

Ingersoll
KOOLSHADE

Sun Screen

MACATEE, INC.
DISTRIBUTORS
10801 DALLAS, TEXAS

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AIR CONDITIONING ENGINEERS

have proved that as much as 75% of the cooling load on their equipment is the direct result of

THE SUN HEAT THAT ENTERS THROUGH GLASS AREAS

We have long needed "Sun-Conditioning" on glass areas, too.



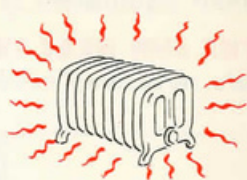
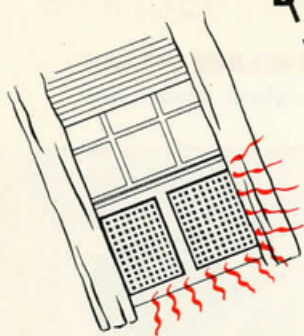
"Solar energy reaching the earth is about equivalent to that of burning 100 million tons of soft coal a MINUTE." . . . Fortune, April, 1940.

KOOLSHADE

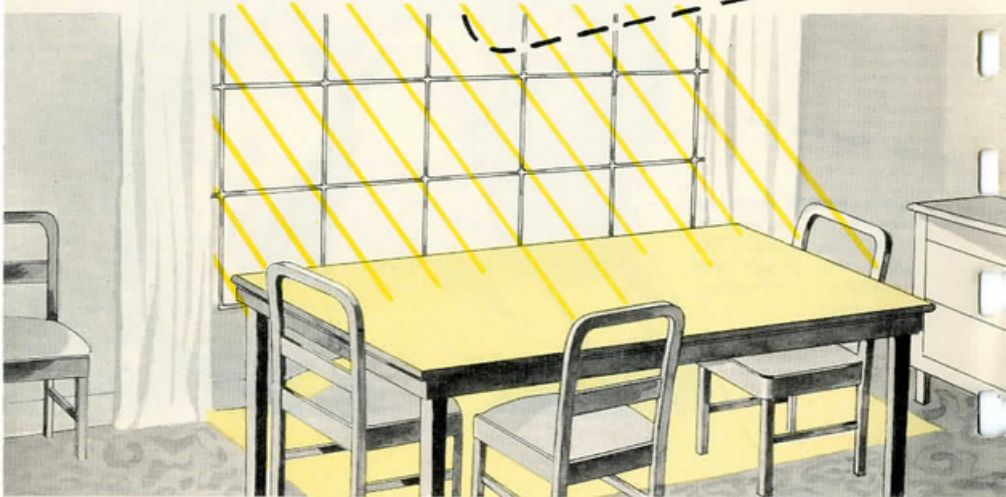
IS A HEAT BARRIER . . . AN
"OUTSIDE INSULATION" for
WINDOWS and GLAZED AREAS

LIGHT COMES THROUGH—
SUN RAY HEAT STAYS OUT

SUN RAYS ENTERING THROUGH THE WINDOW HEAT YOUR ROOMS BY RADIATION...



Just like your radiators in Winter—but they get their heat from the boiler



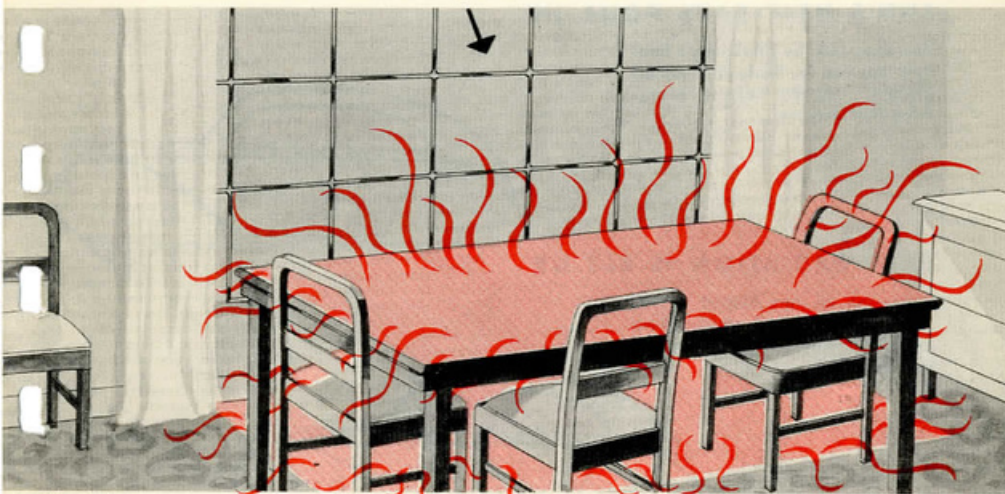
These heat rays not only heat the *air* in the room and add to the discomfort of the people in it—but they are also absorbed by everything they touch in the room . . .

WALLS - FLOOR - FURNITURE

Then

**THESE SURFACES START
RADIATING THE HEAT THEY RECEIVED
DIRECT FROM THE SUN RAYS**

Radiated heat rays are soon "bouncing against" and being absorbed by every other surface in the room . . . including the people in it . . .



UNTIL THE ROOM BECOMES A HEAT TRAP

Only a very little of this heat can get back out through the window because only incandescent heat (that developed by light rays) passes readily through glass.



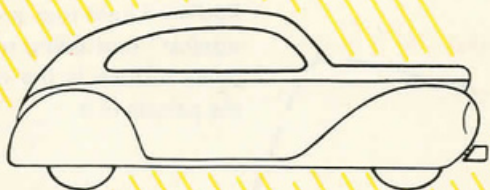
THIS TEST WILL PROVE IT!

Hold your hand close to, but not against, a pane of glass with a large lighted electric lamp on the other side. Now try it with a very hot "flat iron"!



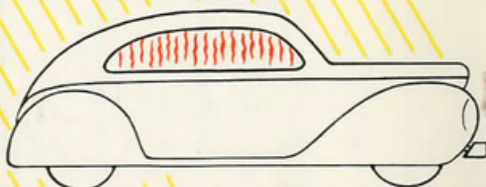
TRAPPED!

a closed car a perfect example



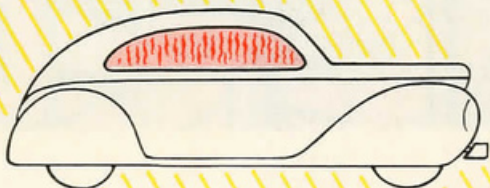
SUN'S HEAT RAYS POUR IN

You have felt the direct sun's heat rays pouring in through a closed window — rapidly heating everything that they hit.



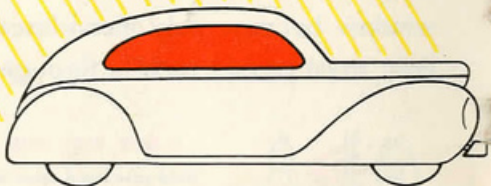
HEAT RADIATION IS SET UP

Every bit of sun heated metal, wood, fabric or flesh starts giving off its absorbed heat. That is called radiated heat.



IT IS TRAPPED INSIDE

Radiated heat lacks the driving force of sun's rays. It floats up against the glass but most of it is trapped inside. Temperatures rise.

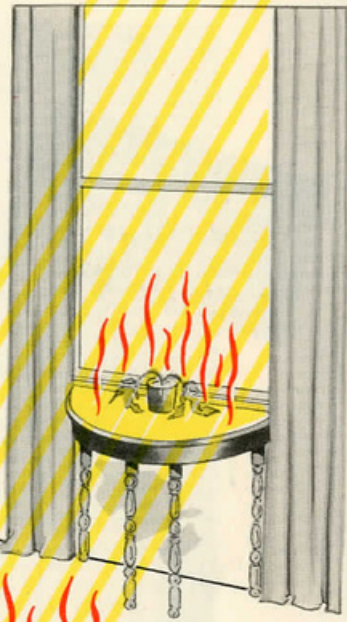


BECOMES OVEN-LIKE

You know the result—open the car door and a hot oven-like blast of heat hits you. The sweat oozes.

parked in the sun is of trapped sun ray heat

*The Same Thing Happens
in a Sun Exposed Room . . .*



Unless

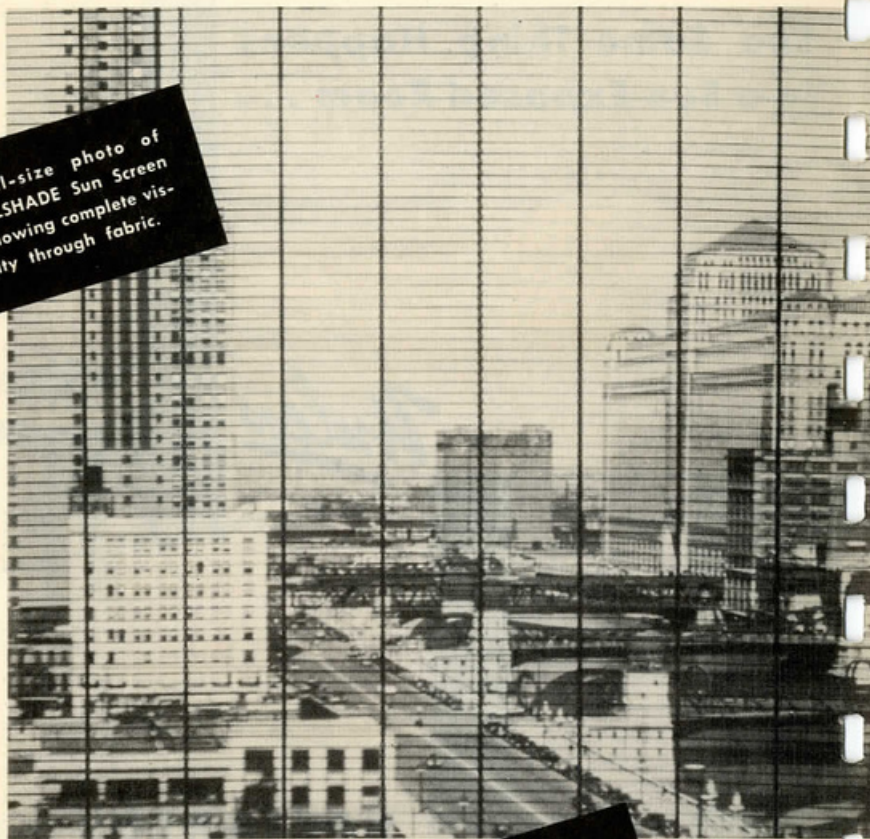


KOOLSHADE is Used
to Block the Sun's Rays
outside the Windows . . .

KOOLSHADE IS A METAL FABRIC
Made of Pre-Oxydized Bronze
IT LOOKS LIKE THIS!

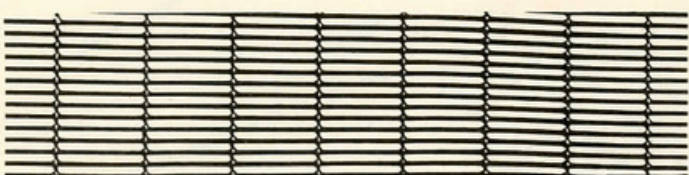
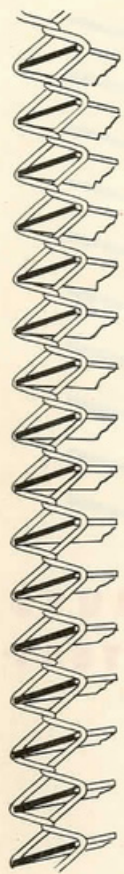


Actual-size photo of
KOOLSHADE Sun Screen
—showing complete vis-
ibility through fabric.

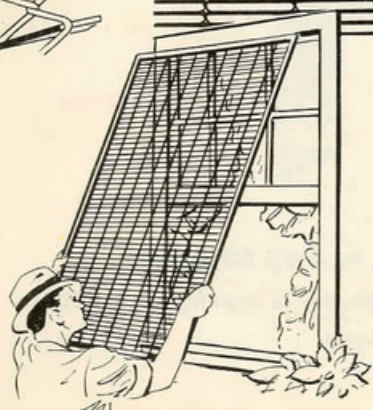


17.4 horizontal louvers to each inch
—each louver .058 inch wide and
.0045 inch thick—louvers held at
exact 17 degree angle by 2 vertical
wires twisted around each louver
at $\frac{1}{2}$ inch intervals. Louvers tilt
outward and downward.

FROM THE SIDE IT LOOKS LIKE THIS



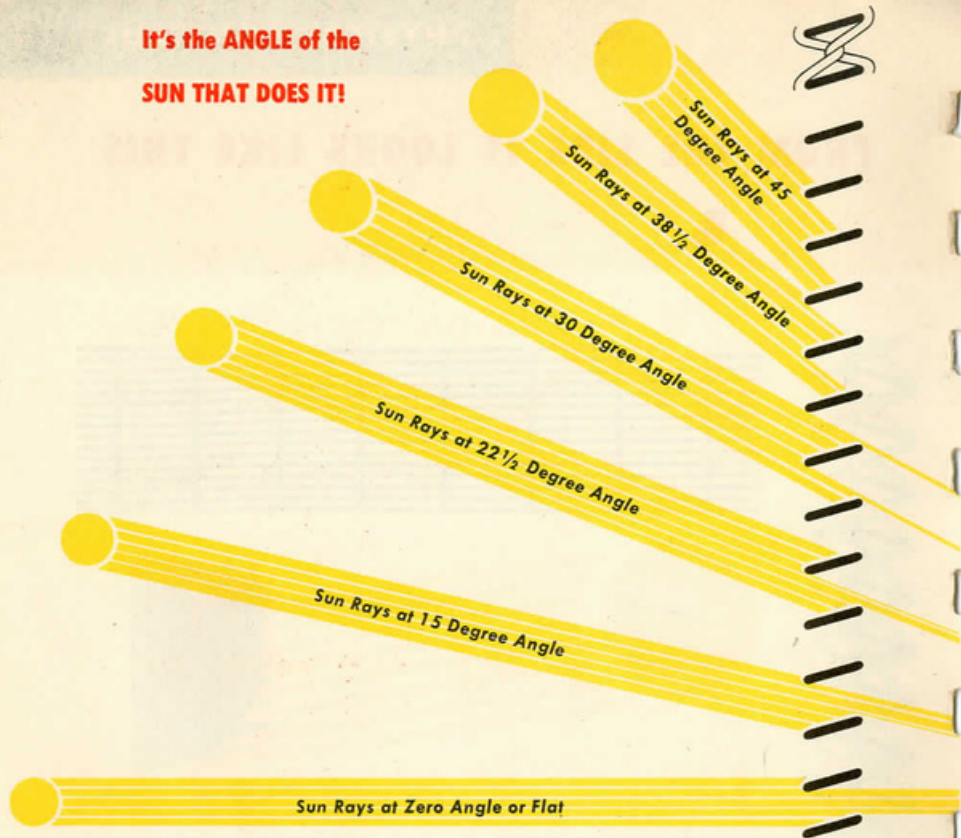
Actually it is a bronze miniature Venetian Blind with fixed horizontal bars set to stop the greatest possible amount of Sun Ray Heat *before it gets inside.*



It is framed and applied to windows like ordinary insect screens . . .

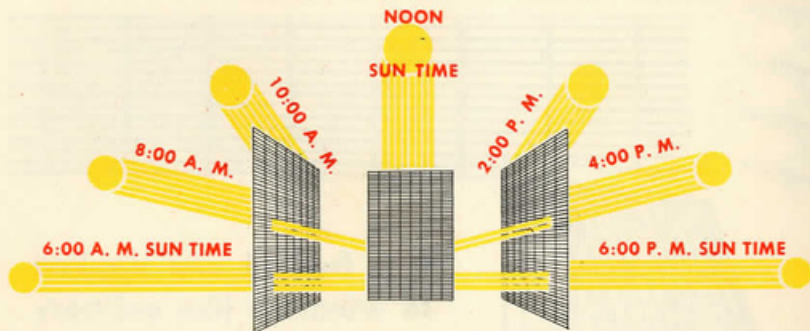
AS SIMPLE AS THAT!

**It's the ANGLE of the
SUN THAT DOES IT!**



Side view of KoolShade
Enlarged 7 times

**KOOLSHADE COMPLETELY SHUTS
WE CALL "THE HOTTEST**



In MIDSUMMER, from 8:15 to 3:45 SUN TIME

Thus, in Midsummer KoolShade is most effective in shutting out Sun Heat at those times of the day when it is needed most.

Entirely Shut Out

Entirely Shut Out 9:00

About 85% Shut Out 8:30

About 70% Shut Out 8:00

About 60% Shut Out

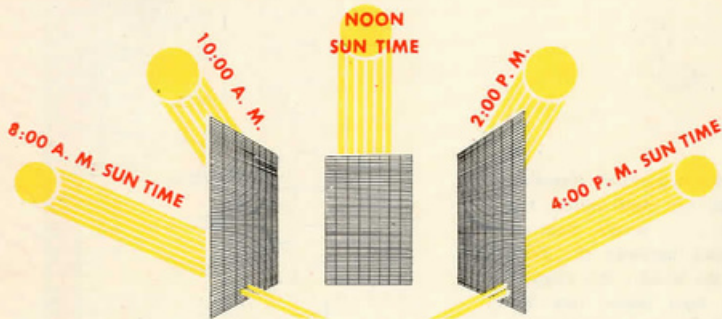
About 35% Shut Out

Showing how

**KOOLSHADE SHUTS OUT
SUN RAY HEAT AT VARI-
OUS SUN ELEVATIONS**

**IT'S THE ANGLE OF THE
SUN THAT DOES IT!**

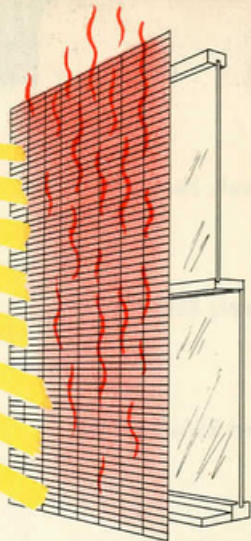
**OFF ALL SUN RAYS DURING WHAT
PART OF THE DAY?"**



In SPRING and FALL, from 10:00 to 2:00 SUN TIME

But in Spring and Fall KoolShade lets in the early morning and late afternoon Sun Heat—welcome warmth at these seasons—but it shuts out the hot mid-day sun.

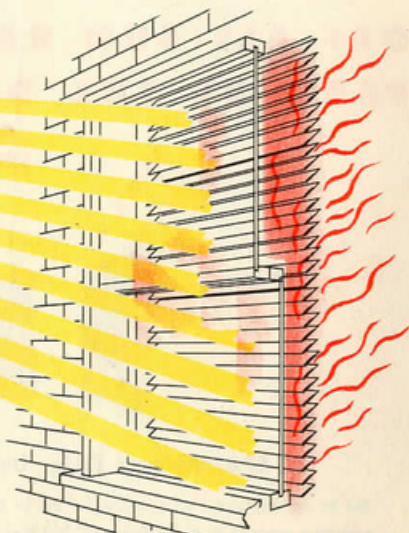
Exact times when the sun reaches any given altitude vary but slightly due to latitude within Continental United States. They also vary a little depending on the local difference between Sun Time and local Standard time. "Daylight Saving" Time also causes variations.



KOOLSHADE,
THEN IS
Really an
Outside Venetian Blind

Its scientific advance as a *heat control* is that it blocks direct Sun Ray Heat OUTSIDE the WINDOW.

Accurate, controlled tests show KoolShade is more than TWICE* as efficient a heat barrier as *Inside Venetian Blinds*.



... Because *Inside Venetian Blinds* let heat *inside* the room ... where heat is trapped between the Pane and the blind...this trapped heat then pours into the rooms between "slats" ... and the absorbed heat of the blind automatically makes a "panel heater" for that portion of the room.

*source: American Society of Heating & Ventilating Engineers

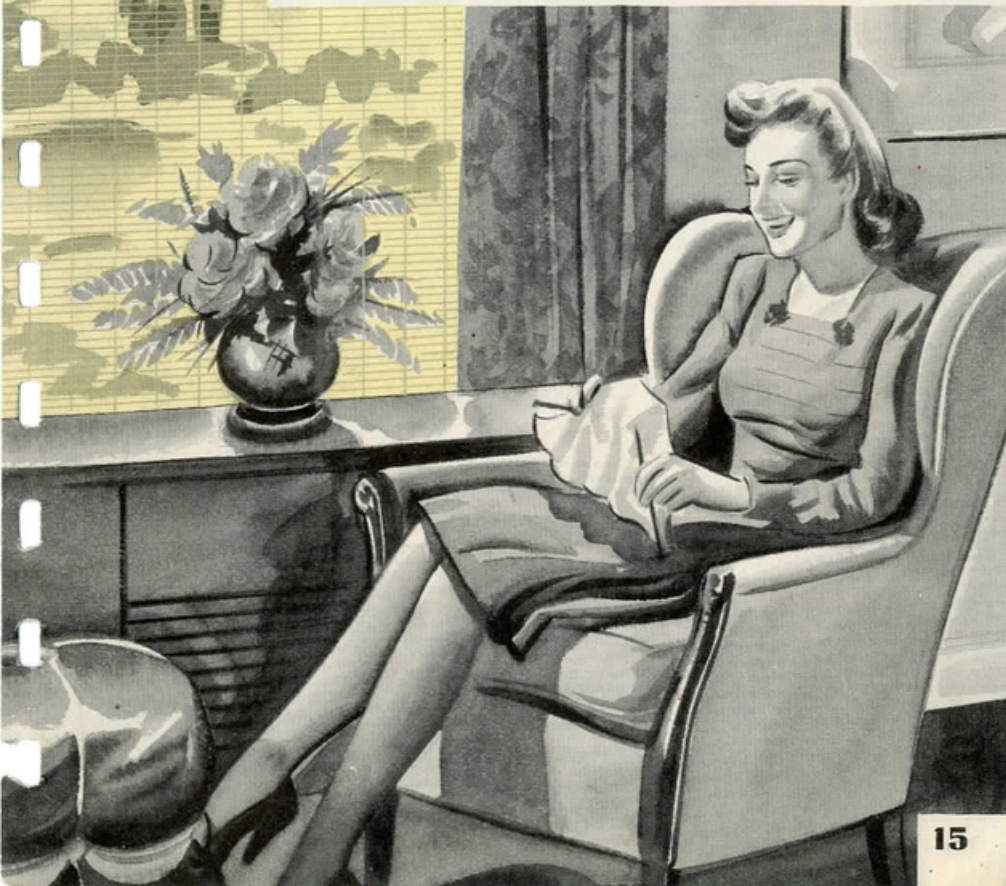
INSIDE vs. OUTSIDE HEAT BARRIERS

And in addition to
Giving More Than Double
HEAT STOPPING EFFICIENCY

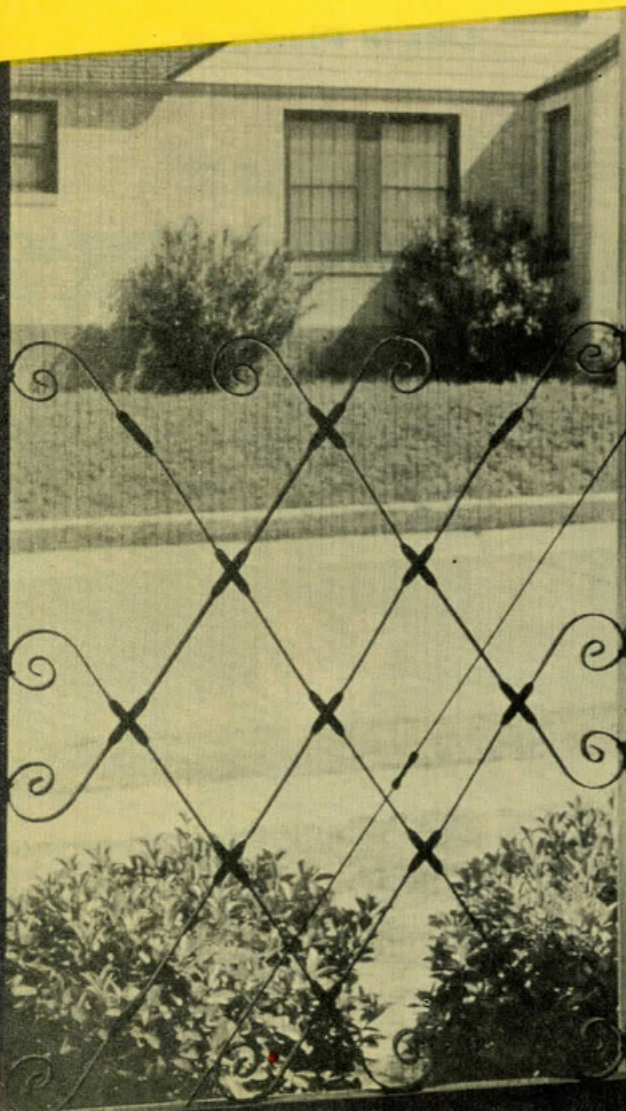
KOOLSHADE

Lets in Plenty of
GLARELESS LIGHT

*Cheerful, restful, easy on both
the eyes and the disposition*

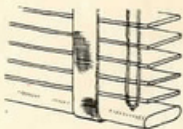
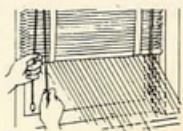
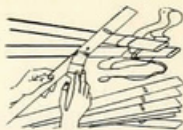


Another KoolShade Extra Value Is
COMPLETE VISIBILITY!
Closed Venetian Blinds Shut Out Entire View



Then add these advantages of
KOOLSHADE
 over Inside Venetian Blinds

1. Bronze Alloy KOOLSHADE never has to be repainted.
2. KoolShade is automatically set for greatest heat prevention—you don't have to adjust it.
3. KoolShade has no ropes to fray, no tapes to replace or remove and wash.
4. KoolShade never interferes with interior color schemes or decoration.
5. No insect screens are needed with KoolShade—an extra economy.





