

ASTRO-FOIL[®]
Reflective Insulation



H.V.A.C.

*The revolutionary insulating material
that's safe, non-toxic, fiberless,
tested and approved, lightweight,
and easy to install!*

**AstroFoil International, LLC | 901 Wilshire Drive, Suite 490 | Troy, MI 48084
248-362-3791 | Fax 248-362-4984**

The Best Choice For Insulating...

ASTRO-TAB

Applications:

1 - I Joists

- 16" ASTRO-TAB between bottom caps
- 17" ASTRO-TAB between the webs

2 - Solid Lumber Joists

- 16" ASTRO-TAB

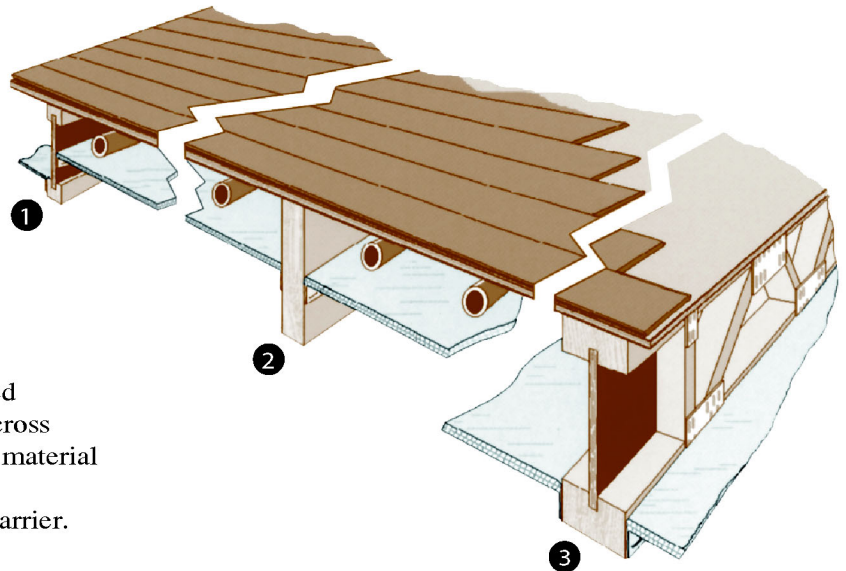
3 - Truss Joists

- 17" ASTRO-TAB between bottom flanges
or cut to fit

Note:

When insulating above crawl space or an unfinished basement ASTRO-FOIL can be stapled along or across the bottom face of the floor joists. 48" or 72" wide material is preferred for that application. Use 2" wide ASTRO-FOIL tape at all seams to create a vapor barrier.

BELOW HYDRONIC FLOOR HEATING SYSTEMS

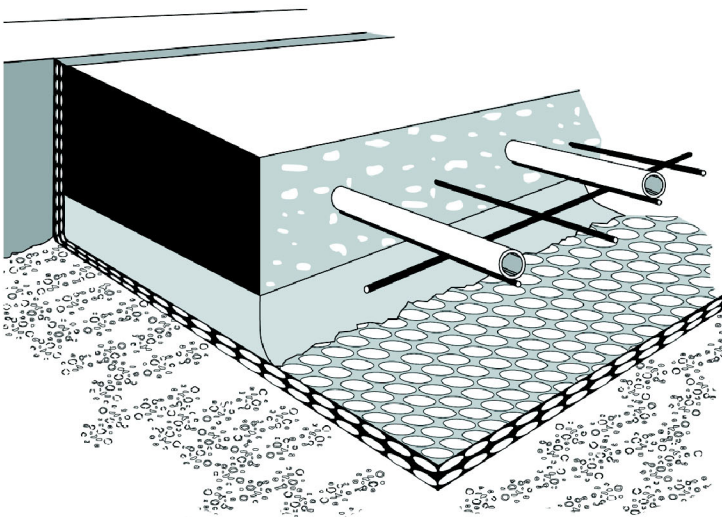


BELOW HEATED CONCRETE FLOORS For a High-Strength Insulating Moisture Barrier

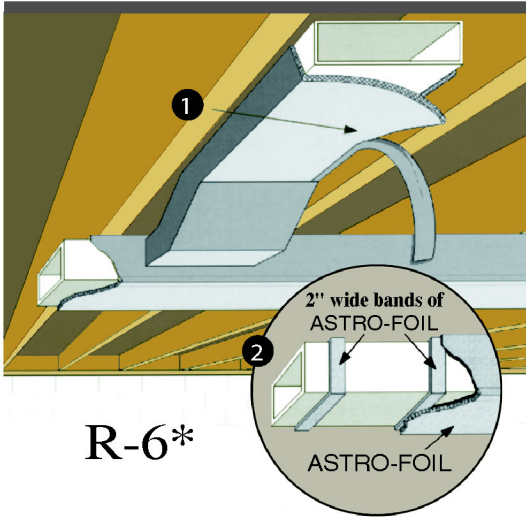
TUFF-STUFF

Special Features Include:

