



# Duct Liner (DL)



### Product Description

AFICO Duct Liner is a highly efficient, semi-rigid insulation composed of fine, stable and uniformly textured inorganic glass fibers bonded together by a non-water soluble and fire retardant thermosetting and heat resistant resin. It is free from coarse fibers and shot due to its mineral composition.

as thermal and coustical insulation of heating air-conditioning and interior of dual temperature duct work, air handling equipment and plenums operating at air-velocities up to 20 m/s (4000 FPM) and temperatures up to 232°C (450°F).

### Facing

AFICO Duct Liner is supplied semi-rigid faced with a strong, dimensionally stable Non-Woven Black Glass Tissue (BGT).

Also used as an efficient sound absorption treatment of walls and ceiling, acoustic enclosures, generator rooms, studios, curtain walls, auditoriums, conference rooms, theatres and others.

### Application

AFICO Duct Liner is intended for use in commercial, institutional, industrial and residential construction

### Standard Available Products

Nominal Manufacturing Specifications. check for availability of other dimesnions and densities.

Product Type	Density		K Value@24°C		R Value / Thickness								NRC Value			
	Kg/m <sup>3</sup>	Lb/ft <sup>3</sup>	W/m <sup>2</sup> ·°K	BTU·in/hr·ft <sup>2</sup> ·°F	15 mm	½ in.	25 mm	1 in.	38 mm	1 ½ in.	50 mm	2 in.	15 mm	25 mm	38 mm	50 mm
DL 160	16	1.0	0.037	0.26	-	-	0.68	3.78	1.03	5.8	1.35	7.6	-	-	-	-
DL 240	24	1.5	0.034	0.24	-	-	0.74	4.1	1.12	6.2	1.47	8.2	0.50	0.65	0.85	0.95
DL 320	32	2.0	0.033	0.23	0.45	2.6	0.76	4.37	1.15	6.5	1.52	8.6	0.50	0.65	0.90	1.00
DL 480	48	3.0	0.031	0.22	0.48	2.7	0.81	4.47	1.23	6.8	1.61	8.9	0.55	0.75	0.90	1.05

Other thicknes available upon request and verification

### Apparent Thermal Conductivity ASTM C518, EN12667

W/m·°K or Btu·in/hr·ft<sup>2</sup>·°F for all product range "K" or "λ" value at mean temperatures Data for 10, 24 and 35°C mean temperature

Product Type	Density		Mean Temperature					
	Kg/m <sup>3</sup>	Lb/ft <sup>3</sup>	10°C	50°F	24°C	75°F	35°C	95°F
DL 160	16	1	0.034	0.24	0.037	0.26	0.039	0.27
DL 240	24	1.5	0.032	0.22	0.034	0.24	0.036	0.25
DL 320	32	2	0.031	0.21	0.033	0.23	0.034	0.24
DL 480	48	3	0.03	0.21	0.031	0.22	0.033	0.23





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### Performance & Physical Characteristics

#### Thermal Resistance "R" Value (ASTM C518)

"R" is a measure of the resistance to heat flow of a material of any given thickness.  
("R" = m<sup>2</sup>·°K/W or hr·ft<sup>2</sup>·°F/Btu)

$$R = \frac{T}{K} \quad \text{Where "T" = Thickness}$$

$$\quad \quad \quad \text{Where "K" or "λ" = Thermal Conductivity}$$

#### Thermal Transmittance "U" Value (ASTM C167)

"U" is a measure of how much heat is lost through a given thickness of a particular material.  
("U" = W/m<sup>2</sup>K °C or Btu/hr·sq ft °F)

$$U = \frac{1}{Rt} \quad \text{Where "Rt" = Total Thermal Resistance}$$

$$\quad \quad \quad \text{Composed of all elements/layers}$$

U-Values are calculated from the thermal resistances of the parts making up a particular part of the structure. Transmission of heat is opposed in varying amounts dependent on material and surface.

U-Value (of building element) = 1 / (Rso+Rsi R1+R2...)

Where Rso is the fixed external resistance  
Rsi is the fixed internal resistance  
R1, R2 etc are resistivity of all elements within the application including that of cavities within the construction.

Example Calculation:

Layer & Material	Thickness & Conductivity	R Value
Rso - Fixed external resistance	—	0.40 m <sup>2</sup> ·°K/W
Rsi - Fixed internal resistance	—	0.13 m <sup>2</sup> ·°K/W
R1 - Fiberglass insulation	0.100 m; 0.035 W/mK	2.85 m <sup>2</sup> ·°K/W
R2 - Clay bricks	0.105 m; 0.710 W/mK	0.15 m <sup>2</sup> ·°K/W
R3 - Concrete blocks	0.100 m; 0.018 W/mK	0.55 m <sup>2</sup> ·°K/W
R4 - Plaster	0.013 m; 0.016 W/mK	0.08 m <sup>2</sup> ·°K/W
Total		4.16 m <sup>2</sup> ·°K/W

Therefore the overall wall element  
U-value = 1/R = 1/4.16 = 0.24 W/m<sup>2</sup>K

#### Surface Burning Characteristics (ASTM E84, UL723)

Base glass fiber is non-combustible when tested.

