 mm) radius.

**2.3.3 Adhesives:** The Dryvit ADEPS Adhesive is applied directly to the entire back surface of the insulation board as a continuous coating, using a U-notched trowel to produce a $^1/_4$-inch-wide-by-$^3/_8$-inch-deep (6.4 mm by 9.5 mm) notch every 1$^1/_2$ inches (38 mm).

The Dryvit Primus/adhesive is mixed with Type I portland cement at a ratio of 1:1 by weight and is applied to the entire back surface of the insulation board, using a rounded U-notched trowel to produce a minimum $^1/_4$-inch-wide-by-$^3/_8$-inch-deep (6.4 mm by 9.5 mm) notch every 1$^1/_2$ inches (38 mm). The Dryvit primus/adhesive mixture is not for adhering to wood-based sheathing.

**2.3.4 Attachment:** The coated insulation board is immediately placed horizontally in a running bond on the substrate, and slid into place. Firm pressure is then applied to the entire surface to ensure complete contact between the coated insulation board and the substrate. Board edges are abutted tightly. No adhesive is permitted between the boards. Temporary fasteners may be used, especially where contours exist, to ensure adequate contact between the coated insulation board and the substrate during the drying period; (care should be taken when removing the fasteners to avoid damage to the insulation board). Once the insulation board has been installed, a minimum of 24 hours must elapse prior to additional work on the surface.

**2.3.5 Coating and Reinforcing Fabric:**

**2.3.5.1 Base Coat:** Using a stainless steel trowel or spray equipment, the Dryvit primus/adhesive mixture or the NCB base coat is applied to the entire exposed surface of the insulation board to a uniform thickness of $^1/_{16}$ inch (1.6 mm). Up to 8 fluid ounces (0.24 L) of water may be added to 5 gallons (18.9 L) of base coat to enhance the workability. The reinforcing fabric is placed against the wet base coat and, by troweling from the center to the edges, the fabric is completely embedded. The fabric is continuous over corners and is lapped not less than $2^1/_2$ inches (63.5 mm) at fabric edges.

**2.3.5.2 Finish Coat:** After the base coat has dried a minimum of 24 hours, the Dryvit finish material may be applied. The material is mixed with a high-speed mixer until a uniform workable consistency is achieved. Clean water may be added to adjust workability in accordance with the manufacturer's instructions. The coating is spray- or trowel-applied directly to the reinforced base coat and is leveled in the same operation. When the finish has gelled, the desired texture is achieved using a variety of motions with trowels or floats. The final nominal thickness is approximately $^1/_{16}$ inch (1.6 mm). See Figure 1 for further details.

**2.4 Control Joints:**

Horizontal control joints are required at each floor line in wood-framed construction. Control joints must be installed as specified by the architect, designer, builder or exterior coating manufacturer, in that order.

**2.5 Wind Design:**

Dryvit Outsulation EIFS has the following wind capacities:

