



INSULATION FOR SINGLE-LAYER ROOFS AND ENCLOSURES

Single-layer roof panels work best with reflective insulation. This type of insulation is flexible, lightweight and thin, and it usually comes in rolls, making it easy to transport and store.

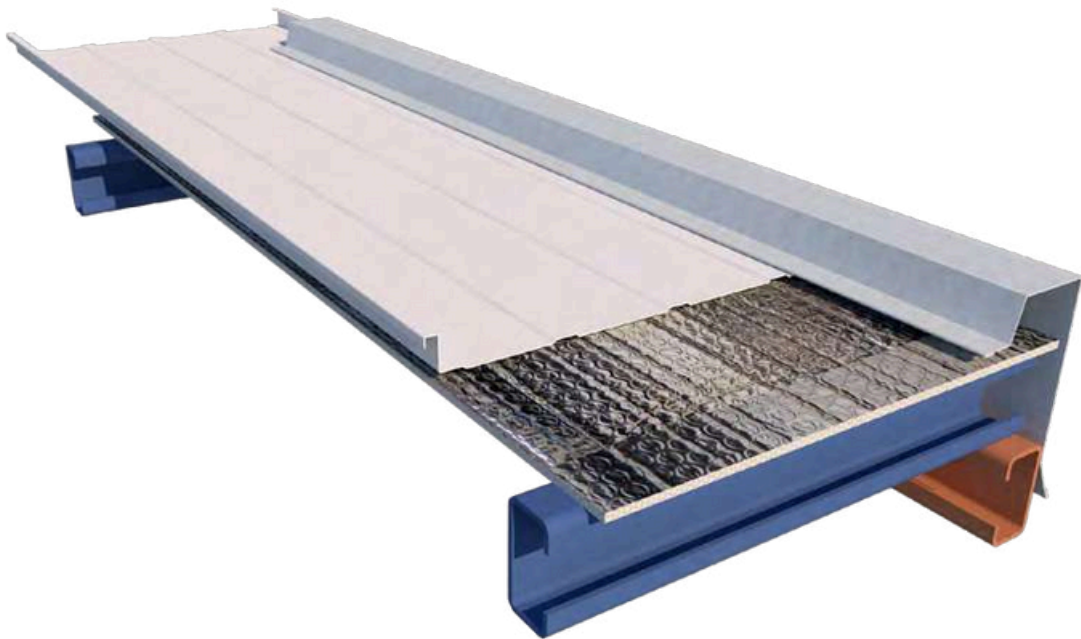
Despite its thinness, reflective thermal insulation has a low conductivity coefficient and offers good heat resistance.

As the insulation disrupts thermal bridges, heat is not transferred outdoors in the winter or indoors in the summer, providing for remarkable energy savings in heating and air conditioning.

Reflective insulation is very resistant to moisture and water, and to all their correlated problems such as mold or bacteria.

It also contributes acoustic insulation properties against aircraft and impact noises. Further, it is very durable, it does not lose its insulation properties with time, and it does not require frequent maintenance.

The main types of reflective insulation Cielo Vivo works with are bubble and closed cell.





REFLECTIVE BUBBLE INSULATION



Consists of a layer of polyethylene bubbles or foam sandwiched between two layers of aluminum foil.

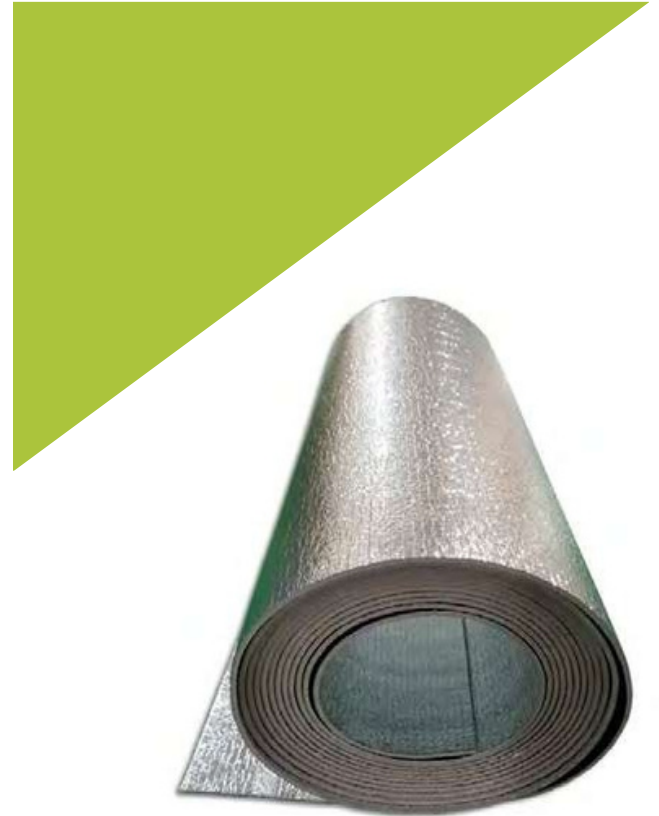
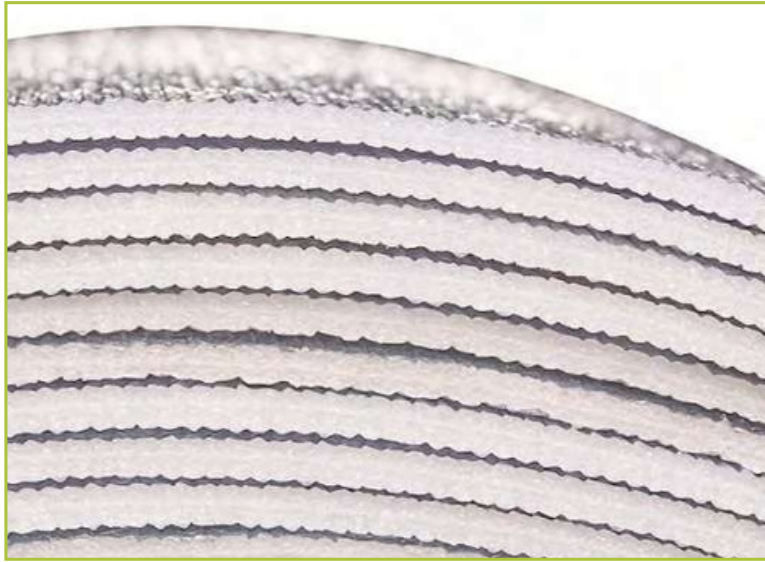
BUBBLE INSULATION TECHNICAL SPECIFICATIONS

