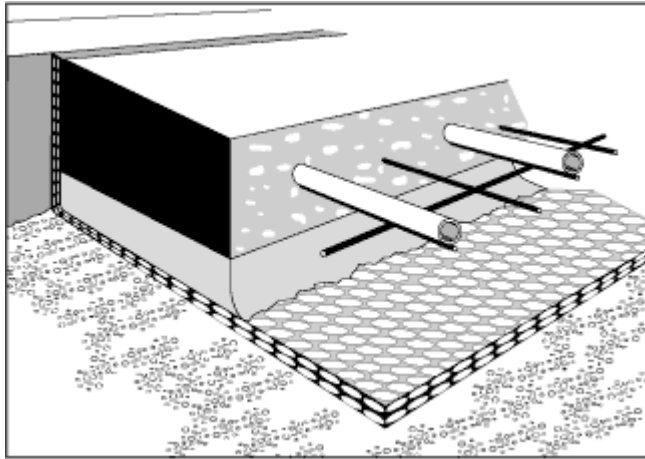


# TUFF-STUFF

From Astro-Foil UK

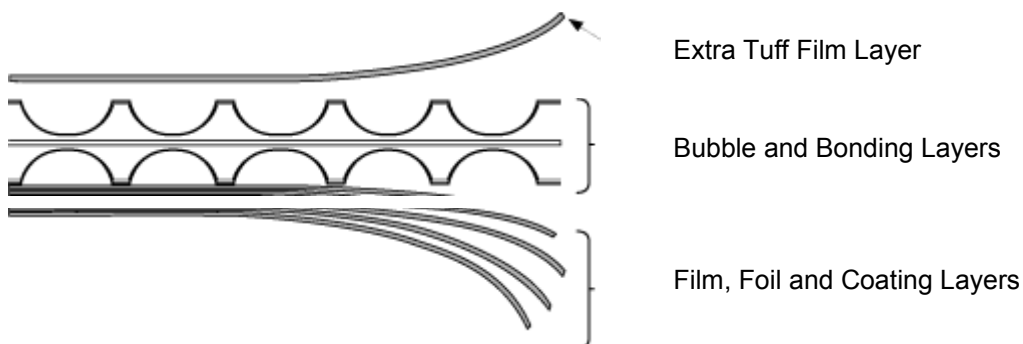
A HIGH-STRENGTH Insulating Moisture Barrier  
for Use Below Heated Concrete Floors



## Special Features

- 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 338 PSI Puncture Resistance**  
Will support over 6" of concrete plus floor loads indefinitely.
- ❹ **Total of Over 16 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 and Protects Foil Against Chemical Erosion**  
Tuff-Stuff can be laid with the foil side up or down, whichever is most convenient.

Structure Detail and Total Film Thickness



# Specifications

	<b>Rating</b>	<b>Test Method</b>
Absolute Moisture Barrier:	0.002 (impermeable)	ASTM E 96-95
Puncture Resistance:	151.8 PSI	ASTM F 1306
Tensile Strength:		Fed. Test Std. 101C-Method 2031
Flame and Smoke Rating:	85-95 lb/sq. in.	ASTM D 412
Foil Reflectance/Emittance:	Class 1, Class A	ASTM E 84
System Thermal Resistance:	76% / 24%	ASTM E 408
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		