Facing	Flame Spread Index	Smoke Developed Index
BGT	≤ 25	≤ 50



#### Working Temperature Limitations (ASTM C411)

Operating temperature up to 232°C (450°F) for the BGT faced product. At excessive temperatures, limited migration of binder may occur in the insulation in contact with the surface. This in no way impairs the performance of the insulation.

#### Mold Growth (ASTM C1338)

Does not breed or sustain mold, fungus, bacteria or rodents.

#### Corrosiveness (ASTM C665)

Chemically inert. Will not cause or accelerate corrosion of steel, stainless steel, copper or aluminum, due to its particular inorganic and mineral composition.

#### Alkalinity (ASTM C871)

pH 9

#### Friction Loss

According to TIMA AHS-152T Pressure loss, In W.G., AFICO Duct Liner.

This is to be used in place of the standard friction loss chart published in the ASHRAE Handbook of fundamentals.

For conversion of round equivalents to rectangular sizes, use Table C-2 "Circular Equivalents of Rectangular Ducts for Equal Friction and Capacity" from the same reference. Tests conducted in accordance with TIMA AHS 152T.

#### Acoustical Performance (ASTM C423)

Reverberation Chamber Method Type A mounting. Verify with manufacturer performance results.

Data is for comparison only and is not meant to indicate characteristics in duct service.

Type	Thickness		Frequency, Hz						NRC
	inch	(mm)	125	250	500	1000	2000	4000	
I	½	(13)	0.02	0.07	0.18	0.37	0.52	0.67	0.30
	1	(25)	0.04	0.19	0.35	0.55	0.69	0.72	0.45
	1½	(38)	0.08	0.31	0.58	0.75	0.82	0.81	0.60
	2	(51)	0.16	0.42	0.76	0.85	0.85	0.83	0.70

#### Specification Compliance

AFICO Duct Liner complies with the property requirements of the following specifications:

**DCL:** ASTM C665

**CE-EN:** EN 13162-T1-1121-CPD-BA0136

**UL 723:** Classified as FHC 25/50 File no R27731

**SCS:** Recycled Content Certified SCS-MC-02810

**ASTM C795:** Thermal Insulation for Use in Contact with Austenitic Stainless Steel tested

**ASTM C1071:** For thermal and sound absorbing SASO materials

**SASO:** SASO GSO EN 13162 License #201800652111

#### Fire Properties

B.S. 476 PART 4: Non Combustible

B.S. 476 PART 5: Ignitability

B.S. 476 PART 6: Fire Propagation

B.S. 476 PART 7: Surface Spread of Flame Class 'O' fire rating to the building regulations sections E15

#### Installation Recommendation for flexible blanket

AFICO Duct Liner Blankets are available in rolls. The desired application length can be easily measured and cut from the full roll. Afico Duct Liner is applied to the interior of ducts and plenums with the black surface facing the air stream.

Transverse joints are to be neatly butted, with no interruptions or gaps. Longitudinal corner joints are to be overlapped and compressed.

AFICO Duct Liner should be adhered to sheet metal ducts with 100% coverage of adhesive, and all exposed leading edges and all traverse joints coated with adhesive. The adhesive shall conform to standard ASC-A7001C-1972 or as approved by the project consultant. The liner should be additionally secured with mechanical fasteners which will compress the product sufficiently to hold it firmly in place.

**For velocities to 10 m/s:** fasteners should start within 75 mm of the upstream transverse edges of the liner and 75 mm from longitudinal joints, and should be spaced at maximum of 300 mm on centers around the perimeter of the duct, except they may be maximum of 300 mm from a corner break.

**For velocities to 10 to 20 m/s:** fasteners should be placed as above, except to be placed at a maximum of 150 mm on centers around the perimeter and a maximum of 150 mm from corner break. Elsewhere, they should be at a maximum of 400 mm on centers except to be placed not more than 150 mm from a longitudinal joint and 300 mm from corner break. In addition to the edge coating of transverse joints, longitudinal joints should be similarly coated with adhesive.

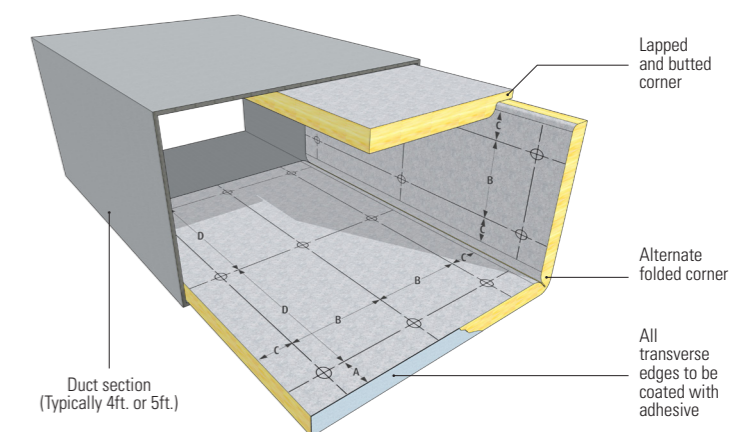
**For velocities to 20 to 30 m/s:** fasteners should be spaced as for 10 to 20 m/s. In addition, metal nosing should be installed to secure the liner at all upstream transverse edges.