1. Allowable transverse wind pressures based on systems installed in accordance with this report are set forth in this section. Adequacy of the framing system to resist the applied loads must be investigated. Maximum allowable deflection of structural wall components is 1/240 of span.
2. Where the system is applied to minimum-$^1/_2$-inch-thick (12.7 mm) water-resistant core gypsum sheathing fastened to $3^5/_8$-inch-deep (92 mm), minimum No. 18 gage steel studs or nominal 2-by-4 wood studs, spaced a maximum of 16 inches (406 mm) on center, using minimum-$1^5/_8$-inch-long (41.3 mm), No. 6, self-drilling, buglehead drywall screws spaced a maximum of 6 inches (152 mm) on center, a positive wind load of 55 psf (2.6 kN/m$^2$) and a negative wind load of 40 psf (1.9 kN/m$^2$) can be resisted.
3. Where the system is applied to the substrate described in Item 2 of this section fastened to 6-inch-deep, minimum No. 16 gage steel studs or nominal 2-by-4 wood studs, spaced a maximum of 16 inches (406 mm) on center, using minimum-$1^5/_8$-inch-long (41.3 mm), No. 6, self-drilling, buglehead drywall screws spaced a maximum of 4 inches (102 mm) on center, a positive wind load of 55 psf (2.6 kN/m$^2$) and a negative wind load of 70 psf (3.4 kN/m$^2$) can be resisted.
4. Where the system is applied to minimum-2.5-pound-per-square-yard (0.95 kg/m$^2$) diamond mesh metal lath that is fastened through minimum-$^1/_2$-inch-thick (12.7 mm) water-resistant core gypsum sheathing to 6-inch-deep (152 mm), minimum No. 16 gage steel studs spaced a maximum of 16 inches (406 mm) on center, using minimum-$1^5/_8$-inch-long (41.3 mm), No. 6, self-drilling, buglehead drywall screws with $^3/_{16}$-inch-diameter (4.8 mm) metal washers, spaced 6 inches (152 mm) on center around the perimeter and 10 inches (254 mm) on center in the field of the sheathing board, a negative and positive wind load of 60 psf (2.9 kN/m$^2$) can be resisted.
5. If, in the system described in Item 5 of this section, 3.4-pound-per-square-yard (1.3 kg/m$^2$) metal lath, No. 18 gage steel studs and 0.16-inch-diameter (4 mm), minimum-$1^5/_8$-inch-long (41.3 mm), self-tapping panhead screws at 6 inches (152 mm) on center are substituted, a negative and positive wind load of 50 psf (2.4 kN/m$^2$) can be resisted.
6. When the system is applied to masonry, concrete or exterior plaster substrate, a negative wind load of 70 psf (3.4 kN/m$^2$) can be resisted.

**2.6 Noncombustible Construction:**

Noncombustible exterior walls are permitted to be constructed with the Dryvit Outsulation system, provided the walls are constructed in accordance with Sections 2.6.1 and 2.6.2.

**2.6.1 Primus/adhesive Mixture as Adhesive and Base Coat:** Application to walls required to be of noncombustible construction requires $3^5/_8$-inch-deep (92 mm), minimum No. 20 gage steel studs at a maximum of 16 inches (406 mm) on center. One layer of $^1/_2$-inch-thick (12.7 mm) regular gypsum wallboard is installed vertically to interior stud flanges; one-half-inch-thick (12.7 mm) water-resistant core gypsum sheathing complying with ASTM C 79-92 is applied to the exterior stud flanges horizontally in a similar manner, except that joints are staggered from those of the interior wallboard. The sheathing and wallboard are fastened to studs using No. 6 drywall screws spaced 12 inches (305 mm) on center. Openings between floors and walls must be blocked with safing insulation. Openings in walls must be framed with No. 16 gage steel flashing. The rest of the construction is as described in Section 2.3 of this report, using Dryvit primus/adhesive as an adhesive and base coat. The insulation board is limited to a maximum thickness of 4 inches (102 mm).

**2.6.2 ADEPS Adhesive and NCB Base Coat:** When ADEPS adhesive and NCB base coat are used, one layer of $^5/_8$-inch-thick (15.9 mm) Type X gypsum wallboard is installed with the long dimension parallel to studs on the interior face of minimum No. 20 gage steel studs spaced a maximum of 16 inches (406 mm) on center. One layer of $^1/_2$-inch-thick (12.7 mm) water-resistant core gypsum sheathing complying with ASTM C 79-92 is applied with the long dimension perpendicular to studs on the exterior face. The gypsum wallboard and sheathing are attached to the studs with No. 6 drywall screws spaced 8 inches (203 mm) on center along the perimeter and 12 inches (305 mm) on center in the field. All joints are taped and, along with screw heads, are covered with joint compound. The rest of the construction is as described in Section 2.3 of this report, using ADEPS adhesive and NCB base coat. The insulation board is limited to a maximum thickness of 4 inches (95 mm).

**2.7 Fire-resistive Construction:**

The Dryvit Outsulation System may be applied over exterior fire-rated walls required to be of combustible construction without affecting the hourly rating. The system may also be applied over exterior noncombustible nonload-bearing steel-framed gypsum wallboard wall assemblies of an up to two-hour fire-resistive rating, and over any concrete or concrete masonry walls, without affecting the hourly rating.

