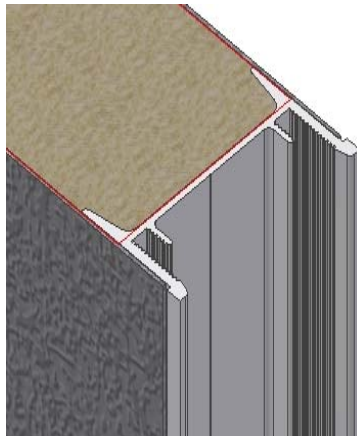
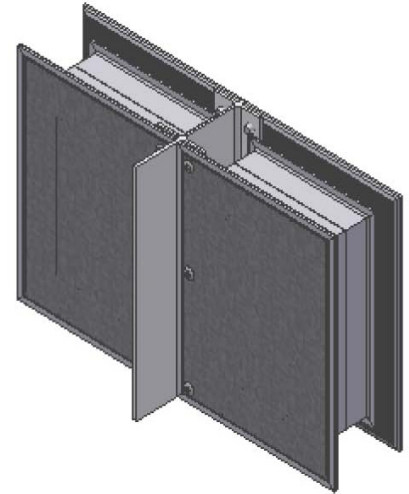


## CASING PERFORMANCE DATA

Air Enterprises signature on custom air handling equipment is our double wall insulated unit casing construction. That is; our distinguishing feature is our encapsulated double wall insulated, structural load bearing, low leakage all aluminum casing construction.

Over 40 years of development and experience result in the industry standard in premium custom air handling unit casing design and performance.

Air Enterprises offers 100% aluminum casing construction as a standard. In addition to being lightweight, aluminum has excellent corrosion resistance that can be applied in many environments. Aluminum's corrosion resistance is the result of an oxide film barrier that forms on the material surface. This oxide barrier is self-renewing in that a new oxide barrier quickly forms over any accidental surface abrasions and scratches thereby maintaining the corrosion resistant protection.



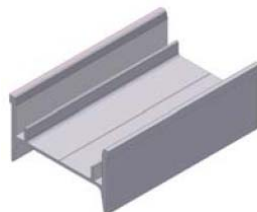
Casing panels are manufactured using a 2-1/2" thick structural extruded aluminum framing (thermal break extrusion is available as an option).

Panel skins (owner's choice of material and finish) are bonded to each side of the panel frame and the interior panel cavity is insulated (owner's preference of mineral wool, fiberglass or foam).

Each individual panel is air and vapor tight.

Each unit casing is custom engineered to meet the specific application requirements for structural, thermal and acoustical performance. Owner preference of aesthetic finish is easily accommodated through a wide selection of materials, textures and coatings that can be applied to the panel design.

Air Enterprises offers a true No-thru-Metal (NTM) / Thermal Break construction. This feature incorporates a 1/2" thick resin bridge integral to the structural casing extrusions that breaks the thru-metal path. This bridge has proven to significantly reduce the occurrence of casing surface condensation.



STANDARD ALUMINUM EXTRUSION

THERMAL BREAK ALUMINUM EXTRUSION

### Casing Leakage Integrity

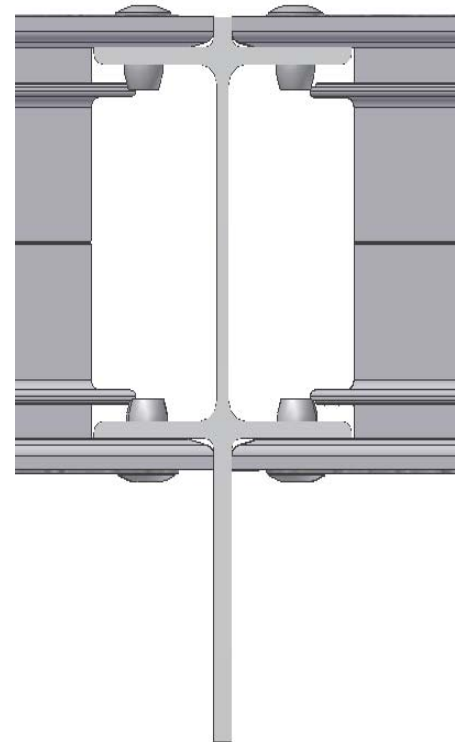
Air Enterprises unique method of panel and casing construction provides exceptional low leakage performance for the life of the equipment.