	4 mm - POLYETHYLENE AIR BUBBLES + TWO LAYERS OF ALUMINUM POLYESTER	8 mm - POLYETHYLENE AIR BUBBLES + TWO LAYERS OF ALUMINUM POLYESTER	STANDARD
Thickness	4 mm-5 mm	8 mm-10 mm	
Dimensions	1.22 m W x 38.1 m L	1.27 m W x 20 m L	
Effective width	1.17 m	1.17 m	
Average weight per m2	0.149 g/m2	0.229 g/m2	
Water vapor permeability	Complies with		ASTME96/CGSB-51.33-M89
Mold resistance	Does not promote mold/mildew growth		ASTM C1338
Delamination resistance	Complies with		ASTM C1224
R-value	R 14.7 Heat flow down	R 15.2 Heat flow down	ASTM C1224
	R 6.1 Heat flow up	R 6.6 Heat flow up	ASTM C1224
	R 8.0 Horizontal heat flow	R 8.5 Horizontal heat flow	ASTM C1224
Temperature range	-32.9 °C to 381.6 °C		ASTM C411
Fire rating	Class 1 / Class A		ASTM E84
Emittance	0.06		ASTM C1371





REFLECTIVE CLOSED-CELL INSULATION



Consists of a variable-width layer of closed microcell polyethylene foam sandwiched between two layers of aluminum foil or one layer of film and one layer of aluminum foil.

CLOSED CELL INSULATION TECHNICAL SPECIFICATIONS

	5 mm - CLOSED-CELL POLYETHYLENE FOAM + SINGLE ALUMINUM POLYESTER LAYER	10 mm - CLOSED-CELL POLYETHYLENE FOAM + SINGLE ALUMINUM POLYESTER LAYER	5 mm - CLOSED-CELL POLYETHYLENE FOAM + DOUBLE ALUMINUM POLYESTER LAYERS	10 mm - CLOSED-CELL POLYETHYLENE FOAM + DOUBLE ALUMINUM POLYESTER LAYERS	NORMA
Thickness	5 +/- 0.35 mm 1.22	10 +/- 0.7 mm 1.27	5 +/- 0.35 mm 1.22	10 +/- 0.7 mm 1.27	
Dimensions	m W x 20 m L	m W x 20 m L	m W x 20 m L	m W x 20 m L	
Effective width	1.17 m 0.214	1.22 m 0.374	1.17 m 0.374	1.22 m 0.414	
Average weight per m2	kg/m2	kg/m2	kg/m2	kg/m2	
Water permeability	Waterproof				UEAtc
Water vapor permeability	0.033 g/m ² ·h·kPa 0.05 perms (gr/ft ² ·h·inHg)				ASTM E96 / IRAM 1735
Mold resistance	Does not promote mold/mildew growth				ASTM C1338
Corrosion resistance	Complies with				ASTM C1224
Crack resistance	Complies with				ASTM C1224
Delamination resistance	Complies with				ASTM C1224
Moisture resistance	Complies with				ASTM C1258*
R-value	R 9.56 (°F·ft ² ·h/BTU)		*A: 15.67 B: 21.12 (°F·ft ² ·h/BTU)	*A: 16.55 B: 31.01 (°F·ft ² ·h/BTU)	ASTM C-236
Temperature range	-20 °C-80 °C				ASTM C1224
Fire rating	0				ASTM E84-99
Smoke development rating	15				ASTM E84-99
Emittance	0.3				ASTM C1371-98

*TEMPERATURE RANGE -20 °C-80 °C (ASTM C1224)