When velocity exceeds 4000 FPM use metal nosing on every leading edge. Nosing may be formed on duct or by channel or Zee attached by screws, rivets or welds.

No. of pins	Liner Interior Width
0	8" dn
2	16"-9"
3	28"-17"
4	40"-29"
5	52"-41"
6	64"-53"
7	76"-65"
8	88"-77"
9	100"-89"

Maximum spacing for fasteners. Actual intervals are approximate.

Velocity	Dimensions			
	A	B	C	D
2500 - 0 FPM	3"	12"	4"	18"
6000 - 2501 FPM	3"	6"	4"	16"

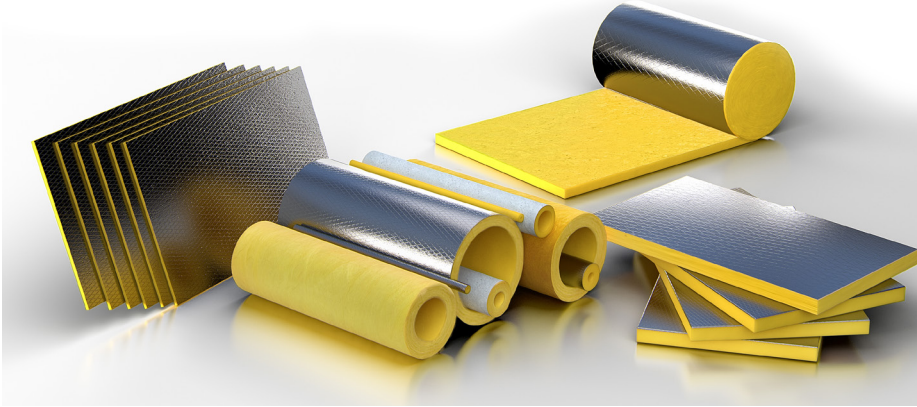


The velocity rated side of liner must face the air flow.

Liner adhered to the conduct with 90% min. area coverage of adhesive.



# Duct Liner (DL)



- The **AFICO Product Range** includes • Acoustical Ceiling Panels • Blanket Insulation • Board Insulation • Cavity Wall Insulation • **Duct Liner** • Duct Liner Board • Faced Duct Wrap • HD Series Blanket Insulation • Heavy Density Pipe Insulation • Mechanical Board Insulation • Pipe Wrap Insulation • Pre-engineered Metal Building Insulation • Quiet Liner • Quiet Liner Board • Roof Deck Board Insulation • Thermal Insulating Wool

### Maintenance

No maintenance is required. **AFICO Duct Liner** products have a high resistance to accidental damage from knocks and handling during installation and maintenance. Dimensionally stable under varying conditions of temperature and humidity, rot proof, odorless, non-hygroscopic and will not sustain vermin or fungus due to its inorganic and mineral compositions.

The product will maintain its thermal properties throughout the lifetime of the construction and will not age. AFICO fiberglass is non-toxic and presents no hazard to health.

### Storage

To avoid moisture in the building construction, AFICO insulation products stored outside must be kept dry. We recommend AFICO products to be always stored in covered and dry areas. AFICO is not liable for the damage resulting from inadequate utilization, loading and off-loading and mishandling of its products.

### Warranty

See manufacturer's General Terms and Conditions of Sale. As **AFICO** and/or **OCF** has no control over installation design, installation workmanship, accessory materials, or conditions of application, AFICO and/or OCF does not warrant the performance or results of any installation containing their products. This warranty disclaimer includes all implied warranties, including the warranties or merchantability and fitness for a particular purpose.

### Arabian Fiberglass Insulation Company AFICO

reserves the right to alter product specifications without prior notice, as part of its policy of continued development and improvement. The installation methods described in this leaflet are not compulsory. The choice of materials and methods of fixing are the decision of the specifier, consultant or contractor. For further information or advice on specification of products, contact your local, sales office.

### Availability

Manufactured by Arabian Fiberglass Insulation Company, Ltd. AFICO member of Zamil Industrial Co. II, with head-quarters and production facilities located in Dammam, Saudi Arabia, under license from and utilizing the manufacturing specifications and technology of Owens-Corning Corporation OCF, Toledo, Ohio, U.S.A. Marketed throughout Saudi

Arabia, the G.C.C. countries, the Middle East and the Far East. AFICO products are available directly from as well as through a vast and reliable network of local distributors.

**Special products are manufactured on request.**

### Call us today for more information & professional guidance:

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## People & Planet Always First

AFICO's products are all **energy saving, environmentally friendly**, use even more **recycled materials** and contribute to the **fight against global warming**.