**2.8 Identification:**

Material containers are identified by the manufacturer's name (Dryvit Systems, Inc.) and address, the product name and the expiration date. Insulation boards are delivered in sealed polyethylene bags bearing the word "Outsulation." Additionally, one edge of each board will bear the wording "Outsulation _____*, ICBO ES Evaluation Report ER-2728-RADCO"; or the markings required for WSG board, specified in ER-4169; or the markings required for EWG board, specified in ER-4059. One board in each bag also bears the same wording on each face.

(*Listing number and plant identification number of block molder.)

## 3.0 EVIDENCE SUBMITTED

Reports of tests in accordance with the ICBO ES Acceptance Criteria for Exterior Insulation and Finish Systems (AC24), dated June 1998; reports of tests in accordance with UBC Standards 7-1, 8-1 and 26-4; application instructions; and a quality control manual for the insulation board.

## 4.0 FINDINGS

**That the Dryvit Outsulation® Exterior Insulation and Finish System described in this report complies with the 1997 *Uniform Building Code*™, subject to the following conditions:**

**4.1 Construction is as set forth in this report and the manufacturer's instructions.**

**4.2 The insulation board is separated from the building interior with a thermal barrier complying with Section 2602.4 of the code.**

**4.3 The insulation boards are identified as described in Section 2.8.**

**4.4 The system may be installed on walls required to be of noncombustible construction, provided there is compliance with Section 2.6 of this report.**

**4.5 Installation is by listed contractors approved by Dryvit Systems, Inc.**

**4.6 Installation cards, such as those shown in Exhibits A and B, must be completed by the EIFS applicator and the sealant installer, respectively, and presented to the building official at the completion of each project.**

**4.7 Recognition for installation on framed walls of Type V construction is beyond the scope of this evaluation report.**

**This report is subject to re-examination in one year.**

FIGURE 1—TYPICAL INSTALLATION DETAILS

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# EVALUATION REPORT



**ER-5032**

*Reissued July 1, 2000*

**Filing Category: EXTERIOR COATINGS (060)**

**DRYVIT FASTRAK SYSTEM 4000 DIRECT-APPLIED EXTERIOR FINISH SYSTEM**

**DRYVIT SYSTEMS, INC.**
**ONE ENERGY WAY**
**WEST WARWICK, RHODE ISLAND 02893**

## 1.0 SUBJECT

Dryvit Fastrak System 4000 Direct-applied Exterior Finish System.

## 2.0 DESCRIPTION

### 2.1 General:

Fastrak System 4000 is a direct-applied exterior finish system consisting of four components to cover wood or steel framing. The four components are Dens-Glass™ Gold sheathing, base material, reinforcing mesh and finish coat. The finish has a flame-spread rating of less than 25 and a smoke-developed rating of 450 or less. The Dryvit Fastrak System 4000 is used in regions not exceeding 4,000 heating degree (°F) days. See Figure 2 for acceptable locations south of the 4,000 line.

### 2.2 Materials:

**2.2.1 Sheathing:** The sheathing is $^1/_2$-inch-thick (12.7 mm) or $^5/_8$-inch-thick (15.9 mm) Dens-Glass Gold gypsum board manufactured by Georgia-Pacific Corporation, Gypsum and Roofing Division, and recognized in the current ICBO ES evaluation report ER-4305.

**2.2.2 Base Material:** The NCB base material is a ready-mixed, noncementitious acrylic copolymer coating.

**2.2.3 Reinforcing Mesh:** The reinforcing mesh is a woven, treated glass-fiber fabric weighing a minimum of 4.3 ounces per square yard (145.93 g/m$^2$). It has a minimum tensile strength of 150 pounds per inch width (2.681 kg/mm), and has 12 strands per inch (0.4724 strand per mm) in the warp direction and 6 strands per inch (0.2362 strand per mm) in the fill direction.

**2.2.4 Finish Coat:** The finish coat is a factory-mixed, water-based acrylic coating with integral color.

The Dryvit finish coat is available in various thicknesses and textures and is identified as Quartzputz, Sandblast, Sandpebble or Freestyle. Demandit or Color Prime are coating materials, measured in mil thicknesses, applied in accordance with the manufacturer's installation instructions.

