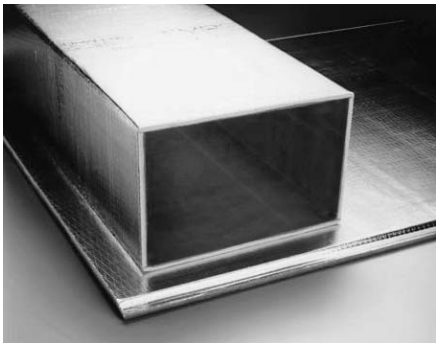
Submittal Sheet

EnDuraGold™ Fiber Glass Duct Board



- ❑ **TYPE 475, 1" (25mm)**
- ❑ **TYPE 800, 1" (25mm)**
- ❑ **TYPE 800, 1 1/2" (38mm)**
- ❑ **TYPE 1400, 2" (51mm)**

Description

Owens Corning **EnDuraGold™** Fiber Glass Duct Board is a rigid, resin bonded fibrous glass board with a tough, damage-resistant, flame retardant, reinforced aluminum foil (FRK) facing. When fabricated into duct systems, it combines excellent thermal and acoustical insulating properties with substantially airtight transmission of air when all joints are sealed with UL 181A listed closures.

EnDuraGold™ Fiber Glass Duct Board features a durable air stream surface that isolates the glass fiber substrate from the airstream and inhibits penetration of the insulation by dirt, dust and other pollutants. This durable air stream surface makes it easy to clean the duct system using methods and equipment described in North American Insulation Manufacturers Association (NAIMA) Publication AH122, *Cleaning Fibrous Glass Insulated Duct Systems, Recommended Practice*.

Uses

EnDuraGold™ Fiber Glass Duct Board may be used to fabricate components for indoor commercial and residential heating, ventilating and air conditioning duct systems operating at static pressures to ±2 in. w.g. (500 Pa), internal air temperatures 40°F (4°C) to 250°F (121°C), and air velocities to 6,000 fpm (30.5 m/s). Straight duct sections, elbows, tees, offsets and other system elements can quickly and easily be fabricated and assembled into a complete air transmission system using these lightweight, thermally efficient boards.

Features and Benefits

Bacterial and Fungal Growth Resistance
A durable air stream surface includes an EPA registered biocide that protects the air stream surface from microbial growth and meets requirements of ASTM C 1338, ASTM G 21 (fungi test) and ASTM G 22 (bacteria test).

Tips to Avoid Mold Growth in Ducts
Mold in duct systems occurs when moisture comes into contact with dirt or dust collected on the duct system surfaces. Proper filters will minimize the collection of dust and dirt, but care needs to be exercised to prevent water formation in the duct. A properly sized and operated air conditioning unit will minimize the likelihood of water formation. The system must be maintained and operated to insure that sufficient dehumidification is occurring and that filters are installed and changed as recommended by the equipment manufacturer.

Assured Thermal Performance
R-values as published for **EnDuraGold™** Fiber Glass Duct Board are superior to those of compressible insulation of equal thickness. Factory control of thickness assures that installed R-values will be as published for the product.

Acoustically Efficient
Duct systems built with these boards absorb fan and air turbulence noise; reduce popping noises caused by expansion, contraction and vibration. Fabrication and installation are quieter.

Single Contractor Accountability
Thermal/acoustical insulation board plus jacket forms a single component duct system, thus reducing inspection time.

Lightweight
These lightweight boards are easier to transport and handle than insulated sheet metal ducts. They reduce the load imposed on the structure by the duct system.

Virtually Eliminates Air Leakage
Closures with UL 181A listed pressure-sensitive tape, heat-activated tape, or glass fabric and mastic virtually eliminate air leakage. This saves energy and removes the need for system overdesign.

Code Compliance
Meets the following model codes and most other applicable codes: NFPA 90A/90B, ICC International Mechanical Code, SBCCI, ICBO, BOCA, CABO, Corps of Engineers Guide Spec., NYC MEA #186-69.

Supported by Industry Standards
Proper fabrication and installation guidelines help ensure long-term performance of the system. These standards, developed by NAIMA and SMACNA, lead to clearer understanding between specifier and contractor.

Physical Property Data

Property	Test Method	Value
Maximum operating temperature limits	UL 181	Internal: 250°F (121°C) External: 150°F (66°C)
Maximum air velocity	UL 181 Erosion Test	6,000 fpm (30.5 m/s)
Static pressure limit	UL 181	±2 in. w.g. (500 Pa)
Water vapor sorption	ASTM C 1104	<3% by weight at 120°F (49°C), 95% R.H.
Mold growth Fungi resistance Bacteria resistance	UL 181 ASTM G 21 ASTM G 22	Meets requirements Meets requirements Meets requirements
Surface burning characteristics	UL 723*	Flame spread 25* Smoke developed 50
Fire retardancy	UL 181	Flame penetration: 30 min.

* The surface burning characteristics of these products have been determined in accordance with UL 723. This standard should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

EnDuraGold™ Fiber Glass Duct Board

Availability

EnDuraGold™ Fiber Glass Duct Board is available in the following forms:

TYPE 475, 1" (25mm) thick

TYPE 800, 1" (25mm) thick

TYPE 800, 1½" (38mm) thick

TYPE 1400, 2" (51mm) thick

Type designates board stiffness defined by flexural rigidity. Type selection depends on duct size, pressure and reinforcement schedule. The 1½" (38mm) and 2" (51mm) thickness provides superior thermal value.

