Kaiser Aluminum & Chemical Sales, Inc.

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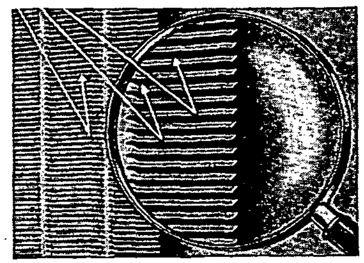
KAISER ALUMINUM SHADE SCREENING*

* Patented

Kaiser Aluminum Shade Screening is scientifically designed to keep interiors cool by blocking hot sun rays. Shade Screening is being widely used in conjunction with air conditioning systems to reduce the solar load—thus permitting the use of smaller units and reducing the work load on larger units.

The effect of using Kaiser Aluminum Shade Screening is shown on these graphs prepared by Kaiser Aluminum engineers following a test procedure similar to that used at the ASHVE Laboratory (1, 2) during experimental work on the shading of sunlit glass. The accompanying charts illustrate the amount of instantaneous heat gain to a room both through unshaded windows and windows protected with Kaiser Shade Screening.

Kaiser Aluminum Shade Screening has 17.5 louvers per inch permanently tilted at a downward angle. This stops sun rays before they hit the window glass. With sun angle (apparent) at 37 deg 100 per cent of sun rays are blocked. At 30 deg, 85 per cent. At 25 deg, 75 per cent. At 15 deg, 55 per cent. At 0 deg, 30 per cent. Thus Shade Screening can reduce the amount of instantaneous heat gain through unshaded windows by as much as 78 per cent, while still providing the insect protection of ordinary window screening.



TYPICAL CALCULATIONS OF COOLING LOAD REDUCTIONS

DURING PERIOD OF EXTREME MIDSUMMER SOLAR RADIATION AT 40° N. LATITUDE.

Shade Screening reduces the load on air-conditioning units . . . permits use of smaller units. These typical calculations show how this is possible:

FIGURING 24 WINDOWS ON THE EAST SIDE 3½′ x 6′

Total area 3½′ x 6′ x 24 = 504 Sq. Ft.
Use 10:00 A.M. peak load

	BTU/HR
Instantaneous Heat Gain through Unshaded Windows 504 Sq. Ft. x 138 BTU/HR per Sq. Ft.	69,500
Instantaneous Heat Gain through Windows shaded by Kaiser Aluminum Shade Screen 504 Sq. Ft. x 35 BTU/HR per Sq. Ft.	17,650
Quantity of Heat Gain Blocked by Shade Screen	51,850

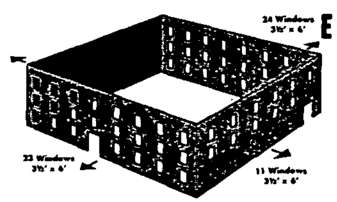
Heat Blocked = 4.31 tons* of refrigeration

FIGURING 23 WEST WINDOWS 3½′ x 6′

Total area 3½′ x 6′ x 23 = 483 Sq. Ft.
Use 4:00 P.M. peak load

	BTU/HR
Instantaneous Heat Gain Unshaded Windows	111,000
Instantaneous Heat Gain through Windows shaded by Kaiser Aluminum Shade Screen	34,800
Quantity of heat blocked by Kaiser Aluminum Shade Screen	76,200

Heat Blocked = 6.35 tons* of refrigeration



FIGURING 11 SOUTH WINDOWS 3½′ x 6′

Total Area = 3½′ x 6′ x 11 = 231 Sq. Ft.
Use 12:00 noon peak load

	BTU/HR
Instantaneous Heat Gain Unshaded Windows	26,800
Instantaneous Heat Gain through Windows shaded by Kaiser Aluminum Shade Screen	8,550
Quantity of heat blocked by Kaiser Aluminum Shade Screen	18,250

Heat Blocked = 1.52 tons* of refrigeration

* 1 ton of refrigeration = 12,000 BTU/HR

KAISER ALUMINUM SHADE SCREENING

The instantaneous heat gain measurements included *transmitted* direct solar radiation plus the *absorbed* heat gained by convection and re-radiation plus transmission of heat through the glass caused by inside-outside temperature differentials. Kaiser Aluminum Shade Screening reflects more heat than other commonly used materials thus the screening itself remains cool and emits at a very low rate.

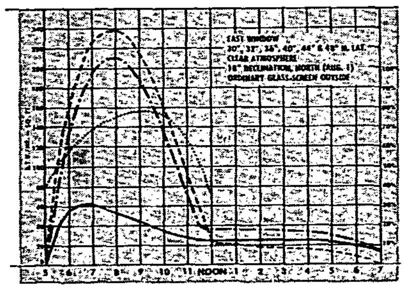
These factors of high reflectivity and low emissivity combine with the sun-blocking feature of Shade Screening to produce cooler interior temperatures.

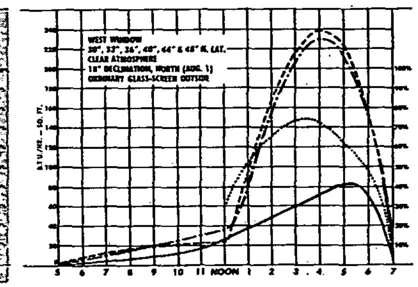
- - - - - - —Total Solar Load

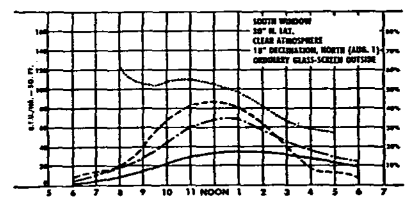
· — · — · —Instantaneous heat gain through unshaded windows.

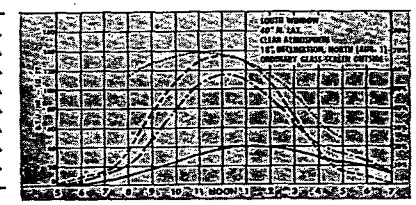
————————Instantaneous heat gain through windows protected by Kaiser Aluminum Shade Screening.

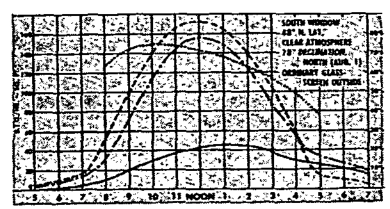
· · · · · · · ·% of heat blocked.











1. ASHVE Research Report, "The Shading of Sunlit Glass—An analysis of the effect of Uniformly Spaced Flat Opaque Slats," by G. V. Parmelee and W. W. Aubele, June 1952.

2. ASHVE Research Report, "The Shading of Sunlit Glass—An Experimental Study of Slat-Type Sun Shades," by G. V. Parmelee, W. W. Aubele, and D. J. Veld, October 1952.