### 2.3 Installation:

Framing consists of minimum 2-by-4 ( 51 by 102 mm) wood studs or No. 18 gage [0.0451 inch (1.15 mm)] steel studs. When sheathing is $^1/_2$-inch-thick (12.7 mm) Dens-Glass Gold, framing is spaced a maximum of 16 inches (406 mm) on center. When sheathing is $^5/_8$-inch-thick (15.9 mm) Dens-Glass Gold, framing is spaced a maximum of 24 inches (610 mm) on center. The framing system must be designed to resist all positive and negative transverse loads with a maximum allowable deflection of L/240 of the span. Prior to installing the Dens-Glass Gold sheathing, Grade D kraft waterproof building paper, complying with UBC Standard 14-1, must be attached to the framing in accordance with Section 1402.1 of the code. Dens-Glass Gold gypsum sheathing panels are applied with the long dimension parallel to framing and all edges backed by framing.

For steel framing, minimum $^1/_2$-inch-thick (12.7 mm) sheathing panels are fastened with 1-inch-long (25.4 mm), No. 6, Type S-12, bugle-head, corrosion-resistant, self-tapping drywall screws. Five-eighths-inch-thick (15.9 mm) sheathing panels are fastened with $1^1/_4$-inch-long (31.7 mm) screws. Fasteners are spaced 8 inches (203 mm) on center along all studs and around the perimeter. The sheathing must be flat to $^1/_8$ inch (3.2 mm) within any 4-foot-0-inch (1219 mm) radius.

All components must be applied over dry surfaces and out of direct sunlight. Temperature during application and curing must be 40°F (4.4°C) and above. Supplementary heat and moisture protection may be provided as needed. Surfaces must be sound, clean, dry, unpainted and free from any residue that may affect bond. Any surface contaminants such as dirt or dust must be removed without damaging the substrate surface.

The NCB base material is mixed to a smooth homogeneous consistency using a $^1/_2$-inch (12.7 mm) drill at 400 to 500 rpm. A small quantity of clear water may be added for workability. The base material is applied in a uniform thickness of approximately $^1/_{16}$ inch (1.6 mm) to the surface of the sheathing, using a flat stainless steel trowel. The reinforcing mesh is immediately placed against the wet NCB and embedded into the base material with the trowel. The NCB base coat must cure at least 24 hours.

The Dryvit finish material is mixed similarly to the NCB base material. The finish material is applied over the reinforced NCB base coat to the desired finish pattern and thickness. The Quartzputz, Sandblast and Sandpebble finishes are applied using a clean, flat, stainless steel trowel, and are leveled to a uniform thickness: Quartzputz—no larger than the largest aggregate; Sandblast—approximately 1 to $1^1/_2$ times the largest aggregate; Sandpebble—slightly larger than the largest aggregate. The texture is achieved by uniform hand motion and/or type of tool. The Freestyle finish is applied, using a clean, flat, stainless steel trowel, to an initial thickness of approximately $^1/_{16}$ inch (1.6 mm). The finish texture is either pulled out of this initial material to a maximum thickness of $^1/_4$ inch (6.4 mm), or the texture is achieved by adding more

Freestyle to the base coat up to the maximum thickness of $^1/_4$ inch (6.4 mm).

See Figure 1 for typical details.

**2.4 Allowable Loads:**

The following allowable loads are recognized for Dryvit Fastrak 4000:

1. Steel framing [No. 18 gage by $3^5/_8$-inch-deep (92 mm) studs], $^1/_2$-inch (12.7 mm) sheathing 16 inches (406 mm) on center: 40 psf (275 kPa) positive pressure, 16.7 psf (115 kPa) negative pressure.
2. Steel framing (No. 18 gage by $3^5/_8$ studs), $^5/_8$-inch (15.9 mm) sheathing 16 inches (406 mm) on center: 40 psf (275 kPa) positive pressure, 26 psf (181 kPa) negative pressure.
3. Steel framing (No. 18 gage by $3^5/_8$ studs), $^5/_8$-inch (15.9 mm) sheathing 24 inches (610 mm) on center: 23.2 psf (160 kPa) positive pressure, 16.3 psf (112 kPa) negative pressure.