- ❶ Absolute Moisture Barrier
Keeps heat-robbing ground moisture away from the concrete.
- ❷ Reduces Downward Heat Loss by Over 50%
Exceeds the requirements of most HVAC load calculation programs.
- ❸ Super-Strong 388 PSI Puncture Resistance
Will support over 6" of concrete plus floor loads indefinitely.
- ❹ Total Over 19 mil Extruded Polyethylene Film
Withstands rough handling by installers and finishers.
- ❺ Air-Encapsulating Vacuum Formed Bubbles
Results in a structure that will not delaminate.
- ❻ Laminated With 99% Pure Polished Aluminum
Adds a reflective benefit to the intrinsic R-value.
- ❼ PET Coating Strengthens & Protects Foil Against Chemical Erosion
TUFF-STUFF can be laid with the foil side up or down, whichever is most convenient.



Typical Slab-On-Grade Installation



HEATING & AIR CONDITIONING DUCTS

ASTRO-FOIL™

Installation Guidelines:

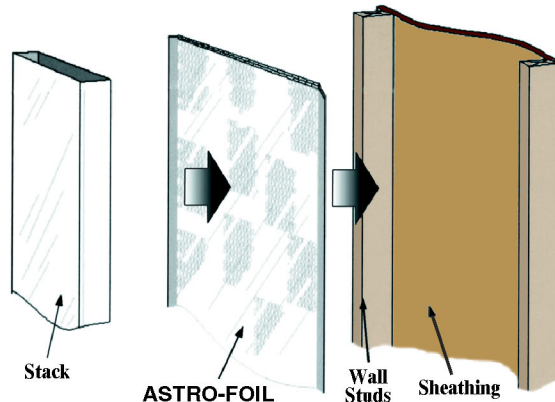
- 1 - Wrap ducts with 12", 16" or 24" wide ASTRO-FOIL. Tape edges and corners with ASTRO-FOIL tape to hold it securely in place and to create perfect vapor barrier.
- 2 - For extra efficiency band the duct with 2" wide strips of ASTRO-FOIL spaced 24" apart and hold in place with foil tape. The additional airspace between the duct and the ASTRO-FOIL will increase resistance to heat loss or gain. Works great with round duct pipes, too! Where access allows you may choose to spiral-wrap the duct pipe.

*NOTE: Using bands to create 3/4" air space, delta T= 30° or less (see note [1] on back page).
SEE REVERSE SIDE for TECHNICAL DATA such as R-VALUES and ADDITIONAL APPROVALS.

BEHIND STACKS

Installation Guidelines:

- 1 - Use 16" wide ASTRO-TAB to fit between wall studs on 16" centers.
- 2 - Push ASTRO-TAB against the sheathing and staple through the tabs every 18" to 24".
- 3 - Install stack over the ASTRO-TAB. For maximum thermal performance leave a 3/4" air space between the stack and the ASTRO-TAB.



ASTRO-TAB

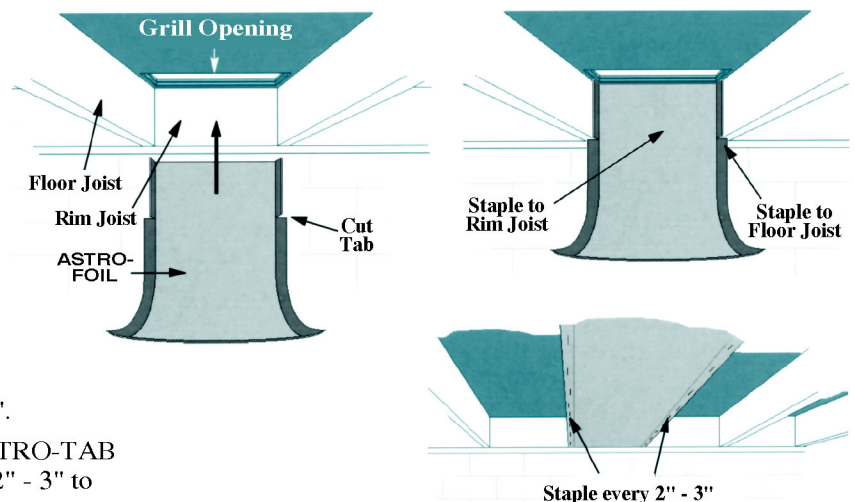
Meets FHC 10/25
(ASTM E84-95)
(Class 1, Class 2)

ASTRO-TAB

Installation Guidelines:

- 1 - Use 16" wide ASTRO-TAB when floor joists are on 16" centers and 24" ASTRO-TAB for joists on 24" centers. For double panning adjacent cavities use 34" wide ASTRO-TAB. Cut tabs same distance from the end of the ASTRO-TAB as the depth of the joist.
- 2 - Slide ASTRO-TAB up between floor joists and staple to the rim joist below the register opening. If run begins away from the rim joist, bend a 1" strip along the beginning edge of the ASTRO-TAB and staple to sub floor. Staple the tabs to the floor joists.
- 3 - Bring the ASTRO-TAB up with the tabs over the bottom face of the floor joists. Staple every 2" - 3". If preferred, the tabs can be bent down and the ASTRO-TAB slid up 3/4" between the floor joists. Staple every 2" - 3" to the bottom inside of the joists.