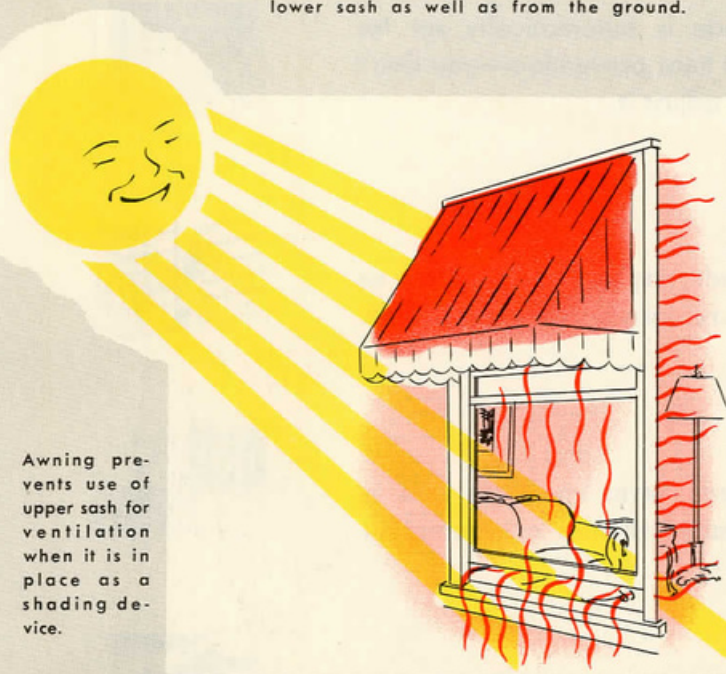
SCIENTIFIC TESTS *Prove* KOOLSHADE SHUTS OUT MORE SUN HEAT THAN AWNINGS or OUTSIDE BLINDS...

And Here's Why:

Awning stops only high angle Sun Rays.



At high Angles of Sun (Midday) awning traps heat radiated upward from outside walls and lower sash as well as from the ground.



Awning prevents use of upper sash for ventilation when it is in place as a shading device.

If deeper awnings are installed to shut out more low-angle Sun Rays they also decrease both visibility, light, and the advantages of cooling breezes.

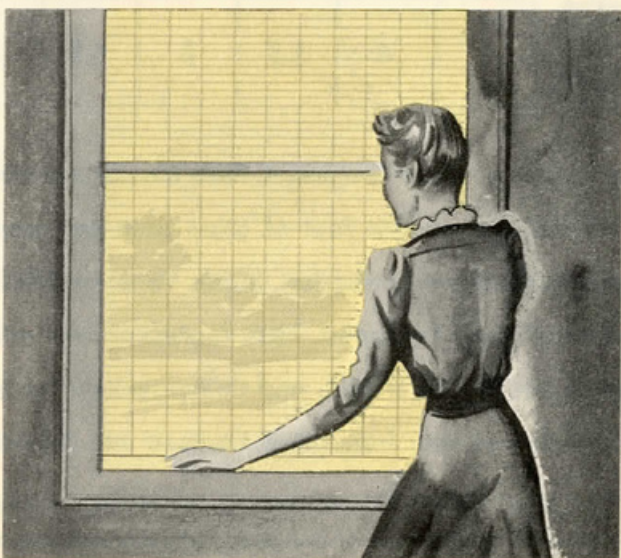
If upper sash is opened for ventilation trapped heat enters here.

Why have pleasant surroundings if you always have to go outside to enjoy them?



Rooms seem larger and more cheerful when you can "see outdoors"!





**WITH COOLSHADE YOU DON'T
HAVE TO STOOP TO SEE OUTSIDE
YOU HAVE COMPLETE VISIBILITY**



ACTUAL HEAT MEASUREMENTS PROVE: THE IS KOOLSHADE'S SUPERIORITY OVER INSIDE

Figures for 12 noon show heat gain at time of peak cooling load for SOUTH exposures.

SOUTH Exposure — 40° Latitude — July 21

SUN TIME	9 AM	10 AM	11 AM	12 AM	1 PM	2 PM	3 PM
 Bare Glass	8	45	66	74	66	45	18
 Shades or Venetian Blinds	10.8	27	39.6	44.4	39.6	27	10.8
 Awnings or Outside Blinds	5.4	13.5	19.8	22.2	19.8	13.5	5.4
 KoolShade Sun Screen	2	4	5.5	6	5.5	4	2

The figures on these two pages show the comparative heat gain in BTU's* per square foot of glass area per hour through 4 types of windows: Unshaded, Inside Venetian Blinds, Awnings, and KoolShade Equipped. They represent heat gain by radiation of Sun Ray Heat only, and do not include the heat gain by conduction of heat from the glass itself into the room.





*A "BTU" (British Thermal Unit) is the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

GREATER THE SUN HEAT LOAD, THE GREATER VENETIAN BLINDS AND AWNINGS!

Figures for East Exposure identical with WEST at comparable Sun Time (10:00 a.m. on EAST equivalent to heat gain on WEST at 2:00 p.m.).

Figures for 10:00 a.m. (2:00 p.m. on WEST) show heat gain at time of peak cooling load for EAST Exposures.

EAST Exposure — 40° Latitude — July 21

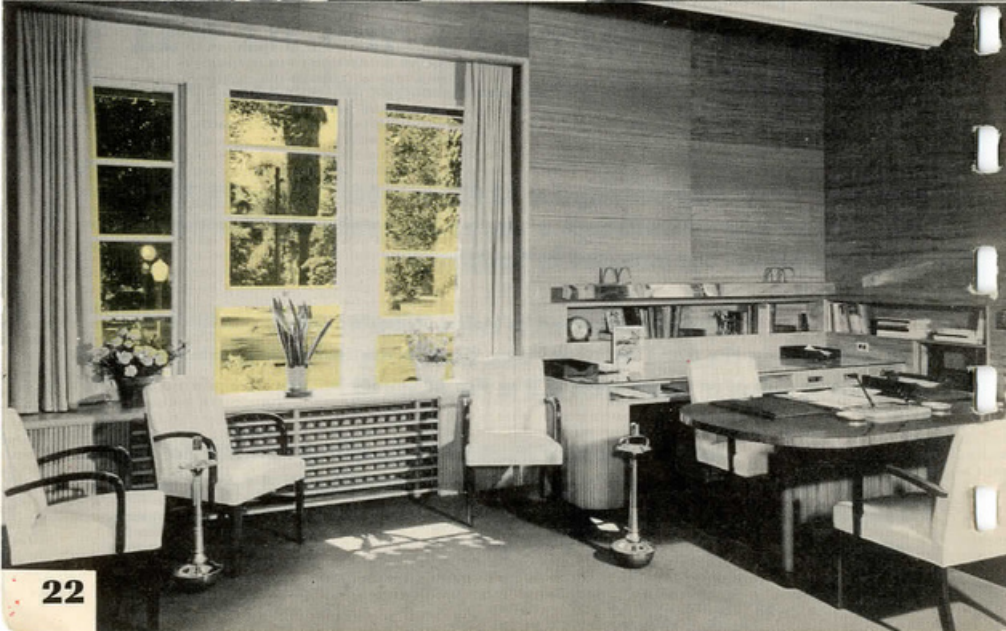
SUN TIME	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM
 Bare Glass	52	147	190	170	116	40
 Shades or Venetian Blinds	26.4	73.7	95.7	84.7	58.3	19.8
 Awnings or Outside Blinds	15.4	44	57.5	50.6	33.2	12.1
 KoolShade Sun Screen	38.5	60.5	42.5	22	11.5	3.5

Example: (opposite page) at 12:00 noon, Sun Time, nearly 7 TIMES as much sun heat enters through a window equipped with Inside Venetian Blinds as through one protected by KoolShade.

Example: (above) compared to Inside Venetian Blinds on 40 sq. feet of windows on the EAST at 10:00 a.m. KoolShade blocks enough heat to change a gallon of water from ICE to the BOILING POINT.

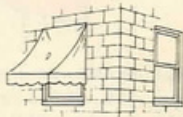
Example: (above) the heat blocked by KoolShade on 100 sq. feet of East windows from 6:00 a.m. to 12:00 noon (53,650 B.T.U.'s) would keep the average 5-room home comfortably warm for one hour on a zero winter day.

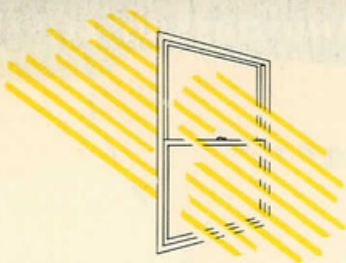
**KOOLSHADE keeps you out of the
SEMI-DARK of AWNING TWILIGHT
PLENTY of GLARELESS LIGHT!**



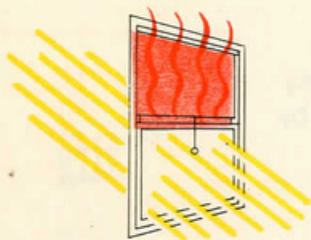
Now add these advantages of
KOOLSHADE
over awnings or outside blinds!

1. KoolShade will not rot, rust, or rattle. It cannot be torn or blown to pieces by the wind.
2. KoolShade is Fire-Proof. Sparks and casual cigarettes cannot harm it.
3. KoolShade is easy to "put up", take down, and store. Has no mechanical parts to get out of order.
4. KoolShade does not change or mar correct architectural design. No gaudy colors to clash with its surroundings.
5. KoolShade will not fade or fray—never requires repainting or re-finishing.
6. KoolShade gives you double economy—where KoolShade is used no INSECT SCREENS are needed.

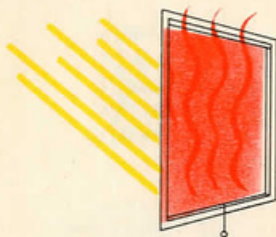




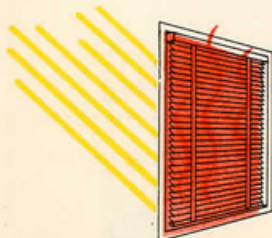
UNSHADED WINDOW—100% of direct Sun Ray Heat enters window—Complete visibility, but zero heat stopping efficiency.



INSIDE SHADE—buff—half drawn—68% of Sun Ray heat enters room. Reduced visibility, 32% efficiency.

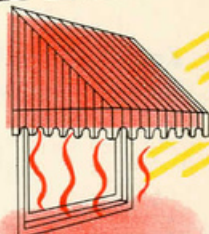


INSIDE SHADE—Aluminum painted—fully drawn—45% of Sun Ray heat enters room—Visibility zero—55% efficiency.

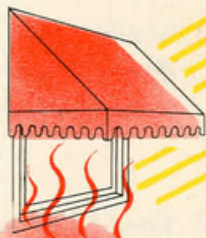


INSIDE VENETIAN BLIND—covering full window—slats at 45°—58% of Sun Ray heat enters window—Almost no visibility.

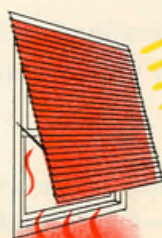
The comparative figures on this page are from the American Society of Heating and Ventilating Engineers tests by Houghton—Kool-Shade figures are from data supplied by Pittsburg Testing Laboratory.



CANVAS AWNING—plain—28% of Sun Ray heat enters room—light and visibility much reduced—72% efficiency.

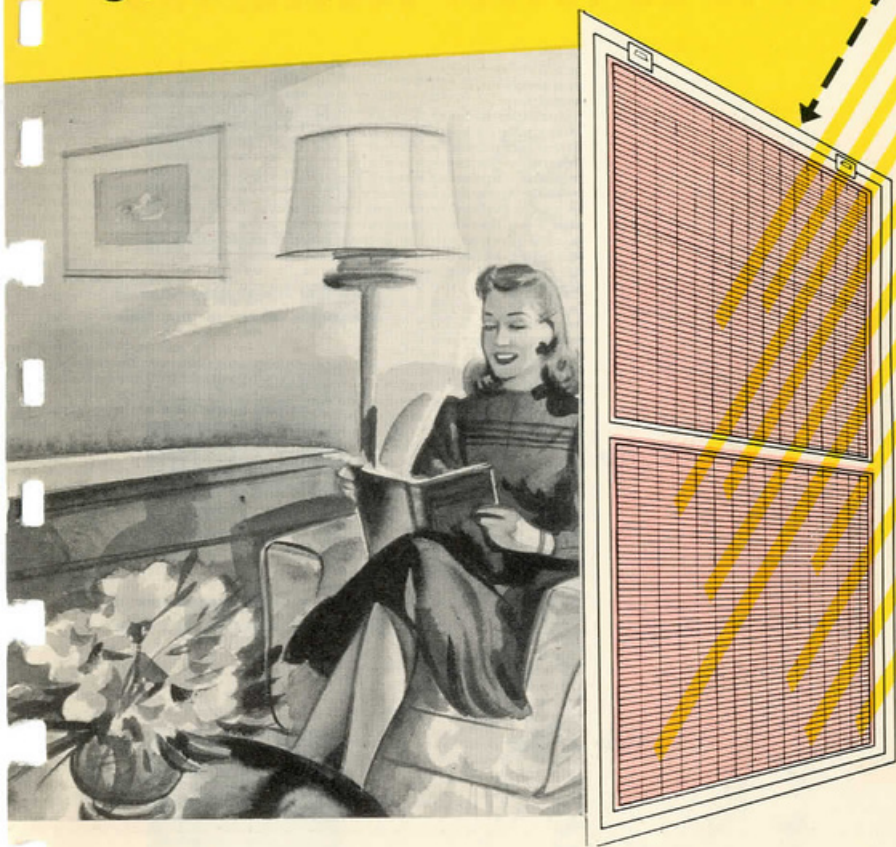


CANVAS AWNING—aluminum painted—22% of Sun Ray heat enters room—light and visibility much reduced—78% efficiency.



OUTSIDE VENETIAN BLIND—fully covering window—slats at 45° angle—22% of Sun Ray heat enters window—no visibility—little light—78% efficiency.

**KOOLSHADE is the
MOST EFFICIENT
OF ALL SHADING DEVICES**



K O O L S H A D E S U N S C R E E N . . .

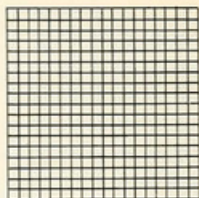
**ONLY 12.5% to 18.2% of Sun Ray heat enters room.
81.8% to 87.5% efficiency. Complete visibility—plen-
ty of glareless, diffused light.**

No rot, no rattle, no rust, no fire hazard, no painting, no maintenance, no insect screens needed.

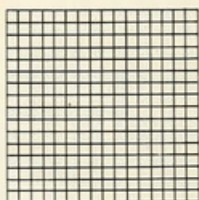
KOOLSHADE

SERVES A DOUBLE PURPOSE....

IT IS AN INSECT SCREEN, TOO



Extra-fine insect screen has 18 horizontal wires to the inch.



Ordinary insect screen has 16 horizontal wires to the inch.



KoolShade has 17.4 horizontal louvers to the inch set at a 17 degree angle.

KoolShade keeps out flies and mosquitoes more effectively than ordinary insect screen, almost as effectively as extra-fine screen.

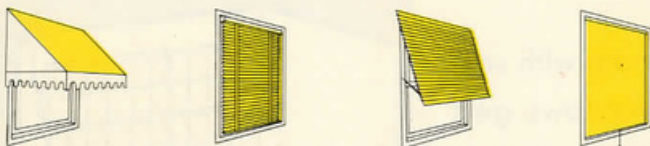
Drawings $1\frac{1}{2}$ times actual size

The insect-proof feature of KOOLSHADE gives you **3 EXTRA ECONOMIES**

(ON WINDOWS REQUIRING INSECT PROTECTION)

1. Other and less efficient shading devices (see pages 17 to 25) require insect screens at EXTRA cost.

None of these shading devices keeps out insects



2. Frames now in use for ordinary insect screen (if in good condition) can be RE-WIRED with KOOLSHADE thus saving you the cost of frames.

See framing and re-wiring illustrations



3. KoolShade's extra long life will give you insect protection *at least three times as long as ordinary insect screen.*

Thus saving you the cost of two wire purchases and two labor bills for re-wiring.

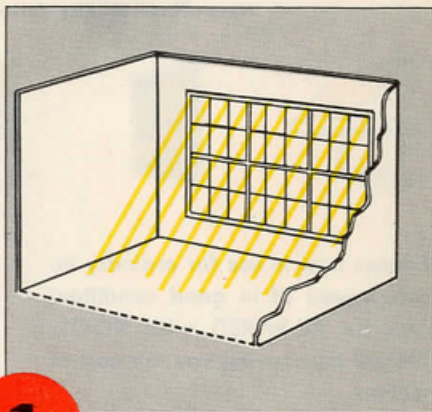
KoolShade louvers are more than **FOUR TIMES** as wide as the diameter of ordinary screen wires . . . made of rust-proof, bronze-alloy.

There are many variables in your rooms will be when KOOOL

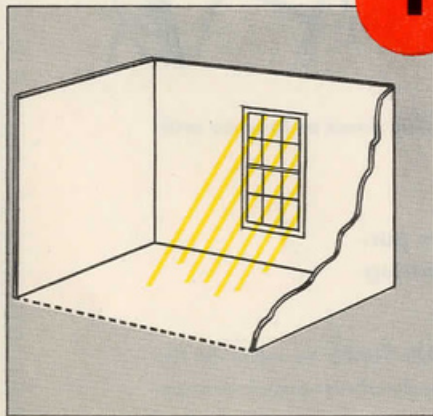
Many KoolShade Users report room temperature reductions of 10 to 15 and even 20 degrees—but here are some of the reasons why there is no definite *advance answer* to the question . . .

HOW MUCH COOLER Will KOOOLSHADE Keep this Office or Room?

A small room with several big windows gets much hotter than a large room with only a few small windows!



1

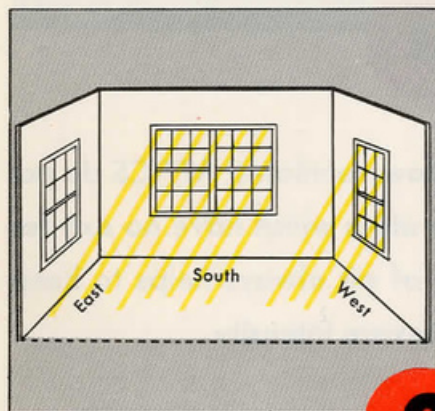


The more glazed area through which sun heat can enter and the less interior surfaces there are to absorb it the faster heat will build up.

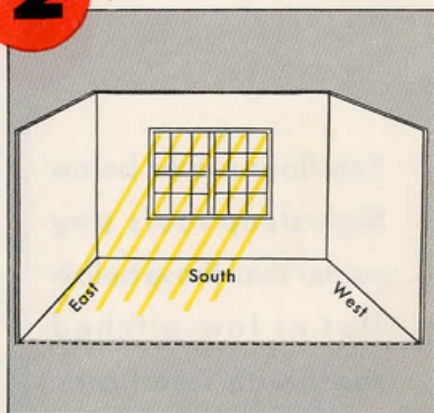
"How Much Cooler" SHADE is installed

A room with windows on both East and South—South and West—or all THREE sides gets much hotter from Sun ray heat alone than a room with windows on one side only—or a room with one north exposure. In other

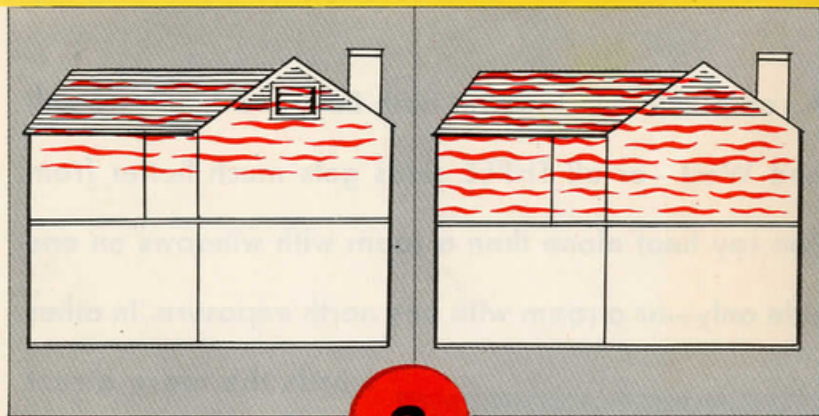
words the more direct sun's rays that hit the windows the hotter the room.