**2.5 Identification:**

Material containers are identified by the manufacturer's name and address, the product name, the evaluation report number (ICBO ES ER-5032), the batch number, the net weight of material (lb./kg) and storage instructions.

## 3.0 EVIDENCE SUBMITTED

Reports of tests in accordance with the ICBO ES Acceptance Criteria for Direct-applied Exterior Finish Systems (DEFS) (AC59), dated September 1992, application instructions and product brochures.

## 4.0 FINDINGS

**That the Dryvit Fastrak System 4000 Direct-applied Exterior Finish System described in this report complies with the 1997 *Uniform Building Code*™, subject to the following conditions:**

**4.1 Construction is as set forth in this report and the manufacturer's instructions. The system is limited to installation in areas described in Section 2.1 of this report.**

**4.2 Installation is by applicators approved by Dryvit Systems, Inc.**

**4.3 Contractor's Certificate and Sealant Installer's Certificate, as shown in Exhibits A and B, must be completed by the Fastrak System 4000 applicator and the sealant installer and must be presented to the building official at the completion of each project.**

**4.4 Walls must be braced to resist wind and seismic forces.**

**4.5 Installation is limited to exterior walls of Type V construction.**

**4.6 Dens-Glass Gold (ICBO ES ER-4305) is a compatible substrate with Fastrak System 4000.**

**This report is subject to re-examination in one year.**

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# EVALUATION REPORT



**ER-4305**

*Reissued January 1, 1999*

**Filing Category: WALL COVERING (288)**

**DENS-GLASS® GOLD GYPSUM BOARD**
**G-P GYPSUM CORPORATION**
**2861 MILLER ROAD**
**DECATUR, GEORGIA 30035-4306**

## 1.0 SUBJECT

Dens-Glass® Gold Gypsum Board.

## 2.0 DESCRIPTION

### 2.1 General:

Dens-Glass Gold is a resinous, coated, glass-fiber-mat-faced, water-resistant core gypsum sheathing board intended for use under exterior wall coverings that are either specified in the code or specified in a current ICBO ES evaluation report in which the board is specifically named. It is available as $^1/_2$-inch-thick (12.7 mm) Dens-Glass Gold board and $^5/_8$-inch-thick (15.9 mm) Dens-Glass Gold Fireguard Type X board, which are considered alternates to water-resistant core gypsum sheathing board and water-resistant core Type X gypsum sheathing board, respectively, described in ASTM C 79-92. The boards are available in 4-foot (1219 mm) widths, and in lengths of up to 16 feet (4877 mm).

Dens-Glass Gold boards are considered noncombustible and have a Class I flame-spread classification and a smoke-density rating of less than 450 when tested in accordance with UBC Standard 8-1.

### 2.2 Installation:

**2.2.1 General:** Dens-Glass Gold boards may be installed as described in this report in locations described in the code for gypsum sheathing and wallboard. Use of Dens-Glass Gold boards for fire-resistive assemblies is limited to the assemblies described in this report.

When a fire-resistive rating or shear value is not required, and for self-supporting systems such as brick veneer, wood, cement, vinyl siding or wood panels, Dens-Glass Gold is applied in accordance with Table 25-G of the code. Fasteners for wood framing are No. 11 gage, $^7/_{16}$-inch-head (11.1 mm), galvanized nails, $1^1/_2$ inches (38 mm) long for $^1/_2$-inch-thick (12.7 mm) boards and $1^3/_4$ inches (44.5 mm) long for $^5/_8$-inch-thick (15.9 mm) boards. Fasteners for steel framing are No. 6, Type S or Type S-12, buglehead, corrosion-resistant, self-tapping drywall screws, a minimum of 1 inch (25.4 mm) long for $^1/_2$-inch-thick (12.7 mm) boards and a minimum of $1^1/_4$ inches (31.7 mm) long for $^5/_8$-inch-thick (15.9 mm) boards.