Panels are joined using a structural extruded aluminum member. The joint is sealed internally using butyl at each of the four legs of the joining member.

Closed end aluminum rivets are used to complete the assembly. The joint cavity is then sealed with polyisocyanurate self expanding foam.

The features of this construction are:

- Each panel is hermetically sealed
- Riveted joints penetrate the joint cavity, not the panel casing
- Riveted joints, unlike threaded fasteners, do not loosen over time
- Butyl seal is applied internal to the joint which isolates it from external environments. Sealants applied external to a joint will weather and erode over time
- The structural member used for joining panels is also used for attachment of internal equipment and flashing.



Factory and field testing of Air Enterprises units have consistently shown entire unit leakage values to be near 1/2% of design airflow at 1-1/2 times the design pressure (always less than 1%).

This leakage rate is inherent to our method of construction; construction methods cannot be modified to provide cost savings to obtain greater leakage rates if so specified. AE casing system will maintain its leakage integrity with no degradation for the entire life of the air-handling unit.

Air Enterprises firmly believes that reducing air leakage through the casing is a much more significant energy saver than reducing the casing U-value. A calculation summary of this comparison is available from Air Enterprises upon request.

### Thermal Performance

CASING DESCRIPTION	U-VALUE	R-VALUE
2-1/2" fiberglass or mineral wool insulation	0.083	R-12
2-1/2" polyisocyanurate foam insulation	0.059	R-17



### Acoustical

Air Enterprises casing panels have been rated by independent test labs for both sound absorption and sound transmission loss characteristics. Results for over 30 different construction types (some standard, many special - varying skin thicknesses, insulating materials, mass liners, etc.) are on file for reference or application. Listed below are these properties for the most commonly used panel types.

#### **Panel Acoustic Transmission Loss Characteristics**

CASING DESCRIPTION	OCTAVE BAND (CENTER FREQ. HZ)						STC
	2	3	4	5	6	7	
	125	250	500	1000	2000	4000	
2-1/2" foam panel	13	18	23	19	31	37	22
2-1/2" fiber panel – (a)	13	28	36	45	49	49	33
2-1/2" fiber panel – (b)	13	33	39	44	48	47	35
2-1/2" fiber panel – special mass (c)	22	28	37	43	52	61	40

(a)-panel with 0.040" aluminum interior and 0.040" aluminum exterior skin

(b)-panel with 0.040" aluminum interior and 0.063" aluminum exterior skin

(c)-panel (a) with 16 ga steel liner inside exterior skin

#### **Panel Acoustic Sound Absorption Characteristics**

CASING DESCRIPTION	OCTAVE BAND (CENTER FREQ. HZ)						NRC
	2	3	4	5	6	7	
	125	250	500	1000	2000	4000	
2-1/2" fiber panel – (a)	0.31	0.71	1.02	0.98	0.94	0.88	0.90
2-1/2" fiber panel – (b)	0.59	0.97	1.06	1.01	0.99	0.99	1.00
2-1/2" non-acoustical panel	0.31	0.18	0.10	0.09	0.07	0.07	0.15

(a)-acoustical panel with 0.040" exterior skin

(b)-acoustical panel with 0.063" exterior skin

### Corrosion Resistance

Aluminum has excellent corrosion resistance and can be applied in many environments typically not suitable for metal products. Aluminum owes its corrosion resistance to the barrier oxide film that forms immediately on its surface in a wide variety of environments. This oxide film is self-renewing and accidental abrasion or other mechanical damage of the surface film is rapidly repaired.

The conditions that promote corrosion of aluminum and its alloys, therefore, are those that continuously abrade the film mechanically or promote (electro-) chemical conditions that locally degrade the protective



oxide film and minimize the availability of oxygen to rebuild it. In general, aluminum and its alloys are not very resistant in acids and alkalis, but they are very resistant to atmospheric corrosion. Aluminum alloys are also characterized by a good general corrosion resistance in oxidizing environments.