UL Class 1 Air Duct

National Fire Protection Association Standards NFPA 90A and 90B for air conditioning and ventilating systems require air ducts to be Class 0 or 1. The tests set stringent requirements on fire safety as well as ruggedness. To meet Class 1 air duct requirements, the system must withstand UL 181 tests such as rupture, pressure loss, impact, collapse, puncture, static load and fire retardancy (30 minute flame penetration test). Also, to qualify as a Class 1 Air Duct System, the following UL 723 fire testing requirements must be met: Flame spread, 25; Smoke developed, 50.

Limitations

Fiber glass ducts should not be used in the following applications:

A. Kitchen or fume exhaust ducts, or to convey solids or corrosive gases;
B. In concrete or buried below grade;
C. Outdoors;
D. As casings and/or housings of built-up equipment;
E. Immediately adjacent to high temperature electric heating coils without radiation protection;
F. For vertical risers in air duct systems serving more than two stories in height;
G. With coal or wood fueled equipment, or with equipment of any type which does not include automatic maximum temperature controls;
H. In variable air volume systems on the high pressure side unless reinforced to withstand the full fan pressure;
I. As penetrations in construction where fire dampers are required, unless the fire damper is installed in a sheet metal sleeve extending through the fire wall; or

Acoustical Performance

Sound absorption coefficients at octave band center frequencies, Hz.

	125	250	500	1000	2000	4000	NRC
Type 475, 1" (25mm)	0.08	0.19	0.69	0.94	0.99	0.98	0.70
Type 800, 1" (25mm)	0.08	0.19	0.69	0.94	0.99	0.98	0.70
Type 800, 1½" (38mm)	0.12	0.33	0.92	1.04	1.03	1.02	0.85
Type 1400, 2" (51mm)	0.14	0.72	1.15	1.12	1.06	1.07	1.00

These data were collected using a limited sample size and are not absolute values. Therefore, reasonable tolerances must be applied. Tests were conducted in accordance with ASTM C 423, Mounting A (material placed against a solid backing).

Thermal Performance, at 75°F (24°C) Mean Temperature

	1" (25mm)	1½" (38mm)	2" (51mm)
R-value, hr•ft²•°F/Btu (RSI, m²•°C/W)	4.3 (0.76)	6.5 (1.15)	8.7 (1.53)
k-value, Btu•in/hr•ft²•°F (λ, W/m•°C)	0.23 (0.033)	0.23 (0.033)	0.23 (0.033)
C-value, Btu/hr•ft²•°F (W/m²•°C)	0.23 (1.32)	0.16 (0.87)	0.12 (0.65)

Mean temperature is the average of two temperatures: that of the air inside the duct and that of the ambient air outside it.
Note: Specified design thickness should be adequate to prevent exterior surface condensation.

J. When the duct system is located in non-conditioned space and is used for cooling only (when heating is from another source), unless all registers which would allow moist air into the duct system are vapor sealed during the heating season to prevent condensation from forming inside the duct.

Application Recommendations

Fabrication and installation of fiber glass Duct Systems shall be in accordance with the UL listing and shall conform to Owens Corning's published methods and/or latest editions of NAIMA (North American Insulation Manufacturers Association) *Fibrous Glass Duct Construction Standards* or SMACNA (Sheet Metal and Air Conditioning Contractors National Association) *Fibrous Glass Duct Construction Standards*. One of the following closure methods must be employed to meet the requirements of UL 181. USE OF A NON-LISTED CLOSURE SYSTEM VOIDS THE UL CLASS 1 AIR DUCT RATING.

1. **Pressure-Sensitive Tape**
   Any tape listed and labeled under UL 181A, Part I (P).
   a. All longitudinal and circumferential joints must be stapled with outward flaring ½" (13mm) (min.) staples, 2" (50mm) (approx.) O.C.
   b. Wipe surface where tape is to be applied to field joints with clean cloth. If surface has grease or oil, saturate cloth with approved solvent. Refer to tape manufacturer's recommendations.
   c. Center tape over edge of stapling flap and rub firmly in place immediately after application, using a squeegee or similar tool.
   d. A heat sealing iron must be used to assure a good bond when installed below 50°F (10°C).
   e. Tape should not be applied to surface of duct board when temperature is below 32°F (0°C) due to the possibility of entrapping ice crystals which will cause tape to loosen upon melting. Heat surface first to drive off moisture.
2. **Heat-Activated Tape**
   Any tape listed and labeled under UL 181A,Part II (H).
   a. All longitudinal and circumferential joints must be stapled with outward flaring ½"(13mm) (min.) staples, 2" (50mm) (approx.) O.C.
   b. Wipe surface where tape is to be applied with clean cloth. If surface has grease or oil, saturate cloth with approved solvent. Refer to tape manufacturer's recommendations.
   c. Center tape over joint and seal down tape end with 500°F (260°C) iron. Do not use heat gun; heat and pressure are both required to effect a seal.
   d. Press down entire length of tape to hold in place using a smearing action to get good bond. Colored dots on tape surface darken when satisfactory bonding temperature is reached.
   e. Staples may be omitted when automatic closure machines such as Glass Master Closemasters are used. Iron temperature must be set at 650°F (343°C) minimum. Continuous production may require periodic pauses to allow sealing iron to recover to 650°F (343°C).
   f. Allow joint to cool before stressing.
3. **Mastic and Glass Fabric**
   Any mastic and glass fabric closure system listed and labeled under UL 181, Part III (M).
   a. All longitudinal and circumferential joints must be stapled with outward flaring ½"(13mm) (min.) staples, 2" (50mm) (approx.) O.C.
   b. Brush mastic onto joint and embed glass fabric in mastic.
   c. Brush second coat of mastic over fabric until completely filled.
   d. Allow joints to dry in accordance with mastic manufacturer's recommendation before pressurizing system.

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