It's the SIZE of the WINDOW area facing the Sun that partially determines the total Sun ray heat that gets inside.



Roofs, attics, neighboring walls, all load – But usually 75% comes through

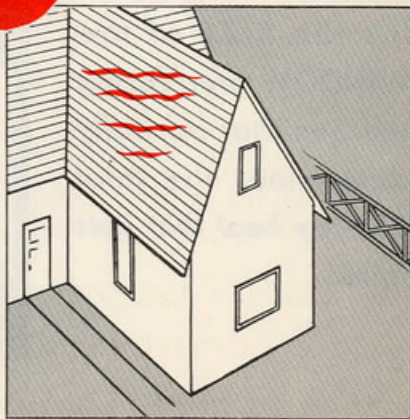


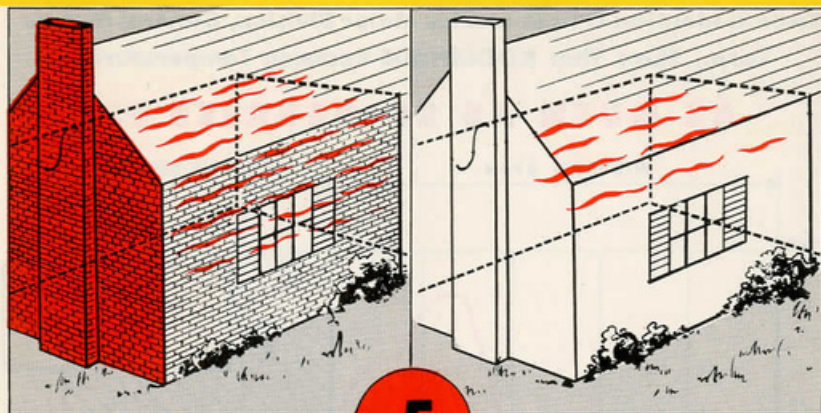
3

Also, top floor rooms below ventilated ATTICS do not get as hot as those below attics which have no exit for trapped heat. Circulation of air always helps to keep heat from building up to severe intensity.

4

Top-floor rooms below high-steep roofs stay cooler than those below flat or low-pitched roofs with small attic space, or no attic space.





5

Rooms adjoining dark-colored exterior walls get hotter than those next to white or light colored walls because the dark walls absorb more sun heat — conduct it to inside rooms.

4

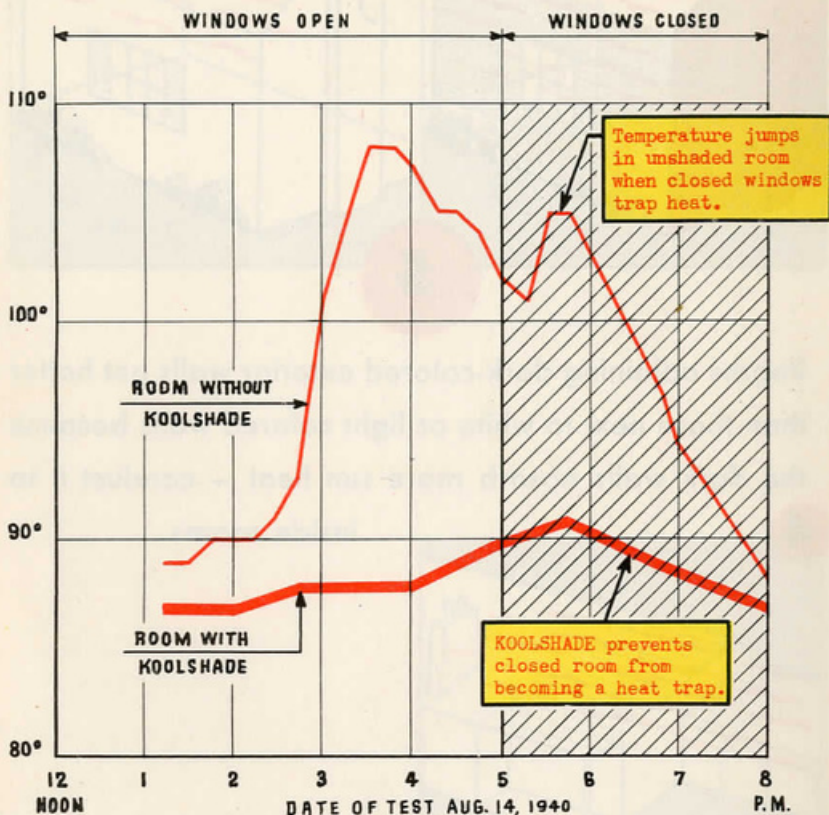


But, since as much as 75% of the summer heat in a room enters through the windows, KoolShade stops Sun Rays where a HEAT BARRIER is MOST NEEDED . . . *the greater the heat condition, the greater the benefits from KoolShade.*

Controlled Tests Show KOOLSHADE Can Reduce

Tests in Identical Offices at Olds Motor Division, General Motors Corp., Show That KOOLSHADE Reduced Temperatures

AS MUCH AS 20 DEGREES F.



CONDITIONS OF TEST

Temperatures were taken 5 feet from the windows.

There was sunshine throughout the entire test period.

The test started during working hours with windows and doors both wide open.

At 5 P.M. when employees left, windows were closed—this accounts for dual nature of test.

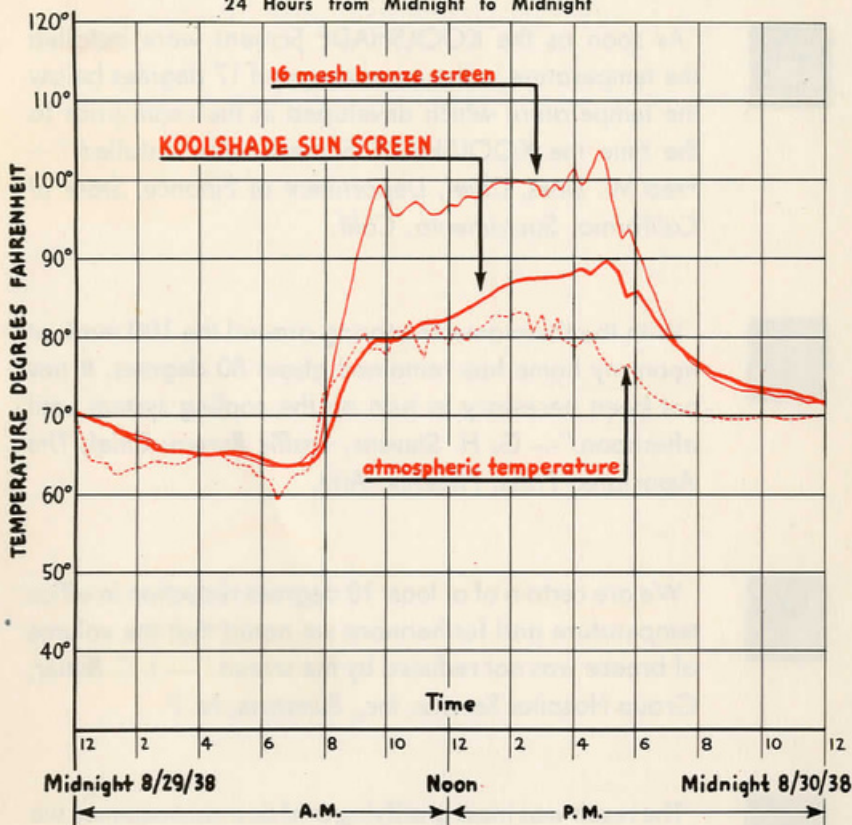
How Much Temperature

HOW MUCH COOLER

Laboratory Cubicle Tests Show KOOLSHADE Temperature Reductions During Hottest Part of the Day

FROM 12 to 20 DEGREES F.

Chart Shows Temperature Variations in 24 Hours from Midnight to Midnight



Both cubicles identical construction except one equipped with KOOLSHADE —one with 16 Mesh Bronze Insect Screen — closed windows on East, South and West.



PEOPLE WHO ENJOY KOOLSHADE COMFORT SAY THIS ABOUT IT!



"As soon as the KOOLSHADE Screens were installed the temperature in the room dropped 17 degrees below the temperature which developed in the room prior to the time the KOOLSHADE Screens were installed."—*Fred W. Links, Chief, Department of Finance, State of California, Sacramento, Calif.*



"With the thermometer soaring around the 100 mark at noon my home has remained about 80 degrees. It has not been necessary to turn on the cooling system until afternoon."—*G. H. Stevens, Traffic Bureau Chief, The Associated Press, Phoenix, Ariz.*



"We are certain of at least 10 degrees reduction in office temperature and furthermore we noted that the volume of breeze was not reduced by the screen."—*J. C. Butler, Group Hospital Service, Inc., Syracuse, N. Y.*



"The result was most gratifying and as a consequence we have made three additional purchases . . . our KOOLSHADE rooms were from 10 to 12 degrees cooler and considering that we made no attempt to control the temperature due to open inside doors and other windows not protected we are convinced that KOOLSHADE really will screen out heat and glare."—*E. J. Hedstrom, Supt., Burnett Sanitarium, Fresno, Calif.*



"The KOOLSHADE Screen which you installed in my office this Spring is working out very satisfactorily. It has unquestionably reduced the temperature of the room many degrees, and it also does much to minimize the glare and light."— *Walter S. McClure, President, Fleetwood Bank, Mount Vernon, N. Y.*



"You have, we believe, introduced us to a product to remedy a definite hotel problem — that is, heat, glare and fading within rooms exposed to the sun."— *D. O. Beusse, Manager, Atlanta Biltmore Hotel, Atlanta, Ga.*



"... the South offices stay just as comfortable throughout the hottest day as those on the North."— *G. L. Knox, Vice-President, Utility Trailer Mfg. Co., Los Angeles, Calif.*



"I can truthfully and honestly say that they do all that you claim and more too."— *W. A. Jones, W. A. Jones Optical Dispensing Co., Cleveland, Ohio.*



"I find that this room is now actually cooler at noon than is the room next to it which faces South and West and which therefore is considerably less exposed to the morning sun."— *A. M. Stires, Architectural Editor, House and Garden, New York, N. Y.*

**Air Conditioned Buildings
need KOOLSHADE for their**

SUN-EXPOSED WINDOWS

because: "by reflecting, absorbing and radiating most of the sun's heat rays outside the window KoolShade has been shown to account for as much as seventy-five per cent

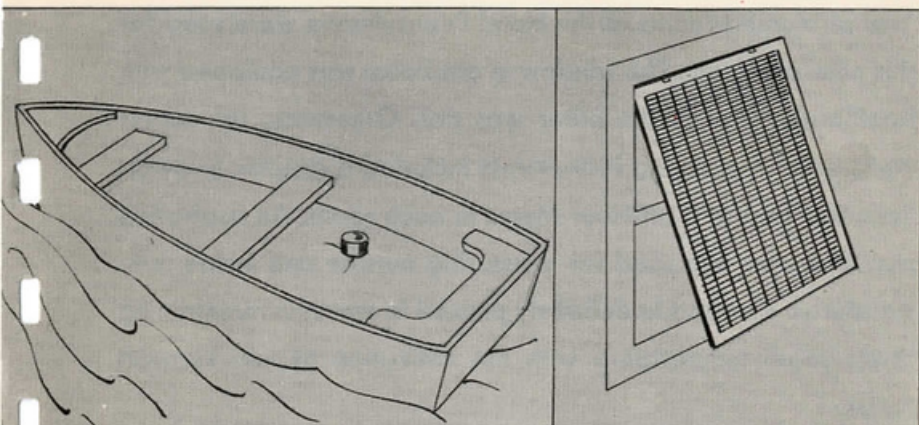
75%

**of the
cooling
necessary"**

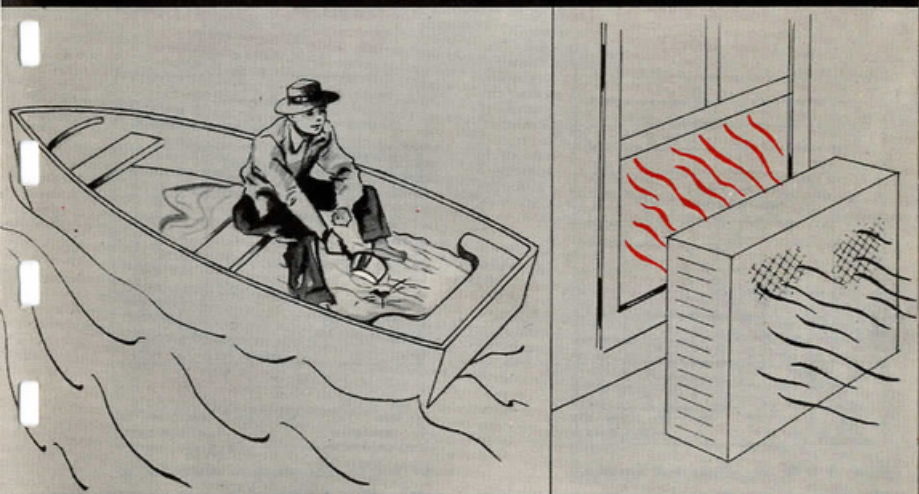
American Society Heating and Ventilating Engineers Guide—1940

KOOLSHADE Bars Most of This Sun

Heat Outside — It Never Gets Inside to become an
EXTRA LOAD on the Air Conditioning Machinery



It is more efficient—TO PLUG THE LEAK



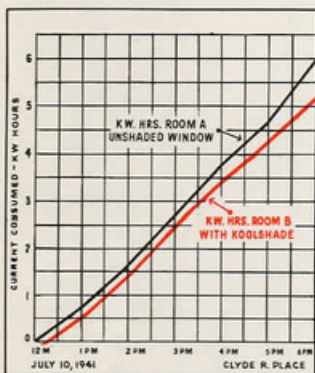
.. than it is to KEEP BAILING OUT the boat

Controlled Tests Prove Koolshade

An Actual Test in Identical Rooms at the Hotel Pennsylvania, New York City, Conducted by Clyde R. Place, Consulting Engineer

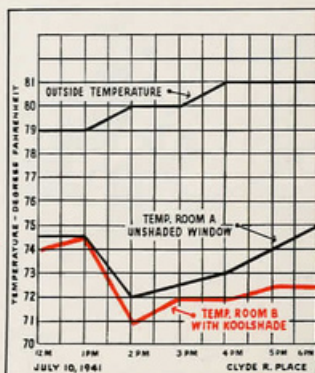
Two air-cooled rooms at the Hotel Pennsylvania were used for this controlled test. The window in one room was equipped with KoolShade, that in the other was not. Otherwise, the rooms were alike. Measuring instruments included a graphic Kilowatt Recorder and a Watt-Hour Meter in each room. An aspirating psychrometer was used for measuring outside and inside temperatures. KoolShade definitely proved its worth in maintaining lower room temperature with the utilization of less kilowatt hours.

CURRENT CONSUMED BY THE TWO UNITS



From 3 P.M. or when full sunlight hit these rooms, the air conditioning unit in the KoolShade room used 21% less electricity.

TEMPERATURE MAINTAINED IN THE TWO ROOMS



At 1 P.M. thermostats were set at 72°. The KoolShaded room held within half a degree of this temperature all afternoon, while the unshaded room rose to 75°.

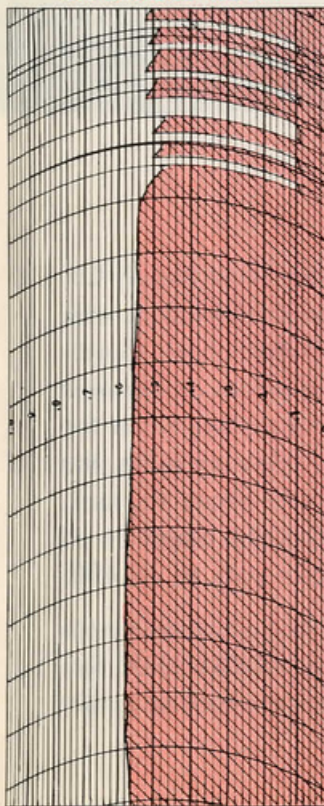
Reduces Air Conditioning Costs

MONEY IS SAVED IN THREE WAYS

- 1 By Reducing Load on Present Equipment thus Lowering Electric Bills and Maintenance Costs
- 2 By Making it Possible to accomplish an excellent cooling job with Lighter, Less Expensive equipment
- 3 By Eliminating heat panels at window opening—thus Making Expensive Zoning Unnecessary

Running Time of the Compressors in Each of the Two Rooms—Photostatic Copies of the Graphic Records . . .

UN-SHADED ROOM



Until 1 P.M. when no sun was hitting the windows, both units worked intermittently.

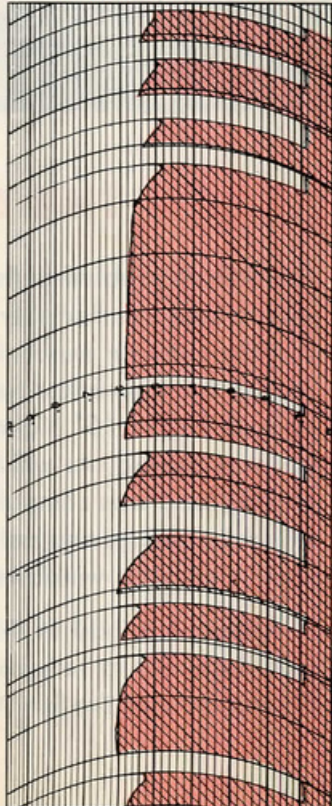
At 1 P.M. both thermostats were set down to 72°.

Unit in room with KoolShade worked for a couple of hours to catch up—then resumed intermittent operation.

Unit in room without KoolShade never did catch up and ran steadily all day.

Air-conditioning costs less where KoolShade is installed.

KOOLSHADED ROOM



Pioneer Linen Supply Company KOOLSHADE Installation . . . Re



HERE'S THE STORY...

The difficult problem in the case of the Pioneer Linen Supply Co. was to keep comfortably cool a set of second floor offices with varying extreme exposures. Prior to installation of Air Conditioning the main office facing south and end offices on the west ranged 10° to 15° higher than outside temperature when the sun was shining. As will be seen from the following table, the cooling load was computed at 53,688 BTUs or about 4½ tons, without shading, and polished aluminum Venetian blinds on all south and west windows reduced this figure only to 45,488.

Although a load of this size and under these circumstances would appear to require expensive zoning, KOOLSHADE Sun Screen reduced the Sun Load through windows to such an extent

Cuts Heat Load 17,640 BTUs with quires Smaller Air Conditioning Unit

that the total computed load was only 36,048 BTUs, and a 3-ton Air Conditioning unit installed in the main office with ducts to private offices on the west easily handled the job.

Note that of the total unshaded cooling load, the sun load through glass windows was OVER 36%. KOOLSHADE reduced that item, the largest single contributor to the cooling load, a full 90%.

No zoning was required. Temperatures were kept to 80° in even the hottest weather. There was no panel heating effect near the windows. An end office with large windows on both south and west stayed within 2° of the temperature of the main office which had southern exposure only.

	Bare Glass No Shading	Venetian Blinds	KOOLSHADE
Heat Gain Through Walls	13993 BTUs	13993 BTUs	13993 BTUs
Total Heat—12 people	4800 BTUs	4800 BTUs	4800 BTUs
Sun Load on Roof	4862 BTUs	4862 BTUs	4862 BTUs
Outside Air—1½ changes	7850 BTUs	7850 BTUs	7850 BTUs
Sun Load—Glass Block	2583 BTUs	2583 BTUs	2583 BTUs
Sun Load—Glass Windows	19600 BTUs	11400 BTUs	1960 BTUs
Maximum BTU Load Per Hour	53688 BTUs	45488 BTUs	36048 BTUs

This case serves as an illustration of the reliability of sun screen data when computing cooling requirements. A very difficult situation was solved easily and completely, in spite of a large sun load through glass block areas not screened, as can be seen from the table.

\$4000 Saved on Air Conditioning by the Plaza Hotel, Corpus Christi,



The owner of the Plaza, and other leading Texas hotels, has this to say about the KOOLSHADE installed on the Plaza Hotel:

"The result was just like finding \$4,000.00, for the enormous reduction in sun load by KOOLSHADE enabled us to save \$4,000.00 on the equipment installation compared with venetian blinds. And, according to conservative calculations, our operating expenses will be reduced by \$45 per month. Other factors considered in favor of KOOLSHADE were: positive and dependable automatic operation; long life and practically negligible maintenance cost; fire safety; and—very important to us—relief from fading of draperies, rugs and furniture in the rooms."

... \$45 a Month in Operating Cost Texas ... All Thanks to KOOLSHADE

**HERE'S THE DATA . . .
IT TELLS ITS OWN
DRAMATIC STORY**

When air conditioning was planned for seven guest room floors of the Plaza Hotel, Mr. Jack White, owner of this and other well-known Texas hotels, instructed the engineers to figure the job two ways: with Venetian blinds and with KOOLSHADE Sun Screen. The following memorandum of data—supplied by Mr. R. W. Kotzebue, Manager, Air Conditioning Dept., Straus-Frank Co. (San Antonio distributors of Carrier equipment) tells its own story. Naturally KOOLSHADE was installed on all sun exposure windows.

SUMMARY OF DATA

7 FLOORS THUS:

East glass	306 sq. ft.}	} typical floor
West glass	165 sq. ft.}	

HEAT TRANSMISSION

(East Wall at 8:00 A.M.)

Through single window glass—bare	306 sq. ft. @ 177 Btu/hr.	54,162 Btu/hr.
Through KOOLSHADE	306 sq. ft. @ 42 Btu/hr.	12,852 Btu/hr.

SAVING BY KOOLSHADE.....41,310 Btu/hr.

41,310 (Saving by KOOLSHADE)	= 3.44 TONS OF
12,000 (Btu's per ton of refrigeration)	REFRIGERATION
	SAVED PER FLOOR

COMPARED WITH BARE WINDOWS,

TOTAL OF.....24.08 TONS SAVED BY KOOLSHADE

COMPARED WITH VENETIAN BLINDS,

TOTAL OF.....12 TONS SAVED BY KOOLSHADE

SAVING IN ORIGINAL EQUIPMENT

By KOOLSHADE.....\$4,000.00

SAVING IN OPERATING COST

By KOOLSHADE.....\$45.00 per month

There is no other shading device that ties in so efficiently with modern air-conditioning systems.

