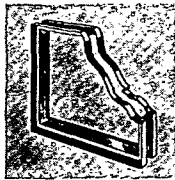


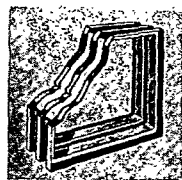
Libbey-Owens-Ford Glass Company

Nicholas Building, Toledo 3, Ohio



THERMOPANE Insulating Glass

L-O-F Thermopane is a transparent factory-fabricated insulating glass unit composed of two or more panes of glass separated by $\frac{1}{4}$ in. or $\frac{1}{2}$ in. of dehydrated captive air, hermetically sealed at the edges in the factory with a metal-to-glass bond.



Thermopane is fabricated to ordered sizes at Libbey-Owens-Ford's factory. The glass, before being assembled into Thermopane units, is specially cleaned before the patented Bondermatic seal is applied. The layer of air inside the Thermopane units is scientifically cleaned, dried and hermetically sealed. The patented, metal-to-glass seal bonds the two or more panes of glass into one unit to prevent dirt and moisture from entering the air space.

Thermopane Reduces the coefficient of heat transmission; increases the room-side surface temperature, thus promoting radiant comfort and lowering the dew point; furnishes a control of light quantity and quality through combinations of various types of glass, and deadens sound transmission to some degree.

Double-glass Thermopane: Glazing of wood or metal windows or doors for practically any purpose in structures requiring heating or air conditioning.

Triple-glass Thermopane: Large stationary units such as insulated glass walls in homes, apartments, public and commercial buildings and in show windows for refrigerated display where temperature differential must be considered.

Quadruple-glass Thermopane: Engineered to meet low temperature and high humidity conditions.

Thermopane Uses are many, but may be briefly summarized as below:

Thermopane Units provide a high resistance to heat flow, varying with the number of panes and the thickness of the air space used. In summer the low heat transmission coefficient reduces the load on air conditioning systems. In winter it saves heat. The greater efficiency of Thermopane makes it possible to incorporate larger windows in houses and keep the cost of fuel constant. For example, a house could have 107 sq ft of Thermopane instead of 35 sq ft of single glazing and not lose any more heat. Thermopane permits the influx of solar heat in exterior glazing of buildings without a prohibitive compensating loss from conduction.

The over-all heat transmission coef-

ficient U varies with the ranges of temperature at which the coefficient is determined. For most practical heat loss calculations coefficient U can be the value determined at 0 deg outside temperature, 70 deg inside temperature, 51 mph outside air velocity, 0.25 mph average inside air velocity. The following table gives such values:

Number of Panes	Thickness of Panes	U Values	
		$\frac{1}{4}$ In. Air Space	$\frac{1}{2}$ In. Air Space
2	$\frac{1}{8}$ "	0.62	0.57
	$\frac{1}{4}$ "	0.57	0.53
3	$\frac{1}{8}$ "	0.42	0.37
	$\frac{1}{4}$ "	0.39	0.35

Note: U for single $\frac{1}{4}$ in. thick glass = 1.14, R = 0.88.
 U for single $\frac{1}{2}$ in. thick glass = 1.07, R = 0.94.

The Room Side Surface Temperature of Thermopane is considerably higher than that of single glazing. Usually radiators or registers are near glass areas in buildings to offset conducted heat loss from a room and radiant loss from the bodies of persons near cold glass areas. The higher glass surface temperature of Thermopane greatly reduces the amount of heat which must be supplied, permitting more flexibility in room design.

Another Important Benefit from Thermopane is the prevention of frost or condensation from forming on the room side surface of a single pane of glass in winter due to higher room humidity. The absence of condensation on the room side surface of glass is of considerable importance where clear visibility is a factor as in residences, all types of commercial or industrial buildings and refrigerated display spaces.

More Complete Information on Thermopane is available by writing to Libbey-Owens-Ford, or its district office nearest to you, and requesting technical data sheets prepared by Don Graf, a general booklet about the product, and a brochure which discusses Solar Housing.

LIBBEY-OWENS-FORD GLASS COMPANY, Toledo 3, Ohio

OWENS-ILLINOIS INSULUX Glass Block

Owens-Illinois Glass Company

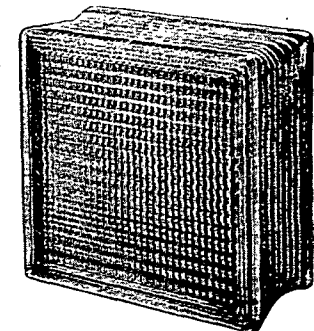
INSULUX PRODUCTS DIVISION

Toledo, Ohio

Dealers in All Principal Cities

Insulux Glass Block Give Better Control of Interior Conditions

Insulux Glass Block are hollow, partially evacuated block, $3\frac{3}{8}$ inches thick, with ribbed or smooth faces. Laid up in mortar in solid panels, they form a light-transmitting area that also offers high insulation value. Proper use of Insulux Glass Block results in better control of interior conditions, and therefore greater efficiency and lower initial and operating costs for cooling and heating plants.



Lower Heat Transmission

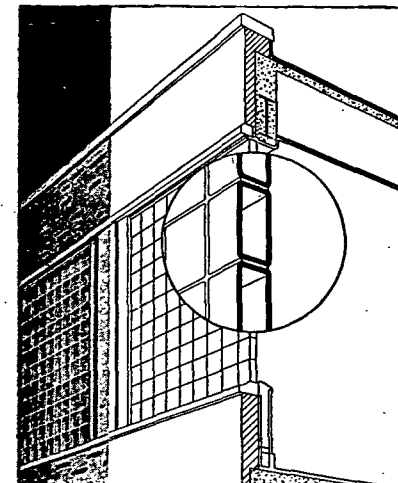
Tests on conductivity of Insulux Glass Block show that the heat transmission of Insulux is approximately the same as for a concrete wall 16 inches thick or a brick wall 8 inches thick. The U factor for smooth face block is .49 Btu per sq ft per hour per degree difference in temperature. For ribbed block, the U factor is .46. This test data is available for inspection by engineers.

Reduction of Solar Heat

In a comparative test of solar heat transmission, a single glazed steel sash transmitted 94 per cent more heat than an Insulux panel. As with sash, however, Insulux panels transmit less solar heat if properly oriented and well shaded. There is variation in the solar heat transmission of different designs of Insulux—data will be furnished on request.

Designs, Sizes, Erection

Insulux Glass Block are made in 11 attractive designs for both residential and industrial use. They are available in three sizes: $5\frac{1}{4}$ in. square, $7\frac{1}{4}$ in. square and $11\frac{1}{4}$ in. square. Panels are easily and quickly erected by bricklayers. Additional technical data, installation information, etc., will be furnished on request.



Better Insulation

The cross-section drawing above shows why Insulux Glass Block panels give higher insulation than ordinary light-transmitting areas. The glass block, partially evacuated and with thick faces, lower the conductivity and solar heat transmission of the light-transmitting area. Air infiltration is eliminated. The better insulation provided by Insulux is a factor in planning air conditioning and heating equipment and operating costs.