When Dens-Glass Gold boards are used on exterior ceilings and soffits, the maximum spacing of $^1/_2$- and $^5/_8$-inch-thick (12.7 and 15.9 mm) boards is 16 inches (406 mm) on center, for parallel orientation, and 24 inches (610 mm) on center, for perpendicular orientation, in accordance with Table 25-G of the code.

When a shear value is required, the maximum spacing of wall framing members is 16 inches (406 mm) on center. Boards are applied with the long dimension parallel to framing and all edges backed by framing. Number 11 gage, $^7/_{16}$-inch-head (11.1 mm) galvanized nails, $1^1/_2$ inches (38 mm) long for $^1/_2$-inch-thick (12.7 mm) boards and $1^3/_4$ inches (44.5 mm) long for $^5/_8$-inch-thick (15.9 mm) boards, are used for attachment to wood-framing members. Fastener spacing is 4 inches (102 mm) on center around the board perimeter and 8 inches (203 mm) on center at intermediate studs. When boards are applied in this manner, they are recognized as equivalent to bracing specified in Item 5 of Section 2320.11.3 of the code.

**2.2.2 One-hour Fire-resistive Load-bearing Wall:** The wall construction consists of the $^5/_8$-inch-thick (15.9 mm) Dens-Glass Gold Fireguard Type X board applied vertically to both faces of a wood-stud partition wall with nominal 2-by-4 studs at 16 inches (406 mm) on center. The wall must be bridged every 5 feet (1524 mm), minimum, and the board on one face installed with joints staggered 16 inches (406 mm) from those on the opposite face. The boards are attached using $1^3/_4$-inch-long (44.5 mm) galvanized nails with a $^7/_{16}$-inch-diameter (11.1 mm) head and 0.128-inch-diameter (3.25 mm) shank, spaced 8 inches (203 mm) on center at edges and intermediate studs. Allowable bearing loads cannot exceed 2,030 pounds (9030 N) per stud, 78 percent of the allowable $F_c'$, or 78 percent of the calculated stress with studs having a slenderness ratio, $l_e/d$, of 33, whichever is less.

**2.2.3 Other Fire-resistive Construction:** One layer of $^5/_8$-inch-thick (15.9 mm) Dens Glass Gold Fireguard Type X board can be substituted for the gypsum sheathing specified for the exterior faces of assemblies Nos. 16-1.1, 16-1.3, 17-1.3, 17-1.5, 18-1.1, 18-1.5 and 18-1.6 of UBC Table 7-B.

**2.2.4 Direct-applied Exterior Finish Systems:** Five-eighth-inch (15.9 mm) Dens-Glass Gold Fireguard Type X board may be used as a substrate for direct-applied exterior finish systems that have a current ICBO ES evaluation report in which the board is specifically named. Installation of the system is limited to areas where the average of the daily lows for any month is at least 30°F (-1.1°C). Allowable negative transverse loads recognized in the evaluation report for the direct-applied exterior system shall be derived from values that have been reduced 14 percent or substantiated by transverse load tests following specimen conditioning per Footnote 2 of Table 1 of the ICBO ES Acceptance Criteria for Direct-applied Exterior Finish Systems (AC59).

### 2.3 Identification:

Each board is identified by the name Dens-Glass Gold and the manufacturing code.

## 3.0 EVIDENCE SUBMITTED

Descriptive details; reports of racking shear tests; reports of tests in accordance with UBC Standards 2-1, 7-1 and 8-1, applicable sections of the ICBO ES Acceptance Criteria for Direct-applied Exterior Finish Systems (AC59), and ASTM C 473-76a; and durability data.

## 4.0 FINDINGS

**That the Dens-Glass® Gold Gypsum Boards described in this report comply with the 1997 *Uniform Building Code*™, subject to the following conditions:**

**4.1 Installation is in accordance with this report and the manufacturer's instructions.**

**4.2 The boards are covered with an exterior wall covering as specified in Section 2.1 or 2.2.4.**

**4.3 The $^5/_8$-inch (15.9 mm) Dens-Glass Gold Fireguard Type X board may be used in fire-resistive assemblies as described in Section 2.2.2 or 2.2.3.**

**This report is subject to re-examination in two years.**