SUN LOAD THROUGH GLASS KOOLSHADE INSTALLATION



Koolshade Works Hand in Hand with Air Conditioning

The bookkeeping office at the Toledo Stamping and Manufacturing Company faces southeast. There are two windows on the southeast side and four windows on the southwest side. The other walls of this office are interior partitions. The direct sun's heat rays hit these windows hard at certain hours of the day. For protection, dark-colored venetian blinds had been installed.

A $\frac{3}{4}$ H.P. room cooling unit was installed: This unit rated at 10,250 BTU's proved woefully inadequate during the hot days of early summer.

Calculations by air-conditioning engineers showed a maximum heat load through these windows of 19,300

REDUCED 88.35% BY AT TOLEDO STAMPING CO.

BTU's, or over 1 1/2 tons, without venetian blinds. (12,000 BTU's equals 1 ton of cooling capacity.) The venetian blinds served to reduce the heat load to 15,252 BTU's per hour. This still was far beyond the capacity of the installed cooling unit.

KOOLSHADE was installed on all these sun-exposed windows. Another check of the maximum heat load showed it had been reduced to 10,786 BTU's per hour. Thanks to KOOLSHADE, the 3/4 H.P. cooling unit was able to do an efficient and effective job of air-conditioning in this office.

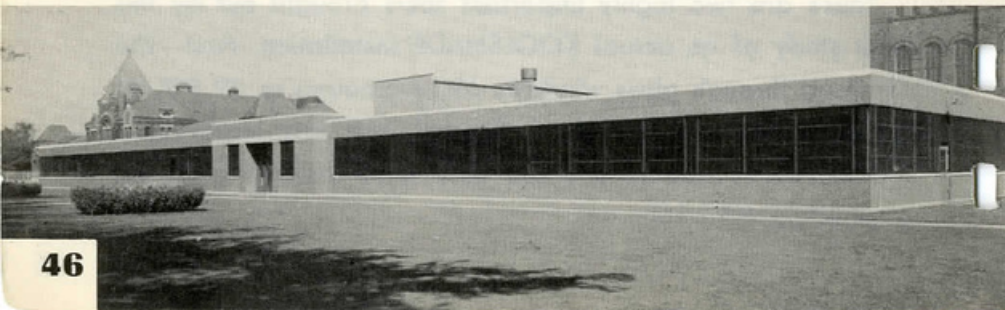
This Table Concisely Tells the Story:

	Bare Glass No Shading	Venetian Blinds	Sun Screen
Sensible Heat Gain Through Walls	4234 BTU'S	4234 BTU'S	4234 BTU'S
Total Heat—4 people	1600 BTU's	1600 BTU's	1600 BTU's
Sun Load on Roof, 3:00 P.M.	2850 BTU's	2850 BTU's	2850 BTU's
Outside Air—one change	980 BTU's	980 BTU's	980 BTU's
Sun Load on Glass Windows	9636 BTU's	5588 BTU's	1122 BTU's
Maximum BTU Load per hour	19300 BTU's	15252 BTU's	10786 BTU's

There are two highly important facts brought out by this case study of an actual KOOLSHADE installation. *First*—The sun load through glass windows alone amounts to 49.9% of the total maximum heat load. *Second*, and most important—KOOLSHADE reduces this sun heat load through glass an astounding 88.35%.

PULLMAN-STANDARD CAR MFG. CONDITIONING INSTALL

Air Conditioning Engineers originally calculated that to maintain moderate temperatures in this modern building would require a 50 ton installation. Because of the continuous expanse of sun-exposed windows it would require rapid air changes and as a consequence undesirable drafts were a major problem. KoolShade was studied and tested. By a KoolShade application the sun heat was so effectively blocked that the cooling load required was reduced to 40 tons. This resulted in a net saving of \$3000 on the original equipment plus a \$20 monthly saving on the cost of operating the entire air conditioning installation. It is estimated that KoolShade saves the Pullman-Standard Car Mfg. Co. 10,000 Kilowatt Hours per year.



CO. TIE KOOLSHADE INTO AIR CONDITIONING AND SAVE \$3000



Cool Comfort in a Sunny Corner

The engineering staff at Pullman really appreciates this KoolShade application. They enjoy all the clear glareless light they need yet no blistering hot sun's rays enter through these sun screened windows. Their view is never obstructed as it would be if venetian blinds or awnings had been installed. Here, thanks to KoolShade and an air conditioning installation, are perfect summertime working conditions.

Koolshade Played Important in Maintaining Perfect Manufac

The VT Fuse was one of the truly important developments of the war. It operates by radio reflection and will explode a shell within 70 feet of its target. The controls required in its manufacture must be extremely accurate and dependable.

THE PROBLEM

In certain rooms 35% relative humidity and 78° temperature had to be maintained. Air conditioning installations were made in three rooms. Due to conventional factory window exposure on three sides of one room and two sides of another a costly and complicated zoning system might have been required to hold to the essential temperature in every part of every room.

THE SOLUTION

KoolShade on all windows eliminated the need for zoning. It saved 16 tons of refrigeration in these departments. It assured uniform temperatures from window-wall to the center of the room regardless of the position or intensity of the sun. Kool-Shade handled the sun load and a simple less costly air conditioning system was able to do an efficient job.

ADDITIONAL BENEFITS

KoolShade also acted as a light diffuser which prevented glare and assured greater accuracy with less strain on the part of all skilled employees. Products or parts placed near the windows were protected from damage by direct sun rays. In

Role at The Hoover Company during Conditions for VT Fuse

In addition to very material savings on the original installation of the air conditioning system there was a definite reduction in operating costs thanks to KoolShade Sun Screen.



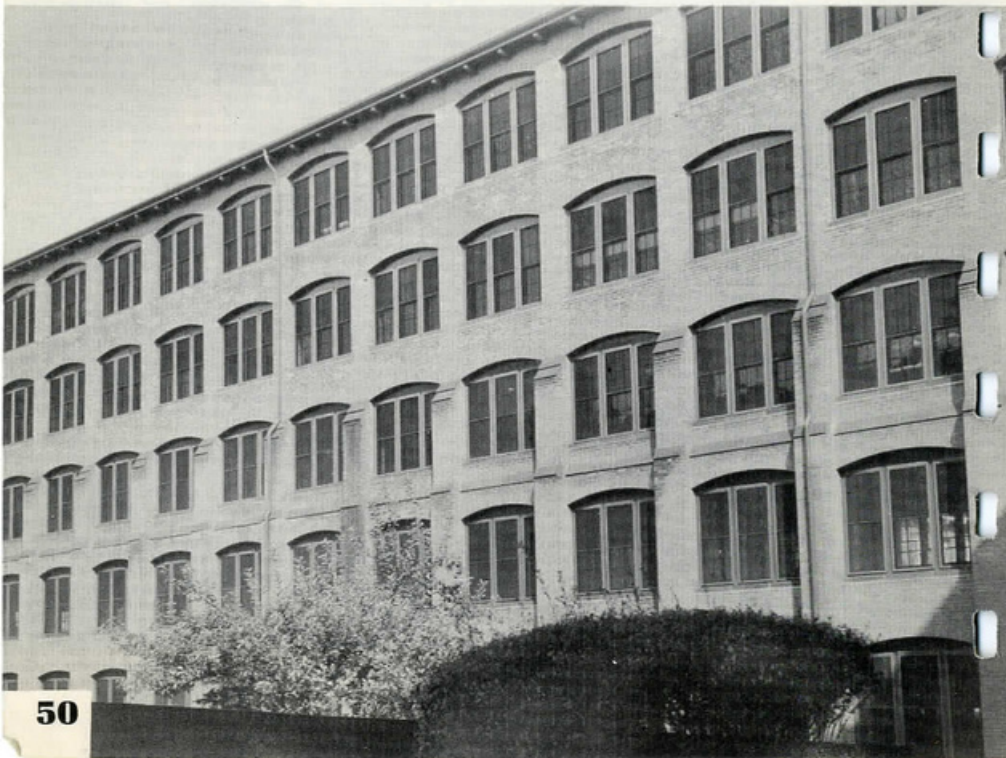
Attractive surroundings such as these at the Hoover Company plant deserve the most attractive of all shading devices—KoolShade. Attractive not only in appearance but in efficiency of operation.

**THOUSANDS OF
LARGE INDUSTRIAL
HAVE PROVED**

REDUCES

**Air Conditioning Costs
Heat in Non-Cooled Rooms
Workers' Fatigue
Building Upkeep Costs**

WALTHAM WATCH CO., WALTHAM, MASS. Sweat has no place where precision is essential. The skilled watchmakers in this famous plant are degrees cooler behind the sun protection of KOOLSHADE.



USERS KOOLSHADE'S EFFECTIVENESS



CENTRAL GREYHOUND LINES, CLEVELAND, OHIO. The sun will never turn these public waiting rooms into an oven. The customer always appreciates KOOLSHADE sun heat protection—and comfortable customers are easier to keep.

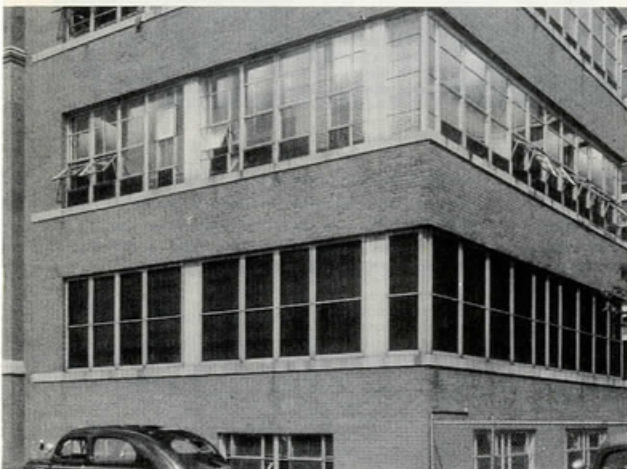
AMERICAN ROLLING MILLS, ZANESVILLE, OHIO
Where sun-exposed windows predominate KOOLSHADE Sun Conditioning goes hand in hand with air conditioning and insulation. Offices are kept far cooler at less cost.



**UP-TO-DATE MANUFACTURERS
NEVER FORGET THEIR EMPLOYEES
COMFORT**

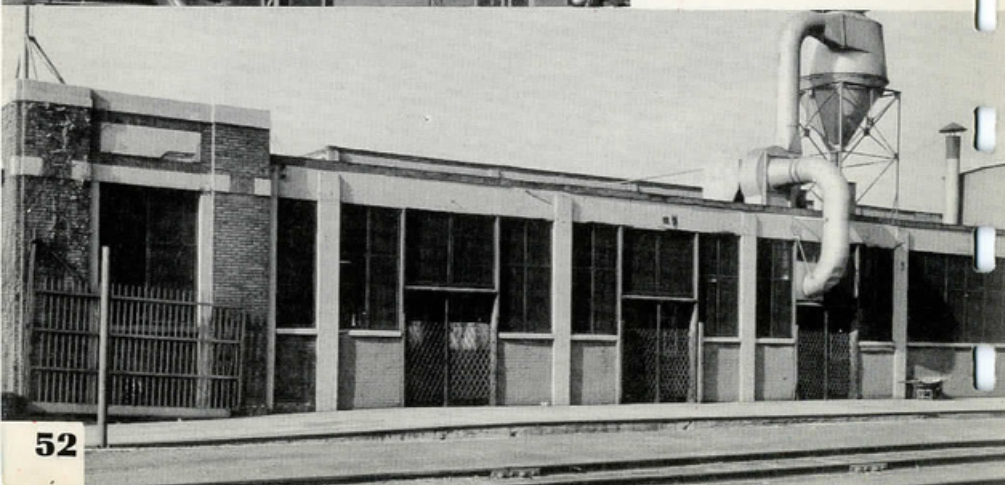
**KOOLSHADE Automatic Sun Heat Control
Increases Efficiency**

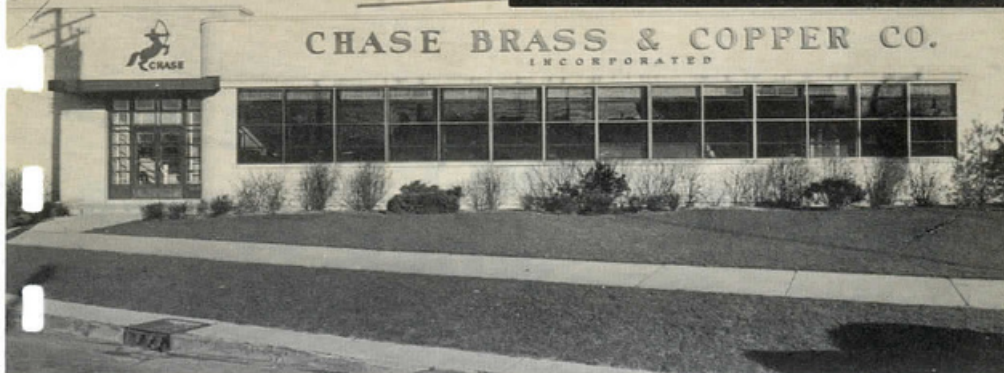
Oppressive heat coupled with glaring sunlight wears a man out in a hurry . . . cuts production. Up-to-date manufacturers are using KOOLSHADE to keep sun heat outside and high morale inside their plants. Ease of installation, little or no maintenance cost, lowered operating cost of air conditioning installations make KOOLSHADE bronze sun screen welcome on any building.



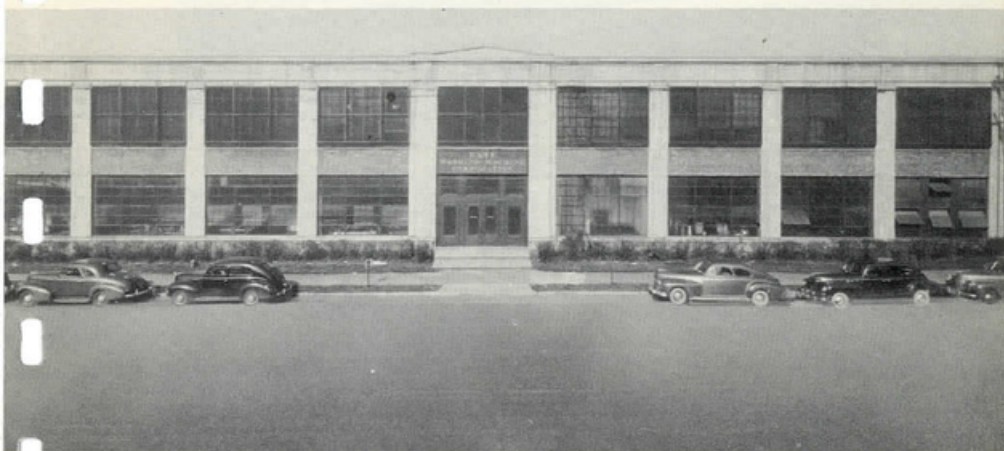
◀ Whew! it's hot. Look at the sun beating into the second floor windows. Venetian Blinds can't keep that room cool. The ground floor is cooler—even comfortable . . . thanks to KOOLSHADE.

Kelsey Hayes Wheel Co., Detroit, had a "hot" problem. The sun daily turned the heat on this end of their plant. Now KOOLSHADE is keeping the sun's heat rays outside. ▶

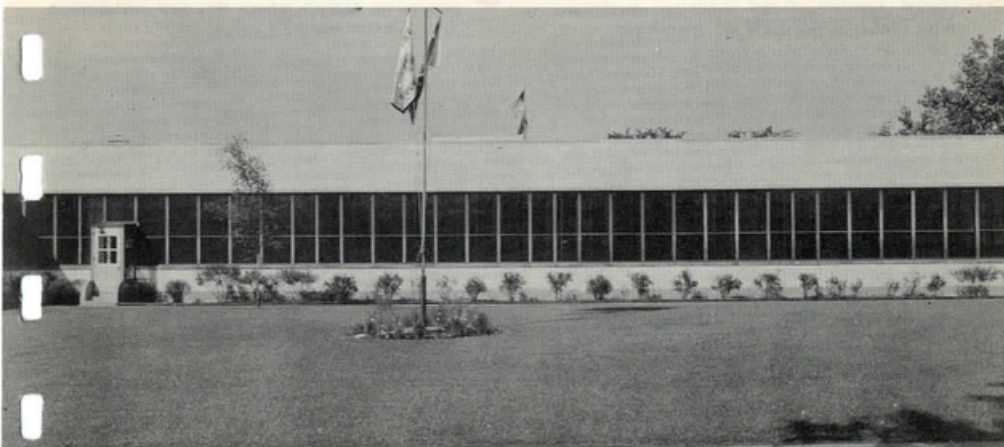




On the sunny side of the street—but there is cool shade even on the window sills of this sun screened office.



Can you imagine how hot it will be in these parked cars if all windows have been closed? Trapped heat rays make life miserable—but not in this plant where KOOLSHADE is installed.



The streamlined Bastian-Blessing building in Chicago. Sun-conditioned in the modern manner. Sun drenched yet in the shade.

**PEOPLE EVERYWHERE ARE
WORK BETTER**



Morale is high where employees work in shaded comfort. Good working conditions mean higher production per man-hour.

➡ Cool and competent is more than an idle phrase at Abbott where this test installation proved KOOLSHADE'S value.



HAPPIER... IN THE SHADE

KOOLSHADE is far more efficient than a tree. But both block, reflect, absorb, and radiate the sun's heat rays — produce welcome shade. Trees can't do the job in industrial areas but KOOLSHADE Sun Screen can and does.



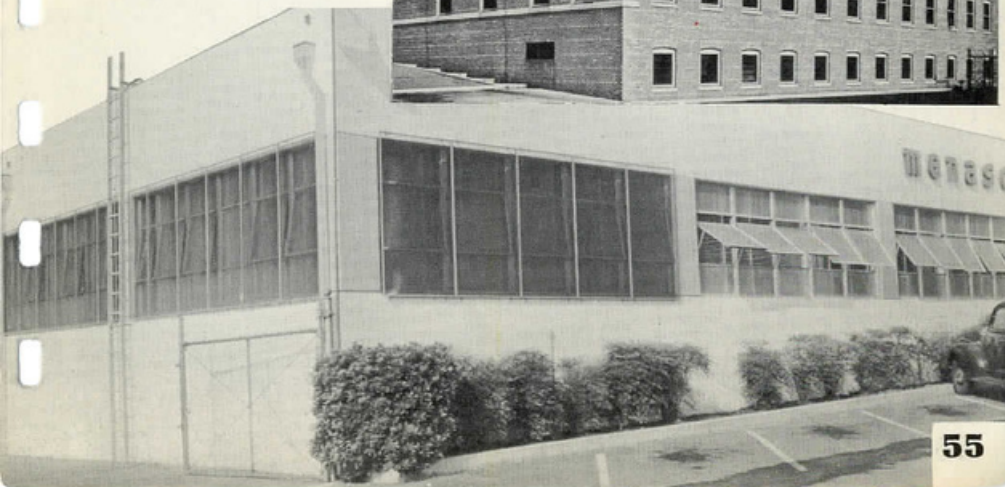
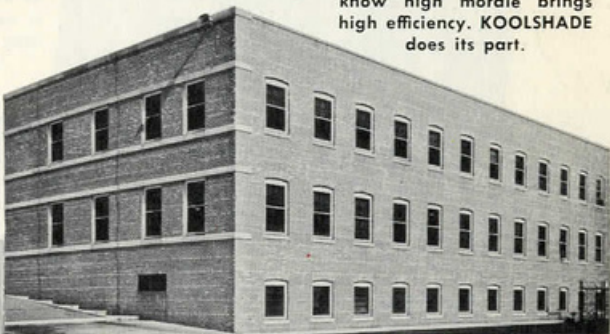
There is an air of fine old tradition about this New England plant. KOOLSHADE fits in—does its job perfectly.

Modern plants use the most modern and efficient cooling device — KOOLSHADE Sun Screen. Attractive, economical and long-lasting.



The men in this Baltimore & Ohio Railroad signal tower work more efficiently behind the protection of KOOLSHADE.

Jack & Heintz know the value of employee good will—know high morale brings high efficiency. KOOLSHADE does its part.



GLASS BLOCK

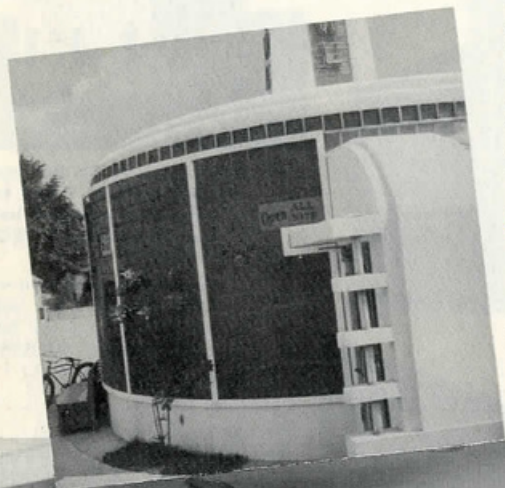
Needs Sun Heat Protection



Modern glass block windows have many attractive features but they do absorb sun heat rays, soon become a heat panel and warm the interior. Even after the sun goes down glass blocks continue radiating heat . . . keep the room uncomfortable. It works on the same principle that makes a steam radiator effective or keeps the chimney corner warm . . . fine in the winter . . . uncomfortable in the summer. Turn off all glass block heat radiation with KOOLSHADE.

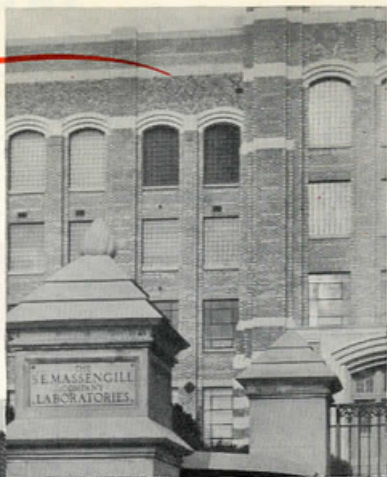
Modern and smart . . . shaded from excessive glare by glass block . . . shaded from Sun Heat Rays by KOOLSHADE.

KOOLSHADE makes the cool appearance of this glass block front a reality. There is no sun heat absorbed and radiated into this bakery, thanks to KOOLSHADE.



Testing

Proved by Actual Test—The S. A. Messengill Laboratories wanted to be shown. KOOLSHADE was installed on two windows. Comparative room temperatures checked. Result . . . KOOLSHADE proved it does keep glass block cool . . . and a room many degrees cooler. Of course, they bought more KOOLSHADE. ➔



It's hot in any forge shop but it's cooler at Dyson's, Inc. since this KOOLSHADE installation. ➔

Ultra modern but a bit like being in a furnace until KOOLSHADE kept the glass block from getting and staying hot. ➔



in INDUSTRY

INDUSTRIAL CONCERNS

THEIR INSTALLATIONS

SAY:

"They certainly cut out a large percentage of the heat rays and noticeably decrease the sunlight glare."