RETURN AIR PANNING SYSTEMS



ASTRO-FOIL & ASTRO-TAB TECHNICAL DATA

Two layers of aluminum foil laminated to two layers of heavy-duty air-filled polyethylene bubbles.

SPECIFICATIONS:

Thickness:	5/16" Nominal (8mm)
Weight:	1.25 oz. per sq. ft. (382 g/m ²)
Flame Spread Index: ASTM E-84	10
Smoke Development Index: ASTM E-84	26
Fire Rating: NFPA 255/UBC 42-1	Class A/Class1
Reflectivity/Emissivity: ASTM E-408	97% / 3%
Linear Shrinkage:	None
Puncture Resistance: ASTM F-1306	66 lbs. per sq. in.
R-Value: ASTM C-236	15 (Down) 7.3 (Horiz.) 5.4 (Up)
Emittance: ASTM C-1321	0.03-0.04
Degradation:	0
U-Value (Btu/ft. ² hr°F):	0.0820 (Down) 0.119 (Horiz.) 0.139 (Up)
Water Vapor Transmission: ASTM E-96	0.02
Temperature Range:	-60°F to 180°F

The R-values shown are obtained ASTM C-236 Calibrated Hot Box test, and represent the measured values achieved when ASTRO-FOIL is installed in a cavity formed by 2" x 4" framing lumber. Different R-values will result from different applications. For complete details of methodology, contact your nearest ASTRO-FOIL supplier. Always check local building codes for variances or restrictions. ASTRO-FOIL's ability, in open applications, to reflect heat, and not emit heat conducted to it, is not fully measured by an R-value test. It's that special ability that makes ASTRO-FOIL so effective when left exposed.

*NOTE [1]: There are no ASTM standards established to measure the thermal performance of reflective insulation when used to insulate forced air duct systems. These ratings are based on "Thermal Resistance of Air Ducts and Bubblepack Insulation" by David W. Yarbrough published in the Journal of Thermal Insulation volume 15 - October 1991.

STANDARD ROLL DIMENSIONS (Width & Length)

ASTRO-FOIL...Standard Edge		ASTRO-TAB...Staple Edge		
12" x 25'	24" x 25'	16" x 25'	17" x 32'	24" x 25'
12" x 50'	24" x 50'	16" x 32'	17" x 50'	24" x 32'
		16" x 50'	17" x 125'	24" x 50'
16" x 25'	24" x 125'	16" x 125'		24" x 125'
16" x 50'	48" x 25'			
16" x 125'	48" x 50'			34" x 32'
	48" x 125'			

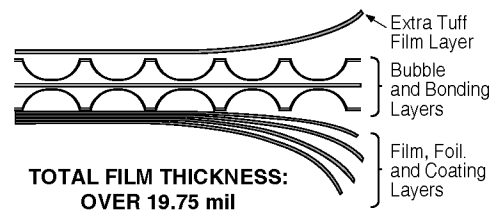
Additional approvals:	CAN/ULC S 102.2 M88
CAL Lic. TF 1213	Flame 5 Smoke 10
Reg Cat 213	CMHC # 11978
Approval for Sacramento County	CAN/CGSB 51.33
City of LA RR 7995	Type 1 Vapor Class M1
HAWAII Mb 92-3(1)	Flame & Smoke

TUFF-STUFF TECHNICAL DATA

SPECIFICATIONS:

	Rating	Test Method
Absolute Moisture Barrier:	0.002 (Impermeable)	ASTM E 96-95
Puncture Resistance:	388 PSI	ASTM F 1306 Fed. Test Std. 101C-Method 2031
Tensile Strength:	85-95 lb/sq. in.	ASTM D 412
Flame & Smoke Rating:	Class 1, Class A	ASTM E 84
Foil Reflectance/Emittance:	76% / 24%	ASTM E 408
System Thermal Resistance:		
Concrete (0.10 R/inch)	0.20 R (2 in.)	ASHRAE Handbook
Sand (0.40 R/inch)	0.60 R (1.5 in.)	ASHRAE Handbook
TUFF STUFF	1.30 R	ASTM C 518
Gravel (0.15 R/inch)	0.45 R (3 in.)	ASHRAE Handbook
Total R Value	2.55 R (system)	
Insect and Fungi Resistant		

Structural Detail and Total Film Thickness



BASIC TOOLS NEEDED:

Razor Knife, Aluminum Tape, Scissors, Tape Measure

ALL ASTRO-FOIL PRODUCTS ARE:

- TESTED AND APPROVED • SUPER EFFICIENT • DURABLE
- SUPER-SAFE TO HANDLE • EASY TO INSTALL • TOUGH AND ECONOMICAL
- PROVIDE CONSISTENT PERFORMANCE and PEACE OF MIND