Infra Insulation, Inc.

525 Broadway, New York, N. Y.
Telephone: WOrth 4-2241

THERMAL FACTORS OF INFRA, AND OTHER INSULATION EQUIVALENTS

	Heat Flow-Type 6	Heat Flow-Type 4 Jr., in ONE-INCH Space
Up-Heat	C.089 R.11.23 = 4⅜″ other insul.	Up C.194 R 5.15 = 2½″ other insul.
Wall	C.073 R.13.69 = 5⅝″ other insul.	Wall C.150 R 6.66 = 2¾″ other insul.
Down	C.044 R.22.72 = 9″ other insul.	Down C.097 R 10.30 = 4⅛″ other insul.

Infra Insulation, Type 6, is a tough, 3-aluminum-sheet insulation, with 6 heat-ray-reflective surfaces, plus two other reflective spaces, and four rows of inner, alternating, reverse triangular air spaces. (Total, 6 reflective spaces.) It is easily and quickly installed between wood joists, furring strips, and between steel trusses, metal beams and girders, giving the entire area in between, including the edges, full depth protection against heat and vapor flow and condensation formation. The normal installation rate between wood joists is 2,000 sq ft a day per man. The 1⅝ cu ft carton contains 500 sq ft, weighs 46 lbs. Standard width, for 12 in., 16 in., and 24 in. centers. Standard Type 4, for 12 in., 16 in., 20 in., 24 in. centers.

Heat flow through wall space, which is air, is about 7 per cent by Conduction; 15 per cent to 28 per cent by Convection; and by Radiation, 65 per cent to 80 per cent.

ABSORPTIVITY and RADIATION:—Each of Infra's 6 accordion aluminum surfaces has an absorptivity of 3 per cent and a reflectivity of 97 per cent for radiant heat or radiation. Their emissivity is only 3 per cent. The surfaces of most building materials, including some insulations, have an absorptivity and emissivity of over 90 per cent for heat rays as against Infra's 3 per cent.

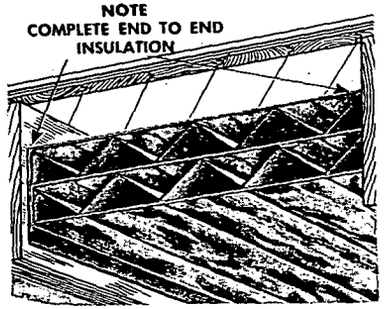
CONDUCTION:—One sq ft of Type 6 Infra weighs only 1¼ oz, has only 1¼ cu in. mass. The air-to-mass ratio of Infra by volume is 431 parts air to 1 part mass. For many insulations, when dry, it is only about 23 parts air to 1 part mass.

CONVECTION and VAPOR:—Each of the 3 long, continuous, tough aluminum sheets of Infra has ZERO permeability to all gases, including heated air, cold air, and water vapor. Infiltration under flat stapled flanges is slight. The 2 fiber separators also retard CONVECTION.

NON-CONDENSATION-FORMING:—The 3 aluminum sheets together with TWO inner accordion separators, which permanently prevent metal-to-metal contact, form FOUR inner rows of alternating, reflective air spaces. The construction, and the low heat storage capacity, minimize condensation formation on or within this type of insulation.

Infra Insulation uses 99.5 per cent pure aluminum, 0.0009 in. and 0.002 in. thick, made in accordance with special Infra emissivity requirements. It has 52 lbs and 17 lbs bursting strength (Mullen Test), 28 grams and 80 grams tearing strength (Elmendorf Test), which is up to 2600 per cent tougher than commonly used foils of less than 0.0005 in. thickness having up to 3 lb bursting and 10 gram tearing strengths. The special fiber separators are permanently flame, mold, and vermin resistant.

FIRE:—Because its aluminum surfaces have very low emissivity (3 per cent) and a very high melting point (1220F), Infra has actually prevented the spread of fire.



SANITARY:—Infra is sanitary, inhospitable to vermin, and DOES NOT RETAIN odors. Mechanics like to work with Infra. It is CLEAN, free of DUST or lint, with permanent freedom from floating particles.

INFRA TYPE 4 JR. is half (½) inch in depth. Can be used in 1 in. spaces between furring strips in brick or masonry walls; around metal ducts, etc.

Write for a free copy of the sixth revised edition of "Simplified Physics of Vapor and Thermal Insulation," a manual by Alexander Schwartz, on the theory, practice and installation of insulation against heat and vapor flow and condensation formation.

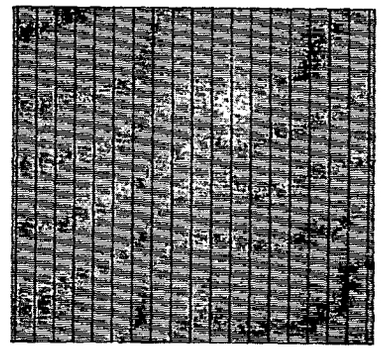
Ingersoll Products Division Borg-Warner Corporation

310 S. Michigan Ave., Chicago 4, Ill.

KoolShade* Sun screen is a bronze miniature venetian blind with fixed horizontal louvers set at an angle which will keep the greatest possible amount of solar heat load outside of windows.

By reflecting, absorbing, and radiating most of the sun's heat rays outside the window, Koolshade keeps rooms up to 15° cooler and has been shown to account for as much as 75% of the cooling necessary in air conditioning installations. Common measure: 100 sq ft of Koolshade is equal to 1 ton of refrigeration and costs ⅛ to ½ as much. Koolshade provides insect protection equal to ordinary insect screen.

Ingersoll franchised distributors apply Koolshade in rolled or extruded aluminum frames featuring the patented lacer wire that holds Koolshade in uniform tension.



Ingersoll KoolShade

An Example† of cooling load reduction based on conditions prevailing at peak solar load at 40° latitude:

We have 16 windows on East side of building—each window 4 ft x 6 ft for a total of 384 sq ft of window area. Use 10 a.m. Peak Load:

	Btu's
Solar load transmitted through bare windows 116 Btu x 384 sq ft	44,544
Solar load transmitted through KoolShade 11.5 Btu x 384 sq ft	4,416
Amount of Solar Heat stopped by KoolShade	40,128

Expressed in tons of refrigeration (12,000 Btu's—1 Ton)

Heat stoppage equals Tons 3.3444

Follow same procedure for 15 West Windows 4 ft x 6 ft—total square footage 360 sq ft—and using 3 p.m. Peak Load:

	Btu's
Solar Load through Bare Windows	61,200
Solar Load through KoolShade	7,920
Reduction	53,280
in Tons	4.440

South windows consist of 7—4 ft x 6 ft and 2—3 ft x 6 ft for total square footage of 204 sq ft—Figuring on 12:00 noon Peak Load:

	Btu's
Solar Load through Bare Windows	15,096
Solar Load through KoolShade	1,224
Reduction	13,872
in Tons	1.156

Total tons of refrigeration saved 8.9404

A Sun Position, Heat Gain and Shading Data Calculator is available for architects and engineers. It is used for computing sun load on windows at various exposures at different times of the year in six different latitudes, N26 deg, 30 deg, 34 deg, 38 deg, 42 deg, and 46 deg . . . compiled in a slide chart for immediate reference. There is a nominal charge for this useful tool. Write for details to Ingersoll Products Division, Borg-Warner Corporation, Dept. V.

† Example based on test data from ASHVE GUIDE, 1954, pp. 287 through 299.

* Koolshade and Sungard are trademarks (Reg. U.S. Pat. Off.). They are the property of the Ingersoll Steel Division, Borg-Warner Corp.