"I consider them a sound investment; as the increase in efficiency of our office employees, due to lower temperatures in the office . . . has more than paid for the screens."

". . . we have found it very effective in the elimination of sun glare, . . . also found that room temperatures have been lowered by KOOLSHADE . . ."

". . . noticed a marked improvement during the summer months in regard to temperature and the absence of glare in the factory."

"We have had KOOLSHADE on one large room in our building for four years, and have recently purchased about 2000 square feet for further installation on our plant."

A FEW OF THE MANY LARGE USERS

- ABBOTT LABORATORIES
North Chicago, Illinois
- AC SPARK PLUG DIV. OF
GEN. MOTORS CORP.
Flint, Michigan
- AMERICAN CAN COMPANY
Chicago, Illinois
- AMERICAN ROLLING MILL CO.
Zanesville, Ohio
- AMERICAN TOBACCO COMPANY
Durham, North Carolina
- ARMOUR & COMPANY
Chicago, Illinois
- BETHLEHEM STEEL COMPANY
Steelton, Pennsylvania
- BUICK MOTOR CAR DIV.
GEN. MOTORS CORP.
Flint, Michigan
- BUTLER BROTHERS
Chicago, Illinois
- CARBIDE & CARBON COMPANY
New York City
- CARNEGIE ILLINOIS STEEL CORP.
Pittsburgh, Pennsylvania
- J. I. CASE COMPANY
Racine, Wisconsin
- CITIES SERVICE COMPANY
Chicago, Illinois
- CONTINENTAL CAN COMPANY
Houston, Texas
- JOHN DEERE TRACTOR COMPANY
Waterloo, Iowa
- FORD MOTOR COMPANY
River Rouge, Michigan
- GENERAL ELECTRIC COMPANY
Pittsfield, Massachusetts
- HERCULES POWDER COMPANY
Hercules, Delaware
- THE HEIL COMPANY
Milwaukee, Wisconsin
- INLAND STEEL COMPANY
East Chicago, Indiana
- JOHNS-MANVILLE CORPORATION
Richmond, Indiana
- LINK-BELT COMPANY
Philadelphia, Pennsylvania
- JOHN MORRELL & COMPANY
Ottumwa, Iowa
- RADIO CORPORATION OF AMERICA
Bloomington, Indiana
- SAVAGE ARMS CORPORATION
Utica, New York
- SEAGRAMS DISTILLERY
Louisville, Kentucky
- SHERWIN-WILLIAMS COMPANY
Chicago, Illinois
- SWIFT & COMPANY
Chicago, Illinois
- THE TEXAS COMPANY
Dallas, Texas
- WRIGHT AERONAUTICAL CORP.
Cincinnati, Ohio

EVEN IN A SKYSCRAPER YOUR OFFICE CAN BE SHADED

Cooler Than Under a Shade Tree

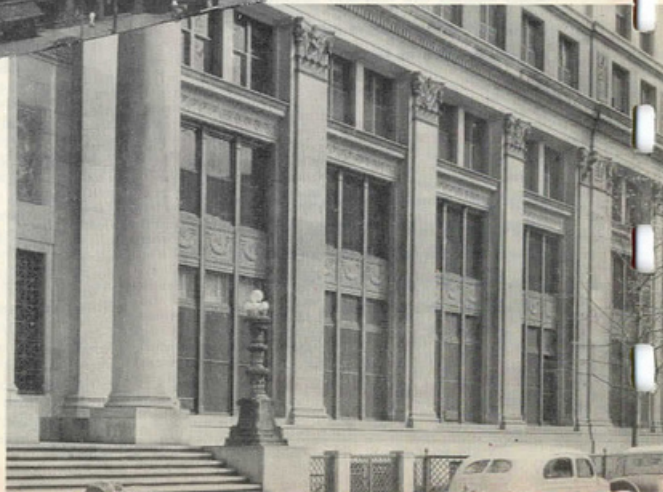


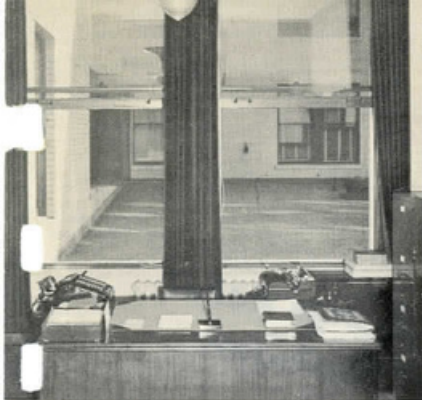
Bring shade up to the umpteenth floor? Shade that keeps your office bright and light—that lets in every breeze—that lets you see out clearly. Sure it can be done with KOOLSHADE Sun Screen.



Many an office in the Milan Building, San Antonio, Texas, is enjoying cooler comfort on blistering hot days, thanks to KOOLSHADED windows.

It's comfortable this summer in the John Hancock offices in Boston—because KOOLSHADE keeps the sun's heat rays outside.





↑
Visibility is always clear and true through
KOOLSHADE Sun Screen. Offices remain
light, airy and free from glare.

●
Lots of light and air—no glare
and no sun's heat rays—that's
the story of KOOLSHADE. →

●
It's a pleasure to go to work on hot summer
days in the KOOLSHADED Pacific Gas
& Electric offices. →



A GLARING NEED OF ALL OFFICE WORKERS . . .

KOOLSHADE Sun Screen Brings Relief From Sun Heat Fatigue. Eliminates Sun Light Glare

To keep office efficiency at its peak through the hot summer months used to be a tough problem. KOOLSHADE Sun Screen is the modern answer. Glare is eliminated—heat reduced as much as 15° in sun-exposed offices.

The temperature difference between KOOLSHADE protected offices and those exposed to the sun was so noticeable that more KOOLSHADE is installed each year.

You'd think it would be terribly hot in these offices with the big sun-exposed windows. But no—KOOLSHADE blocks, absorbs and radiates the sun heat outside the office.





OFFICE INSTALLATIONS

Although the sun is shining directly on these windows there isn't a trace of glare—not one hot sunbeam is getting in to cause discomfort and annoyance. ➤

Sparkling in the afternoon sun. But behind every KOOLSHADE window there is only clear glareless light—no eye strain—little heat fatigue. ➤



For years to come this bronze ➤
KOOLSHADE will serve well
—it needs no adjusting, re-
quires little or no mainte-
nance. A profitable invest-
ment in comfort.



Wherever there are buildings Kool

Here are a few rep-
widely diversified

BANKS

BANK OF MANHATTAN COMPANY
New York City
CITIZENS NATIONAL BANK
Riverside, California
CITIZENS NATIONAL BANK
San Bernardino, California
CITY NATIONAL BANK
Columbus, Ohio
CONTINENTAL NATIONAL BANK
Ft. Worth, Texas
CORN BELT BANK
Bloomington, Illinois
DETROIT BANK
Detroit, Michigan
FARMERS & MERCHANTS BANK
Lodi, California
FIRST NATIONAL BANK
Memphis, Tennessee
PEOPLES STATE BANK
Indianapolis, Indiana

GOV'T BUILDINGS

CITY OF GLENDALE (City Mgr's Off.)
Glendale, California
CITY OF HAVERHILL
Haverhill, Massachusetts
LOS ANGELES CITY HALL (Mayor's Off.)
Los Angeles, California
RENSELAER COUNTY JAIL
Troy, New York
TEXAS STATE HIGHWAY DEPT.
Fort Worth, Texas
U.S. GOV'T PRINTING OFFICE
Washington, D.C.
U.S. NAVAL TRAINING STATION
Great Lakes, Illinois
U.S. WAR DEPT. ARMY WAR COLLEGE
Washington, D.C.
THE WHITE HOUSE (Executive Offices)
Washington, D.C.

LAUNDRIES

BLUE RIBBON LAUNDRY
Dallas, Texas
CONCORD LAUNDRY
St. Paul, Minnesota
KENDALLVILLE LAUNDRY & DRY CLEANING CO.
Kendallville, Indiana
LOUISVILLE LINEN SERVICE
Louisville, Kentucky
MID-CONTINENT LAUNDRIES
Oak Park, Illinois
PREMIER LAUNDRY
Glendale, California
QUALITY DAMP WASH LAUNDRY
Detroit, Michigan
RAINBOW LAUNDRY
Nashville, Tennessee
WHEATON LAUNDRY & DRY CLEANING
Wheaton, Illinois

OFFICE BUILDINGS

ALBANY EXCHANGE NATIONAL BANK BLDG.
Albany, Georgia

AMERICAN MUTUAL LIABILITY INSURANCE CO.
City National Bank Building
Boston, Massachusetts
BURK BURNETT BUILDING
Fort Worth, Texas
CHICAGO CLEARING HOUSE ASS'N
Chicago, Illinois
DILFER BUILDING
Beverly Hills, California
HARDWARE MUTUAL CASUALTY CO.
Stevens Point, Wisconsin
HARTFORD FIRE INSURANCE COMPANY
Hartford, Connecticut
LOUISVILLE TRUST BUILDING
Louisville, Kentucky
MEDICAL ARTS BUILDING
Dallas, Texas
MEDICAL ARTS BUILDING
Syracuse, New York
PARK SQUARE BUILDING
Boston, Massachusetts
RICHFIELD OIL BUILDING
Los Angeles, California
SHAKER SQUARE BUILDING
Cleveland, Ohio
SIXTY WALL TOWER
New York City
SYRACUSE-STANETT BUILDING
Syracuse, New York
TITLE INSURANCE & TRUST BUILDING
Los Angeles, California
UNION CENTRAL LIFE INSURANCE COMPANY
Cincinnati, Ohio

SCHOOLS

BOARD OF EDUCATION
Los Angeles, California
CASE SCHOOL OF APPLIED SCIENCE
Cleveland, Ohio
NORTHWESTERN UNIVERSITY
Evanston, Illinois
ST. JOHN'S UNIVERSITY
Collegeville, Minnesota
STATE UNIVERSITY OF IOWA
Iowa City, Iowa
UNIVERSITY OF LOUISVILLE
Louisville, Kentucky
UNIVERSITY OF MARYLAND
College Park, Maryland

Typical Comments about

"... there is no question but it cuts down fading."

"... extremely helpful during period of intense summer heat."

"... installing KoolShade was easier than we expected."

"... many of our customers have commented favorably."

shade is making life more comfortable

representative users from fields of activity

UNIVERSITY OF MINNESOTA
Minneapolis, Minnesota
UNIVERSITY OF SOUTH DAKOTA
Vermillion, South Dakota
WESLEYAN UNIVERSITY
Middletown, Connecticut

RESTAURANTS

AUBURN RESTAURANT
Auburn, New York
BAND BOX HAMBURGER SHOP
Minneapolis, Minnesota
BROWN DERBY RESTAURANT
Hollywood, California
DEERPATH INN
Lake Forest, Illinois
EARL CARROLL THEATER RESTAURANT
Hollywood, California
"GEORGE-ANNA'S"
Stockton, California
HEID'S RESTAURANT
Liverpool, New York
LITTLE TAVERN SHOPS
(various locations)
SIMONS RESTAURANT
Los Angeles, California
WAGARS, Inc.
Troy, New York

STORES

B. ALTMAN & COMPANY, Dept. Store
New York City
ELIZABETH ARDEN BEAUTY SALON
Washington, D.C.
L. S. AYERS COMPANY
Indianapolis, Indiana
BULLOCK'S-WILSHIRE, Dept. Store
Los Angeles, California
BUTTERY STORES, INC.
Minneapolis, Minnesota
COTRELL & LEONARD
Albany, New York
GEENEN DEPARTMENT STORE
Appleton, Wisconsin
S. H. HEIRONIMUS COMPANY
Roanoke, Virginia
KALTEUX BROTHERS
Schenectady, New York

KAUFMAN DEPT. STORE
Pittsburgh, Pennsylvania
KLEIN'S DEPARTMENT STORE
Chicago, Illinois
LORD'S DEPARTMENT STORE
Evanston, Illinois
R. H. MACY & COMPANY
New York City
MAGEE'S DEPARTMENT STORE
Lincoln, Nebraska
MARKSON'S DEPARTMENT STORE
Syracuse, New York
J. D. PURCELL CO., Dept. Store
Lexington, Kentucky
T. D. WHITNEY COMPANY
Boston, Massachusetts

UTILITIES

ASSOCIATED TELEPHONE CO.
Long Beach, California
CAMBRIDGE ELECTRIC LIGHT CO.
Cambridge, Massachusetts
CENTRAL HUDSON GAS & ELECTRIC CO.
Poughkeepsie, New York
DETROIT EDISON CO.
Detroit, Michigan
EDISON COMPANY
Belleville, New Jersey
MILWAUKEE COKE & GAS COMPANY
Milwaukee, Wisconsin
MONONGAHELA WEST PENNSYLVANIA
PUBLIC SERVICE COMPANY
Fairmont, West Virginia
NEW ENGLAND TELEPHONE & TELEGRAPH CO.
Lowell, Massachusetts
NEW YORK TELEPHONE CO.
New York City
NORTHERN INDIANA PUBLIC SERVICE CO.
Michigan City, Indiana
OHIO BELL TELEPHONE COMPANY
Akron, Ohio
THE OHIO POWER COMPANY
Dennison, Ohio
PACIFIC GAS & ELECTRIC CO.
Stockton, California
PHILADELPHIA ELECTRIC CO.
Philadelphia, Pennsylvania
PUBLIC SERVICE CO. OF NORTHERN ILLINOIS
Harvey, Illinois
ROCHESTER TELEPHONE CO.
Rochester, New York
UNITED GAS CORPORATION
Houston, Texas
VIRGINIA ELECTRIC POWER CO.
Richmond, Virginia

Koolshade's Advantages

"... on the hottest days our formerly sun flooded porch is cool."

"... there is always lots of clear light but no glare in our offices."

"KoolShade's performance surpasses even your promises."

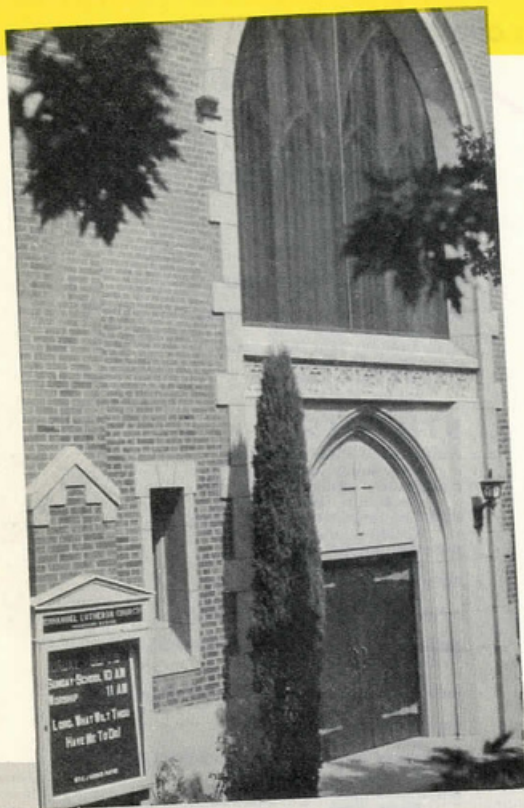
"We will gladly recommend KoolShade to anyone."

CLUBS

CLOUD CLUB
New York City
ELMIRA COUNTRY CLUB
Elmira, New York
GLENVIEW GOLF CLUB
Golf, Illinois
LOUISVILLE COUNTRY CLUB
Louisville, Kentucky
PRINCETON CLUB
New York City
SOUTH SHORE COUNTRY CLUB
Chicago, Illinois

MODERN DESIGN

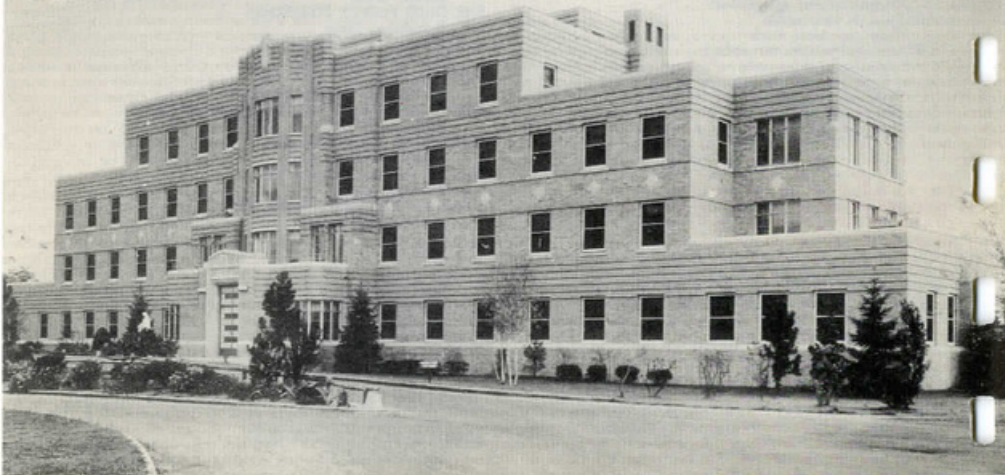
KOOLSHADE



The clean-cut lines of modern architecture are smoothly retained when KOOLSHADE is selected. No projecting hardware is necessary for installation. There is no adjusting and very little maintenance.

EMMANUEL LUTHERAN CHURCH, FRESNO, CALIF. A difficult installation neatly framed with KOOLSHADE—an almost impossible job for any other known shading device.

MERCY HOSPITAL, HEMPSTEAD, N. Y. Architectural beauty unmarred by protruding shading devices. Cooler comfort for all patients is assured by "automatic" sun heat control.



Sun Screen Allows Complete Freedom of Architectural Expression



▲ MRS. STEVENS CANDIES, CHICAGO, ILL. This ultra-modern, air-conditioned building is inconspicuously shaded by KOOL-SHADE . . . lowering cost of refrigeration installation and operation.

EARL CARROLL THEATRE, HOLLYWOOD, CALIF. Typically streamlined modern architecture. This modern design would suffer by the use of protruding shade devices—



KOOLSHADE PRESERVES SMART ARCHITECTURAL LINES . . .

- and gives more complete sun heat protection than any other known shading device

Many building and hotel managers have proved that KOOLSHADE not only controls sun heat, but also saves expensive rugs, draperies, and furnishings from destructive fading.

Modern architecture plus difficult shading situations are "a natural" for KOOLSHADE.



PACIFIC ENTERPRISE

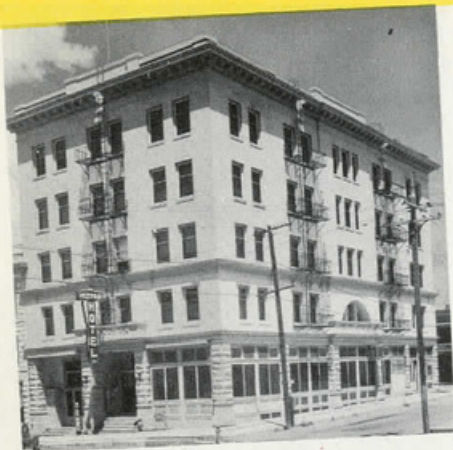
The huge decorative windows of the Ohio Bell Telephone Co. offices in Akron are smartly shaded with KOOLSHADE.

At Left: A closeup of this installation shows how simple framing enhanced rather than hid this attractive metal ornamentation.



Two typical examples of arched top framing — one metal and one wood. Notice how each harmonizes with the architecture.

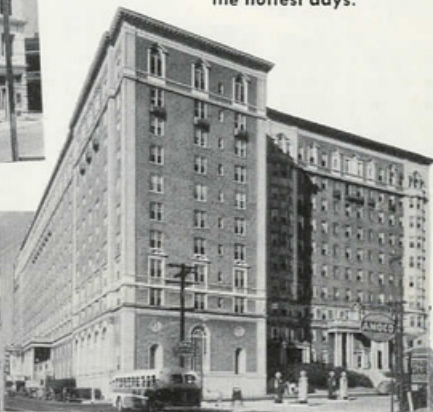
SUMMER GUESTS ON HAVE NORTHERN



The Dodge Hotel, Washington, D. C., inexpensively keeps these sun-exposed rooms as cool as any in the house by sun screening.

◀ Tonopah, Nevada, gets mighty hot in the summer sun but in these KOOLSHADED rooms the Mizpah's guests enjoy western breezes.

◀ KOOLSHADE is a big factor in keeping all guests of the Atlanta Biltmore comfortable on the hottest days.



THE SUNNYSIDE EXPOSURE COMFORT...

Hotel Operating Costs Cut By Simple KOOLSHADE Installation

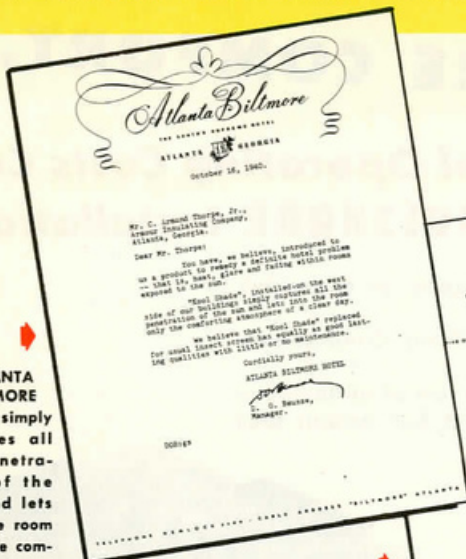
- No Sun Fade of Rugs, Drapes, or expensive Furnishings
- Reduces operating cost of Air Conditioning Installations
- This Bronze Screen will not rust or rattle—does double duty as the perfect Sun Screen plus effective insect screening.

The Excel Apartments in Cleveland Heights are smartly Sun-Conditioned with KOOLSHADE. Cool apartments are easy to rent.

After trying many types of shading devices for these sun drenched rooms, the Read House in Chattanooga tested KOOLSHADE. A complete installation is now being made.



POPULAR HOTELS FIND KOOLSHADE



ATLANTA BILTMORE
 "... simply captures all the penetration of the sun and lets into the room only the comforting atmosphere of a clear day."



THE READ HOUSE
 "You have something in KOOLSHADE SUN SCREEN that fills a very definite need for every hotel."



THE KING COLE HOTEL, Minneapolis, Minnesota, protects its public rooms from the intense summer sun with this KoolShade installation. Guests appreciate the cool clear atmosphere while dining or relaxing.

AN EXCELLENT INVESTMENT

*In Comfort . . . In Prevention of Fading
and In Lowered Air Conditioning Costs*

HOTEL PENNSYLVANIA

The Hotel Pennsylvania in New York proved the effectiveness of KoolShade in lowering the cost of operating air conditioning units. See the story on pages 38 and 39.



These are a few of the Hotels and Apartments which have installed KoolShade

ALEXANDER HOTEL
Hagerstown, Maryland

BAKER HOTEL
Dallas, Texas

BRUNSWICK HOTEL
Lancaster, Pennsylvania

CAMBRIDGE HOTEL
Cambridge, Maryland

CAPITAL PARK HOTEL
Washington, D.C.

GEORGIAN TERRACE HOTEL
Atlanta, Georgia

HERMITAGE HOTEL
Nashville, Tennessee

JEFFERSON HOTEL
Dallas, Texas

LEE SHERATON HOTEL
Washington, D.C.

HOTEL PATTERSON
Bismarck, North Dakota

RITZ-CARLTON HOTEL
Boston, Massachusetts

HOTEL ST. PAUL
St. Paul, Minnesota

SENECA HOTEL
Rochester, New York

SOUTHERN HOTEL
Denton, Texas

SUBURBAN HOTEL
East Orange, New Jersey

WELLINGTON HOTEL
Albany, New York

WESTBROOK HOTEL
Fort Worth, Texas

WHITE SULPHUR SPRINGS, INC.
White Sulphur Springs,
West Virginia

WHITEHALL HOTEL
Auburn, Maine

WINDERMERE HOTEL
Chicago, Illinois

KOOLSHADE Keeps the Sun's Heat Rays (Infra Red Rays) on the Outside Away from the Bedside . . .

- Cool, Clear Light—No Glare
- Up to 15° Cooler in Sun-Bathed Rooms
- Strong Bronze Screen
- Affords Excellent Insect Control
- Clear, undistorted vision through KOOLSHADE Sun Screen from inside yet difficult to see through from outside—added privacy.



It's hard to see in—easy to see out. No shade outside—but each room perfectly shaded, thanks to KOOLSHADE.

The glare of direct sun light is barred from these KOOLSHADE rooms. No eye strain—less fatigue—faster recovery.



These windows were a sunny day problem to the Flushing Hospital on Long Island until KOOLSHADE was installed.

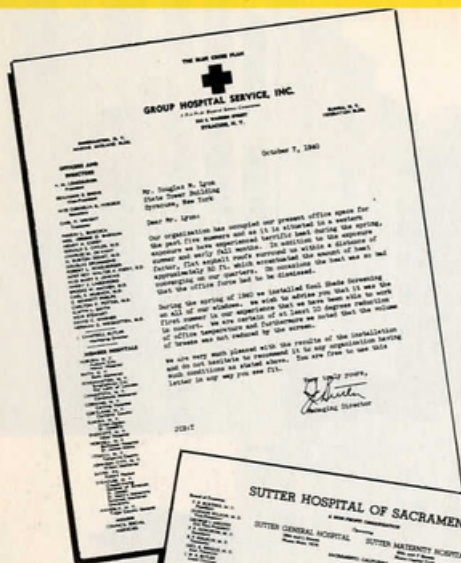


Mercy Hospital, Hempstead, N. Y. Designed for efficiency and comfort. Sun-conditioning keeps these sun-exposed rooms comfortable and cheerful.

Even in Minneapolis the summer sun gets unbearably hot. It's comfortable behind these sun screened windows.



Many Hospitals Bring Shaded



"... it was the first summer in our experience that we had been able to work in comfort."

These are a Hospitals now

Alameda County,
 Highland Hospital
 Oakland, California

Albany Hospital
 Albany, New York

Amesbury Hospital
 Amesbury, Massachusetts

The Beachner Home
 Youngstown, Ohio

Bethania Hospital
 Wichita Falls, Texas

Cooke Memorial Hospital
 Fort Worth, Texas

Crouse Irving Hospital
 Syracuse, New York

Englewood Hospital
 Englewood, New Jersey

Ford Hospital
 Detroit, Michigan

Good Samaritan Hospital
 Lexington, Kentucky

Glendale Sanitorium
 & Hospital
 Glendale, California

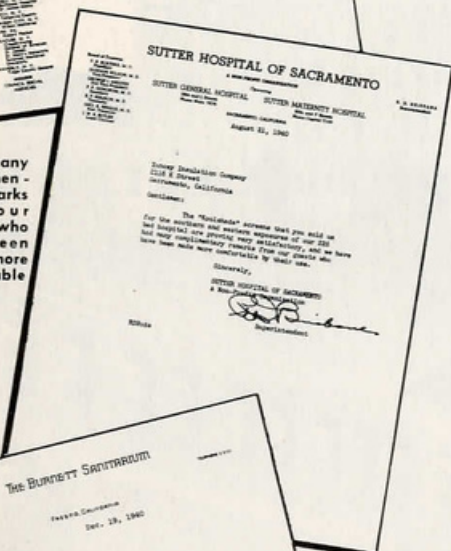
Hillcrest Memorial Hospital
 Dallas, Texas

Lewis-Gale Hospital
 Roanoke, Virginia

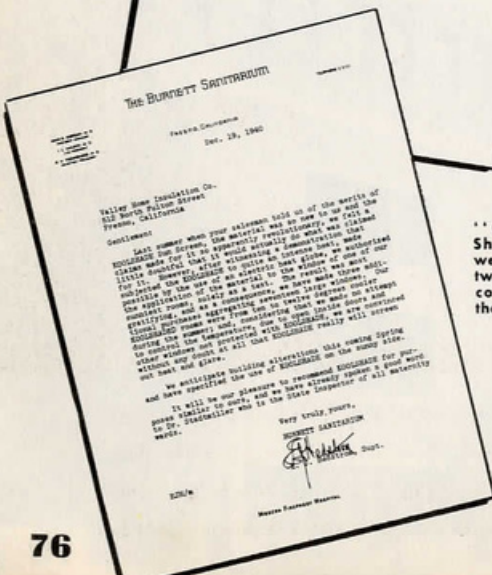
Lincoln General Hospital
 Lincoln, Nebraska

Merritt Hospital
 Oakland, California

"... many complimentary remarks from our guests who have been made more comfortable ..."



"Our Kool-Shaded rooms were ten to twelve degrees cooler during the summer."



Comfort to Sun-Exposed Rooms

few of the using KoolShade

New Britain General
Hospital
New Britain, Connecticut

Onondaga Sanitorium
Syracuse, New York

Pauling Sanitarium
Troy, New York

Provident Hospital
Waco, Texas

Quincy City Hospital
Quincy, Massachusetts

Ring Sanitarium
Arlington, Massachusetts

Rockefeller Institute-
Hospital
New York City

St. Barnabas Hospital
Minneapolis, Minnesota

St. Francis Hospital
Peoria, Illinois

St. Mary's Hospital
Kankakee, Illinois

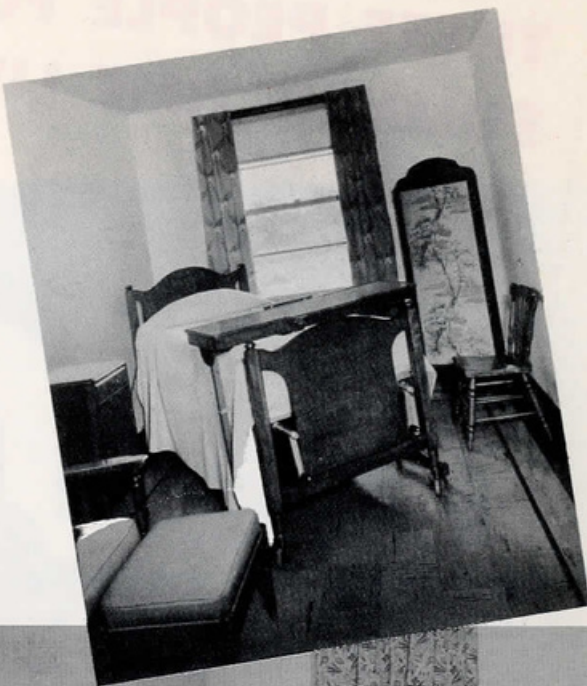
St. Mary's Hospital
Rochester, Minnesota

Salem Hospital
Salem, Massachusetts

Syracuse Memorial Hospital
Syracuse, New York

Vanderbilt Hospital
Nashville, Tennessee

Victory Hospital
Napa, California



Although these windows face the sun no direct heat rays enter during the hot hours of the day. However, KoolShade lets in plenty of clear glareless light and every pleasant breeze.

THESE PEOPLE FOUND THE SUMMER TIME LIVING



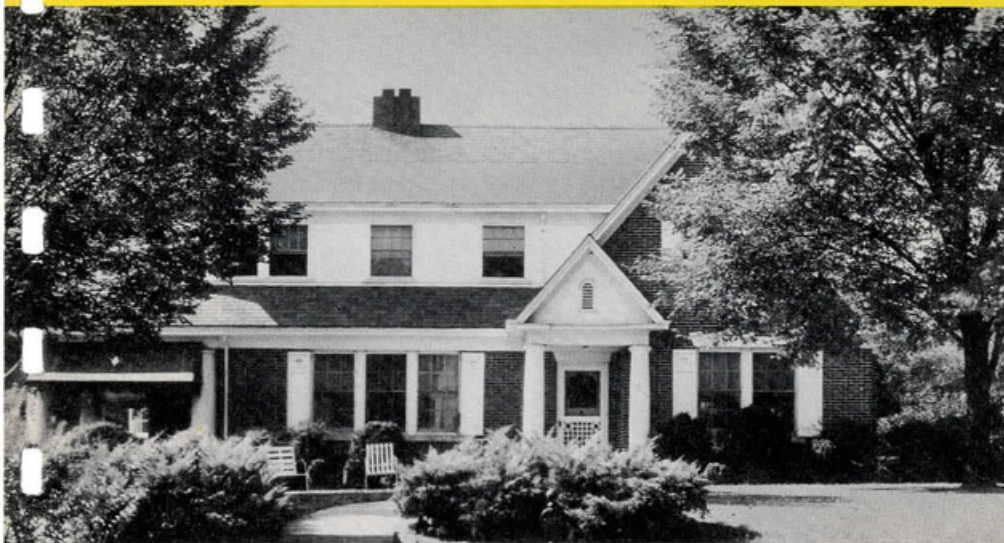
▲ KOOLSHADE pays off in added coolness and comfort on hot Summer days. By blocking all the sun's heat rays it also prevents fading of expensive furnishings.

This charming Oklahoma home is delightfully shaded behind these sun-exposed windows. Simple KOOLSHADE Sun Screens are more effective than a tree. ▼



ANSWER TO COMFORTABLE

No Room in These Homes Can Get Loaded with Trapped Heat . . . Because KOOLSHADE Absorbs and Radiates the Sun's Heat Rays Outside the Windows



Set amid lovely shade trees, yet this Chattanooga home needed KOOLSHADE to keep the sun's heat rays out of sun-exposed rooms during the mid-day hours.

Venetian Blinds, drapes or even awnings wouldn't keep this Fort Wayne, Indiana, home comfortable on hot sunny days. KOOLSHADE was the only answer.



DELIGHTFULLY

Guarded From the Sun's
by KOOLSHADE Sun Screen



▲
Lots of trees but
no shade on this
side of the house
— until KOOL-
SHADE was in-
stalled. Now these
front rooms are
comfortable all
day long.

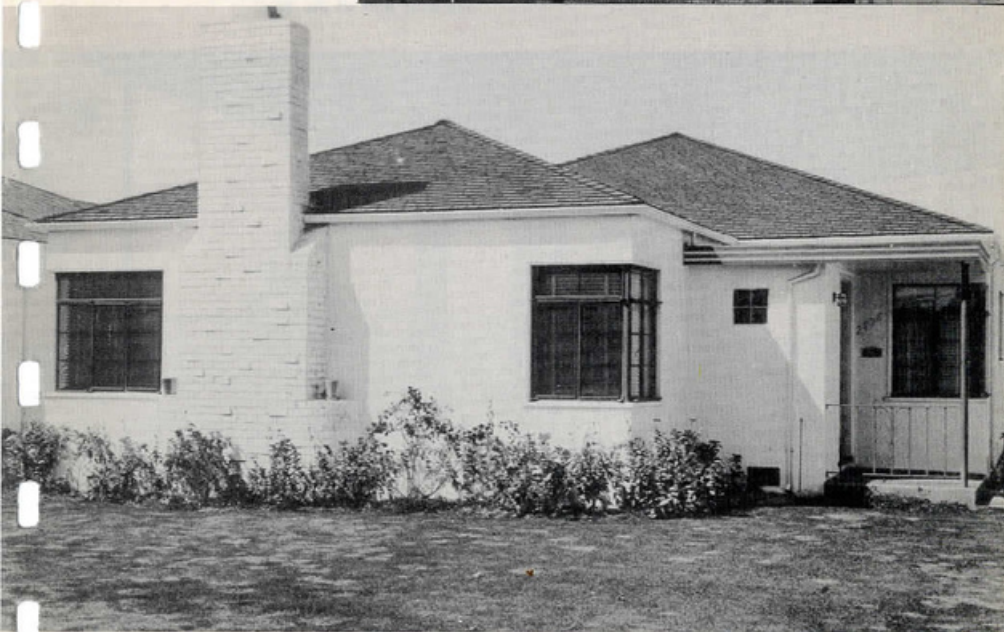


▲
Five sun exposed windows through which the sun's rays never pass, thanks to this neat
appearing KOOLSHADE installation.

SHADED ROOMS

Blistering Heat Rays

▶ An old mansion can get a touch of modern comfort by using KOOLSHADE Sun Screens. Valuable rugs, drapes, and furnishings are protected from sun fading.



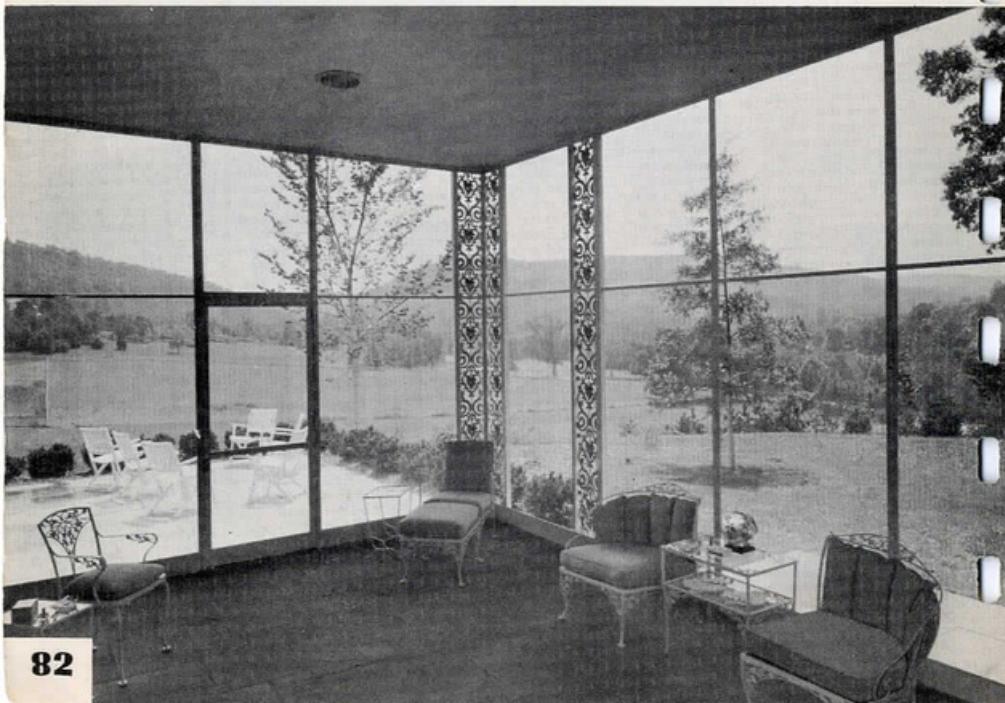
◀ A modern home — shaded in the modern manner. KOOLSHADE Sun Screens absorb and radiate the sun's heat rays right here on the outside.



These **KOOLSHADE**
Key to Complete


Imagine, if you can, awnings or venetian blinds used to shade this beautiful porch. Only KOOLSHADE preserves architectural design.

Without KOOLSHADE the stone floor and metal furniture would become unbearably hot — unusable during the best part of the day.

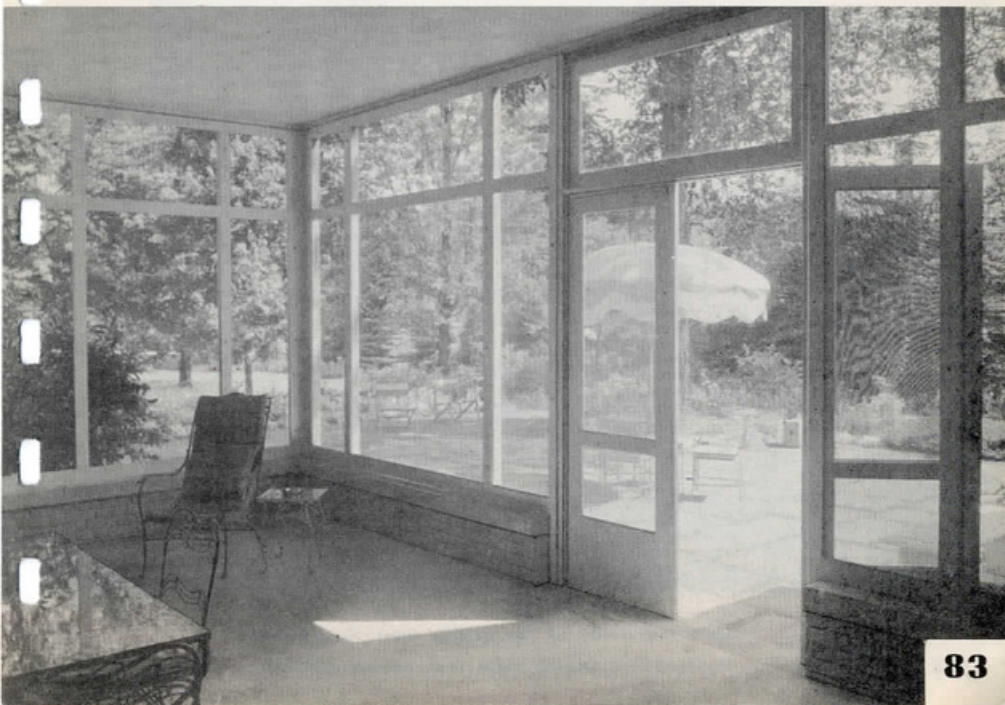


Porches are the Summer Comfort




 Neat appearance, ease of installation, and double-duty work as sun and insect screen, makes KOOLSHADE ideal.

Compare the triangular patch of glaring sunlight (entering through the open door) with the cool appearance of this KOOLSHADE protected porch. The sun beats down on the flagstones outside the door—but you can almost “feel” the cool breezes blowing.



Enhance the beauty of your with an attractive



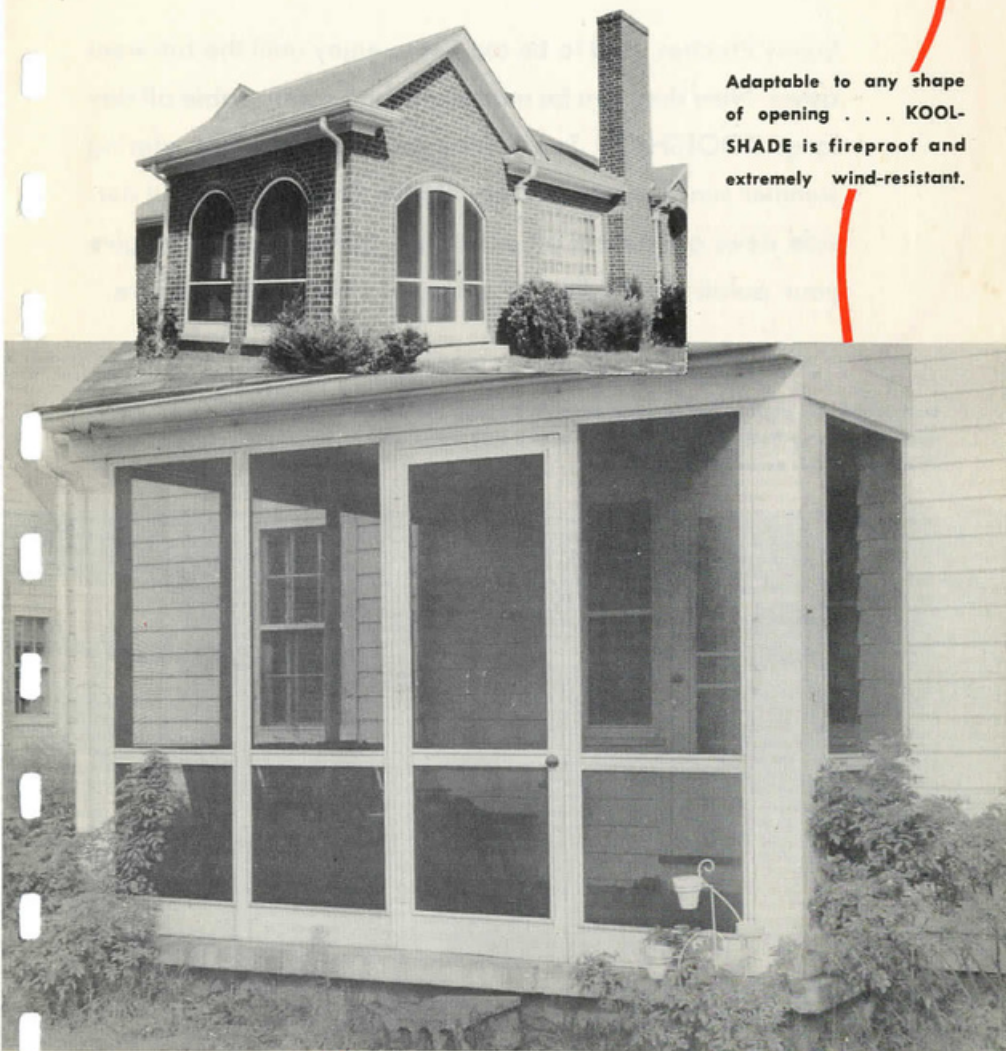
KOOLSHADE combines a certain amount of privacy with that out-in-the-open feeling.



Note the clarity of the outside view. Colors seen through KOOLSHADE retain their natural brilliance.

**porch . . . Large or Small . . .
KOOLSHADE Installation**

Adaptable to any shape
of opening . . . KOOL-
SHADE is fireproof and
extremely wind-resistant.



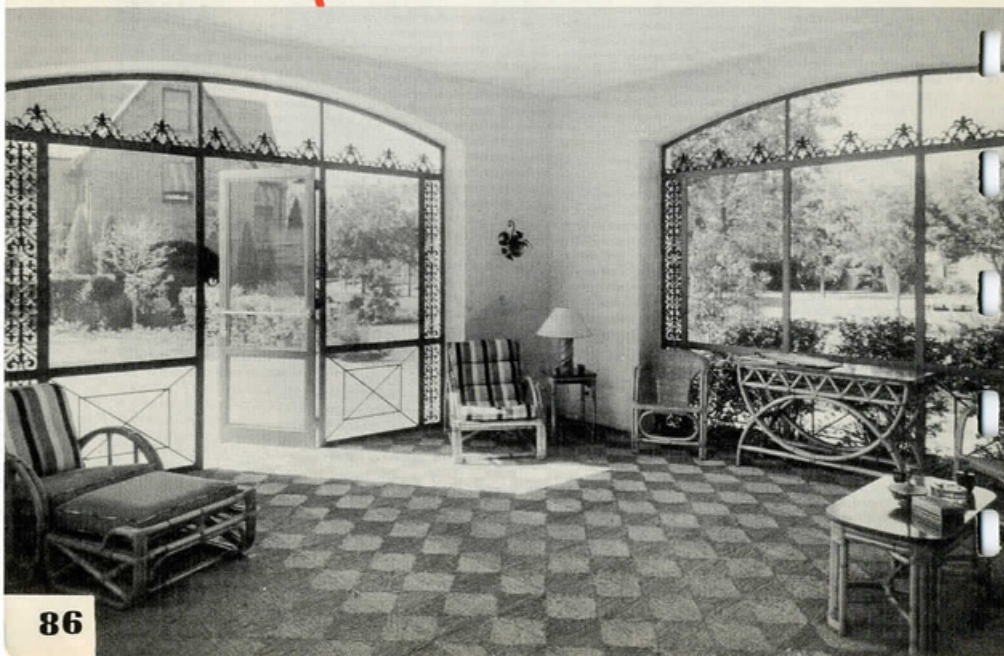
Small homes, particularly, can benefit by the rich appearance of neatly-framed, bronze KOOLSHADE.

**Porches Now Give
24 Hour Service...
and Comfort**

KOOLSHADE

Sunny Porches used to be too hot to enjoy until the sun went down. Now they can be made cool and comfortable all day long. KOOLSHADE Sun Screen keeps out the hot, glaring summer sun, but lets in every elusive breeze. Beautiful outside views are not cut off or blurred. Soft light enters to give your porch the feeling of pleasant "northern exposure."

Notice how the glaring hot sunlight pours in through the open door. It heats up floors and furniture . . . which stay warm after direct sun heat is no longer excessive.



is the ideal porch shade

- Does not obstruct outside view
- Does not block lightest summer breeze
- Does not darken porch during early evening
- Gives excellent insect protection

Notice the cool, shaded appearance of this interior porch view. Plenty of clear light enters. From mountain top to flower bed the view is beautifully pictured.



Here is a typical home installation. KOOLSHADE automatically shades the large open porch from direct sun ray heat and gives excellent insect protection.



The Facts and Figures On How Much KOOL

The figures in the tables that follow were developed from Pittsburgh Testing Laboratories analyses. They furnish accurate Sun Heat data for 30°, 35°, 40°, and 45° North Latitudes for glazed areas facing 7 sun-exposure directions.

They are of great value to Air Conditioning Engineers who must *know accurately how much* heat a square foot of KOOL-SHADE applied to sun-exposed glazed area will eliminate from their cooling load.

SIX YEARS OF FIELD TESTING

Since 1940, Air Conditioning Engineers have used these tables as the basis of cooling load calculations in each of the four latitudes listed above.

In all cases, operative tests after cooling installations were completed have proved the heat reductions listed in these tables are figured conservatively. A common yardstick now popularly used for Solar Load analyses is: 100 square feet KOOLSHADE on sun-exposed glazed areas is equal to one ton of air conditioning (12,000 B.T.U.'s).

YEARS OF TESTING ON ALL TYPES OF GLAZED AREAS HAVE PROVED KOOLSHADE'S ABILITY TO REDUCE SUN HEAT LOAD WHILE PROVIDING ADEQUATE VENTILATION, LIGHT WITHOUT SUN GLARE AND UNOBSTRUCTED OUTSIDE VIEW.

SHADE Reduces The Sun Heat Load

BASIC ENGINEERING DATA SIMPLIFIED...

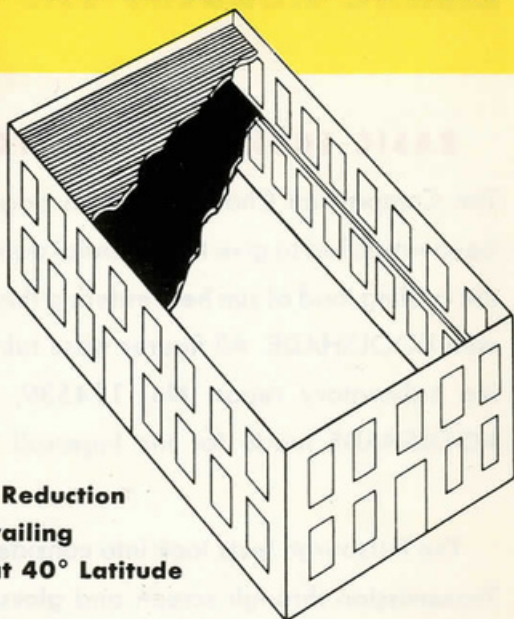
The Comparison Charts found on pages 92 through 99 have been simplified to give the essential data needed for calculating the cooling load of sun heat entering through windows equipped with KOOLSHADE. All figures were taken from Pittsburgh Testing Laboratory report No. 194539, which was a study of KOOLSHADE made for the Ingersoll Steel Division in 1938.

The Pittsburgh tests took into consideration direct Solar Heat Transmission through screen and glass *and* heat gain by conduction through the glass. The following tables represent *only* the direct Solar gain. This method of tabular breakdown allows for a comparison with other commonly used shading devices. By use of the "Effective Transmittance" (heat gain by conduction) values, the *total* cooling load can be calculated.

Heat gain by conduction depends not only on the sun angle, but also on the temperature rise of the air enclosed between the screen and the glass. Because this varies with the amount of solar radiation absorbed by KOOLSHADE over a period of time, a single value is given for Effective Transmittance (at the bottom of each chart) based on the *average* amount of radiation absorbed by the screen during the whole day. This figure, multiplied by the assumed difference between the outside and room temperatures, gives the heat gain due to conduction.

KOOLSHADE SAVES TONS

**Take This
Building
For Example—**



Example of Cooling Load Reduction Based on Conditions Prevailing During Peak Solar Load at 40° Latitude

We have 16 windows on East side of building—each window 4' x 6' 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 B.T.U.'s—1 Ton) Heat stoppage equals
Tons 3.3444

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

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' x 6' and 2—3' x 6' for total square footage of 204 sq. ft.—Figuring on 12:00 noon Peak Load:

Solar Load through Bare Windows-----	15,096
Solar Load through KOOLSHADE-----	1,224
Reduction -----	13,872
	in Tons 1.156

OF REFRIGERATION

KOOLSHADE reduces sun heat load, not only at the peak load hours shown above, but throughout the day. Using the tables on pages 92-99—the total differences, over six hour periods on each exposure, between heat transmitted through bare glass and load entering through KOOLSHADE are as shown below:

East—6 a.m. to Noon.....	384 sq. ft. x 536.5 BTU's	— 206,016	BTU's
West—Noon to 6 p.m.....	360 sq. ft. x 536.5 BTU's	— 193,140	
South—9 a.m. to 3 p.m.....	204 sq. ft. x 287 BTU's	— 58,548	
			Total 457,704
Total Daily Reduction in Cooling Load in Tons.....			38.142

FIVE SETS OF SUN HEAT DATA

- 1. INTENSITY INCIDENT TO VERTICAL SURFACE.** The figures in column 1 of tables on pages 92 through 99 of this book are taken from tables 2, 3, 4, and 5 in chapter 8 of the A.S.H.V.E. Guide for 1940. Included for reference only, not for figuring actual sun heat analyses, but as comparison between the angle of incidence of the sun and the transmitted sun heat radiation through bare single window glass figures in column 2.
- 2. TRANSMITTED THROUGH SINGLE WINDOW GLASS—BARE.** Column 2 in the tables gives the number of B.T.U.'s per square foot per hour transmitted through bare single window glass for each hour of the day in which sun rays strike glazed areas. These figures are furnished by permission of Mr. William Goodman of the Trane Company and are reprinted from the May and June, 1938 issues of Heating, Piping, and Air Conditioning magazine.
- 3. TRANSMITTED THROUGH WINDOW WITH KOOLSHADE.** Column 3 tables give the number of B.T.U.'s per square foot per hour transmitted through windows equipped with KOOLSHADE Sun Screen. Their source is Pittsburgh Testing Laboratory report Laboratory No. 194539, made in 1938.
- 4. PER CENT OF HEAT BLOCKED BY KOOLSHADE.** These figures are included as a handy reference in determining the percentage of solar load blocked or reflected by KOOLSHADE Sun Screen.
- 5. EFFECTIVE TRANSMITTANCE—HEAT GAIN BY CONDUCTION.** The figures under this heading at the bottom of each tabular page show that heat gain by conduction through glass is minute compared to that caused by direct solar rays.

COMPARISON — SUN HEAT TRANSMITTED and THROUGH KOOLSHADE

**ALL FIGURES
B.T.U.s
Per Sq. Ft. Per Hour**

Complete explanations and sample computations on the use of these B.T.U. tables are detailed on pages 88, 89, 90 and 91 of this book.

MORNING

A.M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northeast	47	48	24	50
	East	51	52	26.5	49
	Southeast	24	22	9	59
	South	x	x	x	x
7:00	Northeast	136	122	42	66
	East	160	147	57	61
	Southeast	90	77	17	78
	South	x	x	x	x
8:00	Northeast	151	140	21	85
	East	205	190	42	78
	Southeast	136	116	15.5	78
	South	x	x	x	x
9:00	Northeast	127	101	10	90
	East	189	170	21	88
	Southeast	140	118	12	90
	South	8	1	0	x
10:00	Northeast	79	43	4	91
	East	141	116	11.5	90
	Southeast	122	95	8.5	91
	South	31	8	0.5	93
11:00	Northeast	21	2	0.5	75
	East	78	40	3.5	90
	Southeast	85	53	4	93
	South	45	17	1.5	91
12:00	Northeast	x	x	x	x
	East	x	x	x	x
	Southeast	36	10	1	90
	South	50	20	1.5	93

EFFECTIVE TRANSMITTANCE: ^{HEAT} GAIN BY CONDUCTION:

Northeast 1.02, East 1.05, Southeast 1.02, South 0.97, Southwest 1.02, West 1.05, Northwest 1.02. Heat gain through windows by conduction is figured by multiplying the above figures by the actual or assumed differences between room and outside air temperatures.

THROUGH BARE GLASS WINDOWS EQUIPPED WINDOWS

- (1) Data from A.S.H.V.E. guide 1940.
- (2) Data from William Goodman, Trane Company (copyright).
- (3) KOOLSHADE data from calculations made by Pittsburgh Testing Laboratory, based on their actual tests.

**30 DEGREE
LATITUDE
ON JULY 21**

AFTERNOON

P. M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northwest	47	48	24	50
	West	51	52	26.5	49
	Southwest	24	22	9	59
	South	x	x	x	x
5:00	Northwest	136	122	42	66
	West	160	147	57	61
	Southwest	90	77	17	78
	South	x	x	x	x
4:00	Northwest	151	140	21	85
	West	205	190	42	78
	Southwest	136	116	15.5	78
	South	x	x	x	x
3:00	Northwest	127	101	10	90
	West	189	170	21	88
	Southwest	140	118	12	90
	South	8	1	0	100
2:00	Northwest	79	43	4	91
	West	141	116	11.5	90
	Southwest	122	95	8.5	91
	South	31	8	0.5	93
1:00	Northwest	21	2	0.5	75
	West	78	40	3.5	90
	Southwest	85	53	4	93
	South	45	17	1.5	91
12:00	Northwest	x	x	x	x
	West	x	x	x	x
	Southwest	36	10	1	90
	South	50	20	1.5	93

USE 30° FIGURES FOR THE FOLLOWING STATES:

Southern half of Alabama, Southern Arizona, Florida, Southern Georgia, Louisiana, Southern three-quarters of Texas. All towns in above group are located between 26° and 32° North Latitude.

COMPARISON — SUN HEAT TRANSMITTED and THROUGH KOOLSHADE

**ALL FIGURES
B.T.U.s
Per Sq. Ft. Per Hour**

Complete explanations and sample computations on the use of these B.T.U. tables are detailed on pages 88, 89, 90 and 91 of this book.

MORNING

A.M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northeast	67	48	32.5	32
	East	72	52	36	31
	Southeast	35	23	12	48
	South	x	x	x	x
7:00	Northeast	142	118	41	65
	East	174	147	59	60
	Southeast	103	81	19.5	76
	South	x	x	x	x
8:00	Northeast	150	130	19.5	85
	East	209	187	42	78
	Southeast	145	126	17.5	86
	South	x	x	x	x
9:00	Northeast	118	86	9.5	89
	East	191	170	21	88
	Southeast	154	132	14	89
	South	26	6	0.5	92
10:00	Northeast	60	27	2.5	91
	East	143	116	11.5	90
	Southeast	139	113	11	90
	South	55	24	2	92
11:00	Northeast	2	x	x	x
	East	75	40	4	90
	Southeast	103	73	6	92
	South	72	39	3	92
12:00	Northeast	x	x	x	x
	East	x	x	x	x
	Southeast	55	23	2	91
	South	78	46	4	91

EFFECTIVE TRANSMITTANCE: ^{HEAT GAIN BY} CONDUCTION:

Northeast 1.00, East 1.04, Southeast 1.02, South 0.99, Southwest 1.02, West 1.04, Northwest 1.00. Heat gain through windows by conduction is figured by multiplying the above figures by the actual or assumed differences between room and outside air temperatures.

THROUGH BARE GLASS WINDOWS EQUIPPED WINDOWS

- (1) Data from A.S.H.V.E. guide 1940.
 (2) Data from William Goodman, Trane Company (copyright).
 (3) KOOLSHADE data from calculations made by Pittsburgh Testing Laboratory, based on their actual tests.

**35 DEGREE
LATITUDE
ON JULY 21**

AFTERNOON

P.M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northwest	67	48	32.5	32
	West	72	52	36	31
	Southwest	35	23	12	48
	South	x	x	x	x
5:00	Northwest	142	118	41	65
	West	174	147	59	60
	Southwest	103	81	19.5	76
	South	x	x	x	x
4:00	Northwest	150	130	19.5	85
	West	209	187	42	78
	Southwest	145	126	17.5	86
	South	x	x	x	x
3:00	Northwest	118	86	9.5	89
	West	191	170	21	88
	Southwest	154	132	14	89
	South	26	6	0.5	92
2:00	Northwest	60	27	2.5	91
	West	143	116	11.5	90
	Southwest	139	113	11	90
	South	55	24	2	92
1:00	Northwest	2	x	x	x
	West	75	40	4	90
	Southwest	103	73	6	92
	South	72	39	3	92
12:00	Northwest	x	x	x	x
	West	x	x	x	x
	Southwest	55	23	2	91
	South	78	46	4	91

USE 35° FIGURES FOR THE FOLLOWING STATES:

Northern half of Alabama, Arizona (except extreme southern part), Arkansas, Southern half of California, Northern Georgia, Northern Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Northern quarter of Texas, Virginia. All towns in above group are located between 33° and 37° North Latitude.

COMPARISON — SUN HEAT TRANSMITTED and THROUGH KOOLSHADE

**ALL FIGURES
B.T.U.s
Per Sq. Ft. Per Hour**

Complete explanations and sample computations on the use of these B.T.U. tables are detailed on pages 88, 89, 90 and 91 of this book.

MORNING

A.M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northeast	72	47	33	30
	East	80	52	38.5	26
	Southeast	40	24	13	46
	South	x	x	x	x
7:00	Northeast	143	114	38.5	66
	East	180	147	60.5	59
	Southeast	112	86	22	74
	South	x	x	x	x
8:00	Northeast	143	120	17	86
	East	211	190	42.5	78
	Southeast	155	124	20.5	83
	South	8	1	0	100
9:00	Northeast	104	71	8	89
	East	192	170	22	87
	Southeast	168	146	17	88
	South	46	18	2	89
10:00	Northeast	46	15	1.5	90
	East	143	116	11.5	90
	Southeast	156	132	13	90
	South	77	45	4	91
11:00	Northeast	x	x	x	x
	East	75	40	3.5	91
	Southeast	121	93	8.5	91
	South	95	66	5.5	92
12:00	Northeast	x	x	x	x
	East	x	x	x	x
	Southeast	73	40	3.5	91
	South	103	74	6	92

EFFECTIVE TRANSMITTANCE: ^{HEAT} GAIN BY CONDUCTION:

Northeast 1.01, East 1.04, Southeast 1.02, South 1.00, Southwest 1.02, West 1.04, Northwest 1.01. Heat gain through windows by conduction is figured by multiplying the above figures by the actual or assumed differences between room and outside air temperatures.

THROUGH BARE GLASS WINDOWS EQUIPPED WINDOWS

- (1) Data from A.S.H.V.E. guide 1940.
 (2) Data from William Goodman, Trane Company (copyright).
 (3) KOOLSHADE data from calculations made by Pittsburgh Testing Laboratory, based on their actual tests.

40 DEGREE
LATITUDE
ON JULY 21

AFTERNOON

P. M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northwest	72	47	33	30
	West	80	52	38.5	26
	Southwest	40	24	13	46
	South	x	x	x	x
5:00	Northwest	143	114	38.5	66
	West	180	147	60.5	59
	Southwest	112	86	22	74
	South	x	x	x	x
4:00	Northwest	143	120	17	86
	West	211	190	42.5	78
	Southwest	155	124	20.5	83
	South	8	1	0	100
3:00	Northwest	104	71	8	89
	West	192	170	22	87
	Southwest	168	146	17	88
	South	46	18	2	89
2:00	Northwest	46	15	1.5	90
	West	143	116	11.5	90
	Southwest	156	132	13	90
	South	77	45	4	91
1:00	Northwest	x	x	x	x
	West	75	40	3.5	91
	Southwest	121	93	8.5	91
	South	95	66	5.5	92
12:00	Northwest	x	x	x	x
	West	x	x	x	x
	Southwest	73	40	3.5	91
	South	103	74	6	92

USE 40° FIGURES FOR THE FOLLOWING STATES:

Colorado, Connecticut, Delaware, Washington, D.C., Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Lower Michigan, Missouri, Nebraska, New Jersey, Southern New York, Ohio, Pennsylvania, Rhode Island, Utah, Northern Virginia, West Virginia, Wyoming. All towns in above group are located between 37° and 42° North Latitude.

COMPARISON — SUN HEAT TRANSMITTED and THROUGH KOOLSHADE

**ALL FIGURES
B.T.U.s
Per Sq. Ft. Per Hour**

Complete explanations and sample computations on the use of these B.T.U. tables are detailed on pages 88, 89, 90 and 91 of this book.

MORNING

A.M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northeast	89	46	39	15
	East	99	52	45.5	13
	Southeast	52	25	15.5	38
	South	x	x	x	x
7:00	Northeast	149	109	37	66
	East	194	147	64	56
	Southeast	125	91	25	73
	South	x	x	x	x
8:00	Northeast	140	110	15.5	86
	East	219	190	45	76
	Southeast	171	145	25	83
	South	22	4	0.5	87
9:00	Northeast	92	57	6.5	89
	East	194	170	23	86
	Southeast	183	160	20	88
	South	65	33	3.5	89
10:00	Northeast	33	6	1	83
	East	144	116	11.5	90
	Southeast	171	149	15.5	90
	South	98	69	6.5	91
11:00	Northeast	x	x	x	x
	East	75	40	4	90
	Southeast	139	112	10.5	91
	South	121	93	8.5	91
12:00	Northeast	x	x	x	x
	East	x	x	x	x
	Southeast	91	59	5	92
	South	128	102	9	91

EFFECTIVE TRANSMITTANCE: ^{HEAT} GAIN BY CONDUCTION:

Northeast 1.01, East 1.04, Southeast 1.03, South 1.02, Southwest 1.03, West 1.04, Northwest 1.01. Heat gain through windows by conduction is figured by multiplying the above figures by the actual or assumed differences between room and outside air temperatures.

THROUGH BARE GLASS WINDOWS EQUIPPED WINDOWS

- (1) Data from A.S.H.V.E. guide 1940.
 (2) Data from William Goodman, Trane Company (copyright).
 (3) KOOLSHADE data from calculations made by Pittsburgh Testing Laboratory, based on their actual tests.

**45 DEGREE
LATITUDE
ON JULY 21**

AFTERNOON

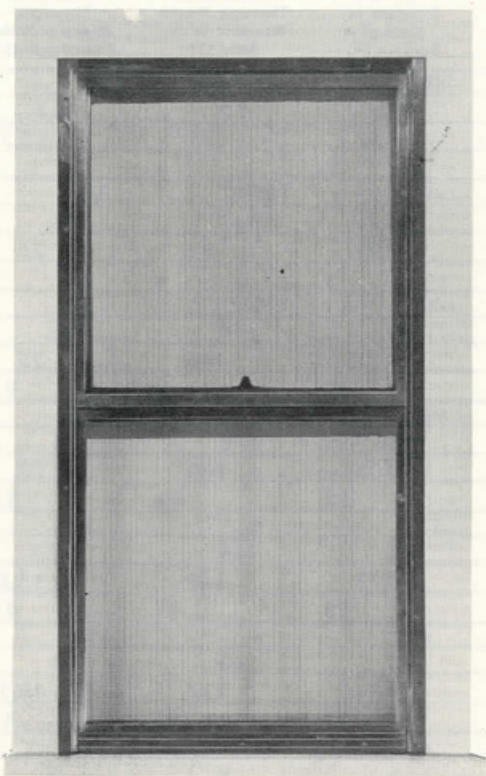
P. M. Sun Time	ORIENTATION (Direction Window Faces)	Intensity Incident to Vertical Surface (1)	Transmitted Through Single Window Glass Bare (2)	Transmitted Through Window With Koolshade (3)	Percent of Heat Blocked by Koolshade
6:00	Northwest	89	46	39	15
	West	99	52	45.5	13
	Southwest	52	25	15.5	38
	South	x	x	x	x
5:00	Northwest	149	109	37	66
	West	194	147	64	56
	Southwest	125	91	25	73
	South	x	x	x	x
4:00	Northwest	140	110	15.5	86
	West	219	190	45	76
	Southwest	171	145	25	83
	South	22	4	0.5	87
3:00	Northwest	92	57	6.5	89
	West	194	170	23	86
	Southwest	183	160	20	88
	South	65	33	3.5	89
2:00	Northwest	33	6	1	83
	West	144	116	11.5	90
	Southwest	171	149	15.5	90
	South	98	69	6.5	91
1:00	Northwest	x	x	x	x
	West	75	40	4	90
	Southwest	139	112	10.5	91
	South	121	93	8.5	91
12:00	Northwest	x	x	x	x
	West	x	x	x	x
	Southwest	91	59	5	92
	South	128	102	9	91

USE 45° FIGURES FOR THE FOLLOWING STATES:

Maine, North half of Michigan, Minnesota, Montana, Northern Nebraska, New Hampshire, North half of New York, North Dakota, Oregon, South Dakota, Vermont, Washington, Wisconsin, Northern Wyoming. All towns in above group are located between 43° and 49° North Latitude.

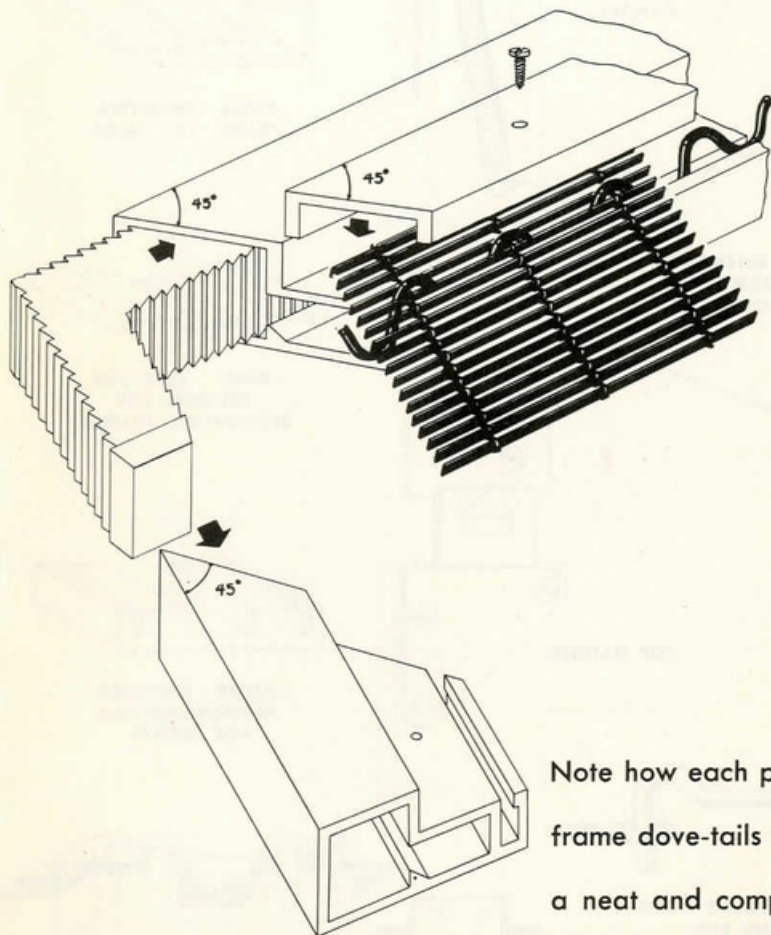
INGERSOLL EXTRUDED ALU IDEAL FOR INSTALLING

Ingersoll has developed an aluminum frame that can be cut and fitted on the job, making it adaptable not only to all ordinary windows but to many types of odd-sized or shaped windows. Minor adjustments can be made within the frame itself after it is mounted to care for any warp or variation in the basic window frame.



Unobtrusive and attractive Ingersoll Extruded Aluminum Frames are smooth and neat. They enhance the appearance of any building. Aluminum is light, easy to handle, cannot rot or rust and does not require painting. This is ideal framing for KOOL-SHADE.

HERE IS A SIMPLE "EXPLODED" SKETCH SHOWING HOW THE FRAME IS ASSEMBLED, HOW THE CORNERS ARE FITTED AND HOW KOOLSHADE IS INSTALLED INTO THE FRAME —

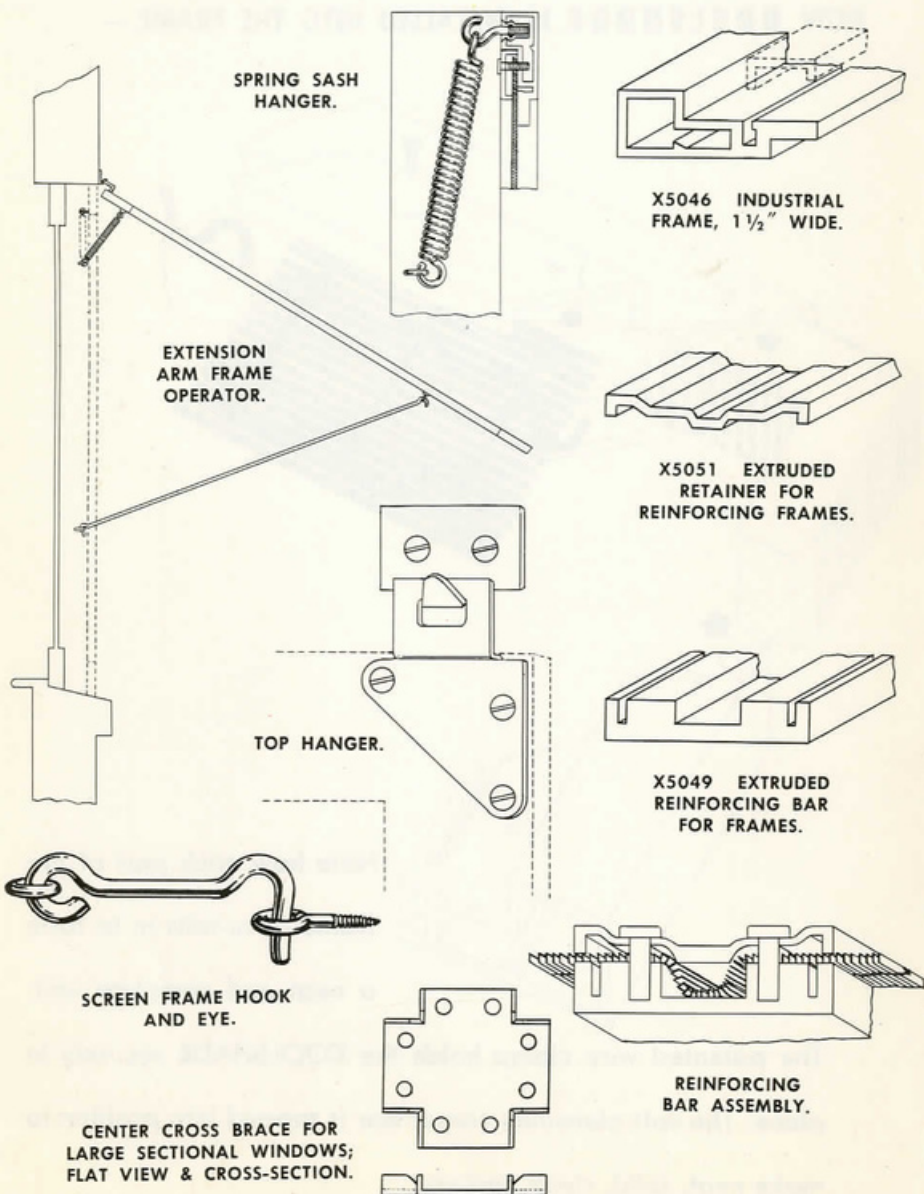


Note how each part of the frame dove-tails in to form a neat and complete unit.

The patented wire clamp holds the KOOLSHADE securely in place. The soft aluminum corner bar is tapped into position to make neat, solid, clean corners.

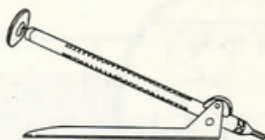
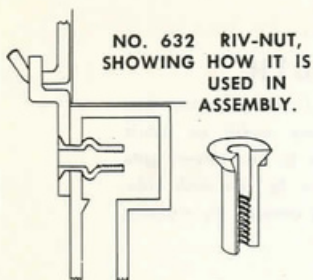
INGERSOLL ALUMINUM FRAMES ARE READILY ALL TYPES OF INDUSTRIAL, COMMERCIAL, OR

Here are the parts that are available to accomplish
an ideal framing job on most types of windows:

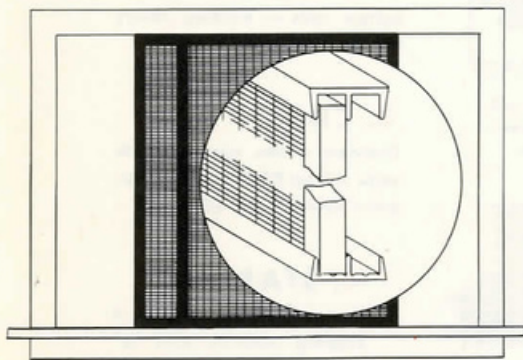


ADAPTABLE TO NEARLY HOME INSTALLATIONS

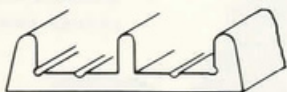
ALUMINUM FRAMING



GOODRICH RIV-NUT TOOL. THIS TOOL IS NEEDED FOR FASTENING THE RIV-NUT.

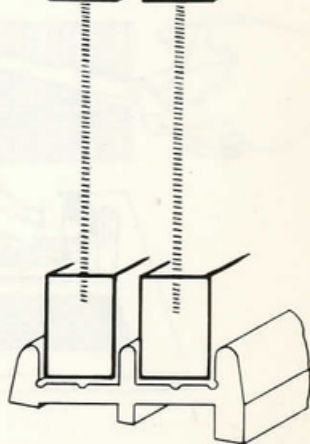
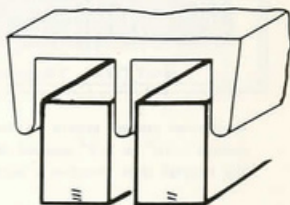


THIS SKETCH SHOWS HOW THE FRAMED KOOLSHADE IS MOUNTED IN UPPER AND LOWER TRACKS.



X5061 LOWER TRACK FOR LEVEL SILL.

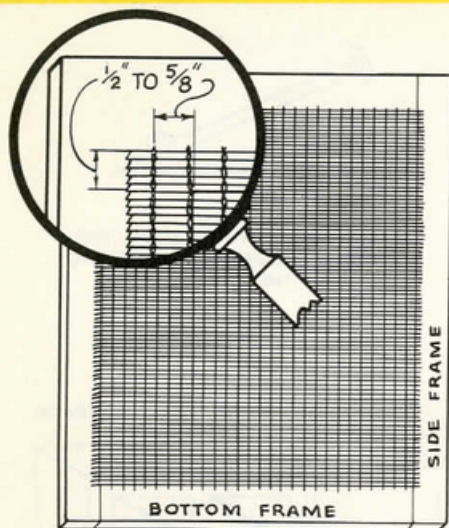
X5063 UPPER EXTRUDED TRACK.



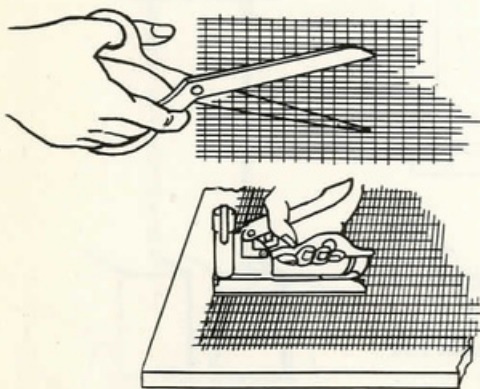
X5062 LOWER EXTRUDED TRACK BUILT UP FOR SLOPING SILL.

The various extruded aluminum frame sections shown on these pages are identified by number. They can be ordered from the plant. Aluminum framing is increasingly popular—it has many advantages. These Ingersoll frames are specially engineered to solve most KOOLSHADE framing problems.

HOW TO WOOD-FRAME KOOL

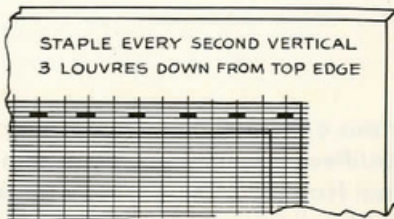


Horizontal louvers should be cut so they will extend $\frac{1}{16}$ " to $\frac{1}{8}$ " beyond vertical wires—the vertical then becomes a selvage edge.



5. TOP RAIL

Lay fabric on top rail, extending $\frac{1}{2}$ " to $\frac{5}{8}$ " over inside edge. BE SURE LOUVRES SLANT DOWNWARD AND OUTWARD. Staple every second vertical 3 louvers down from top edge.



1. WIDTH

Should be 1" to $\frac{1}{4}$ " wider than inside frame width so fabric extends on to and covers side rails $\frac{1}{2}$ " to $\frac{5}{8}$ " on each side. This lap is covered by molding strip.

2. LENGTH

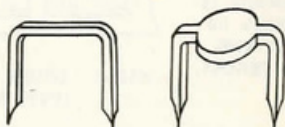
Should be 1" to $\frac{1}{4}$ " longer than inside frame length to allow $\frac{1}{2}$ " to $\frac{5}{8}$ " lap on top and bottom rails — molding covers this lap also.

3. CUT

Ordinary shears, scissors, or tin snips will cut KOOLSHADE's rust-proof bronze alloy with ease.

4. STAPLES

Use ordinary $\frac{3}{8}$ " staples, a stapling machine with $\frac{3}{8}$ " staples, or the patented expanded-head $\frac{3}{8}$ " staple pictured below.



6. STRETCH

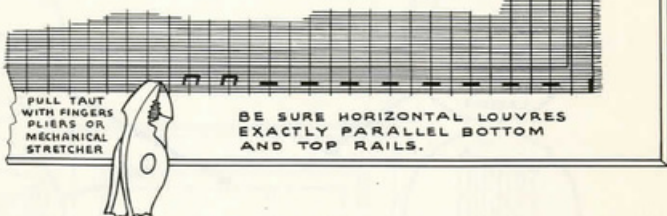
not more than $\frac{1}{8}$ " per lineal foot. Stretch just enough to give fabric a smooth, firm appearance. Horizontal stretching not required.

Staple over vertical wires every 4 inches on side rails.

7. BOTTOM RAIL

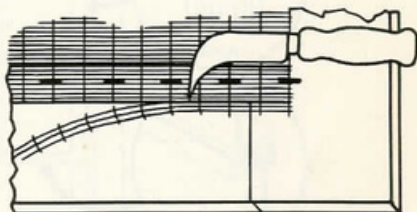
Apply staples exactly as you did on top rail. Be sure louvers parallel bottom rail and verticals parallel side rails.

Be sure vertical wires are exactly parallel to side rails.



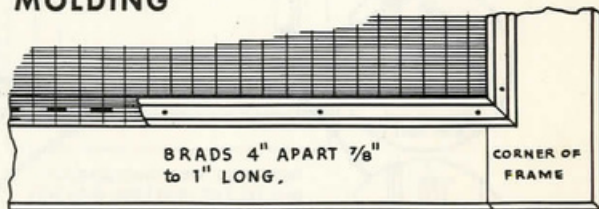
8. TRIM

Now trim off fabric at bottom which will not be covered by molding. Any knife reasonably sharp will do a neat job.



9. APPLY MOLDING

Use brass brads if obtainable, about $\frac{1}{4}$ " shorter than combined thickness of molding and frame.

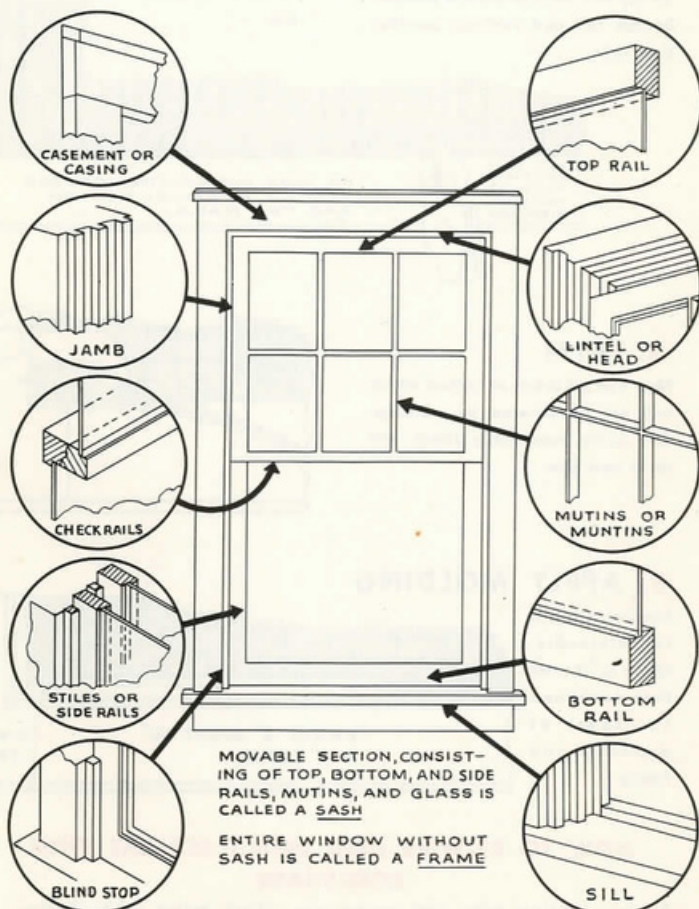


HOW TO RE-WIRE USED INSECT SCREENS WITH KOOLSHADE

Remove molding strips and screen wire. Check corner joints. If loose, strengthen with angle irons or metal screen corners. Clean rust or dried paint off frame sections where old screen was in contact with wood. Re-wire as described above for new screen.

A HANDY GLOSSARY OF THE NAMES

Illustrated below are the various parts that are found on most windows. The nomenclature used is standard throughout the building trades. There are many other window parts that may be used. A few of these are defined on the next page.



OF WINDOW PARTS

Other "Window Words" You May Need To Know

- ANCHOR BOLTS**—Bolts to secure a wooden sill to concrete or masonry floor or wall.
- APRON**—The horizontal piece of wood trim, plain or moulded, to finish below the stool of a window.
- BLIND STOP**—Placed outside of upper sash designed to hold upper sash in place and to seal off from weather.
- BULL NOSE**—An external angle which is rounded to eliminate a sharp corner. Used largely at window returns.
- CAP MOULDING**—Moulding used at the top of window trim to ornament the plainness of the trim.
- CHECK STOP**—A moulding used to hold the bottom sash of a double-hung window in place in a window frame.
- DOUBLE-GLAZING**—Windows with a double glass pane with air space between them, hermetically sealed.
- GLASS STOP**—Moulding used to fasten glass in window sash.
- JAMB LINING**—The side post or lining of a doorway, window or other opening.
- LINTEL**—A horizontal member above a window opening to provide additional support to the wall above the opening.
- MULLION**—A slender bar, forming a division between units of windows, screens, frames or door panels.
- SASH CENTER**—A bearing consisting of two plates, one with a pin, the other with a socket. For use on any sash that turns on a horizontal axis.
- SASH CORD**—Specially made rope used to connect window sash weights.
- SASH FAST**—A locking device fastened to the meeting rails of sash.
- SASH LIFT**—A bar, plate or hook attached to a window sash for use as a handle in opening the window.
- SPANDRAL**—A panel between the top of a window at one story and the sill of a window at the story above.
- STOOL**—The flat, narrow shelf forming the top member of the interior trim at the bottom of a window.
- VENT**—A minor opening to permit passage of air through any space in a building such as attic or window sash.
- WEEP HOLE**—A small hole as in a retaining wall to drain water to the outside.

IT'S EASY TO MEASURE MOST

MEASURING the "DOUBLE-HUNG"

1. Decide How You'll Hang the Framed Screen

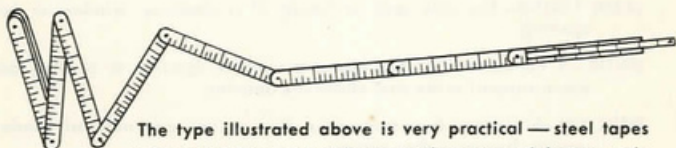
The type of frame and any special window washing requirements will determine which hanging method you'll need to use. See the following pages for illustrated methods of hanging frames. You can then select the method best adapted from some of the following:

- A. Button-On
- B. Top-Hung
- C. Side-Hinged
- D. Sliding Horizontal
- E. Sliding Vertical

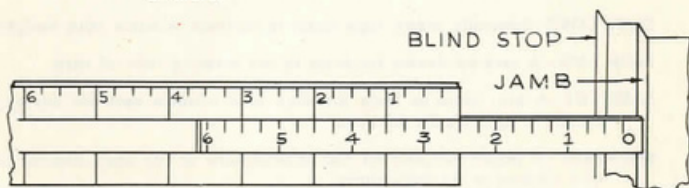
2. Analyze Outer Window Frame: to see what Surfaces Screen frame will fit against.

This is necessary so you'll be sure to take your measurements *in the right places*, since occasionally a window will require extension strips to provide a *plane surface* for the screen frame to fit against.

3. Use Rigid Folding Rule: with Six-Inch Sliding Extension End for "Inside" Accuracy



The type illustrated above is very practical — steel tapes with provision for inside measuring are satisfactory only if they'll hold rigid, straight line when unreel'd 6 feet or more.

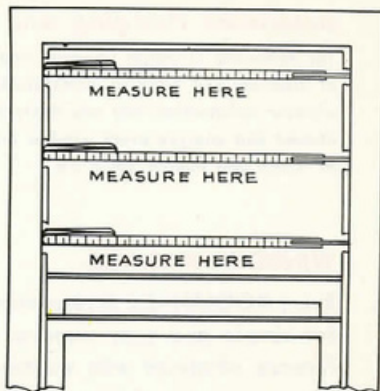


"Inside Dimensions" Can Be Quickly and Accurately Read by Sliding Extension End Out to Contact Blind Stop or Sill.

4. OPEN TOP SASH

Measure Width at Several Points

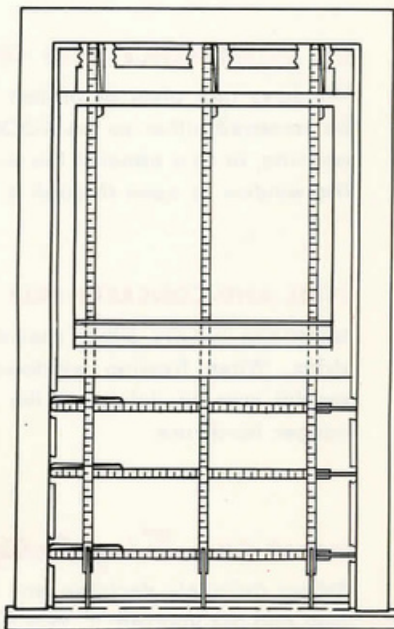
Taking several measurements is essential because few windows either have exactly square corners or exactly parallel jambs.



5. CLOSE TOP SASH OPEN LOWER SASH

Measure Width at Several Points Along Lower Jamb

Record Shortest Width
—Then Deduct $\frac{1}{4}$ Inch
for Easy Clearance



6. MEASURE HEIGHT

at Several Points Between Sill and Head

Deduct $\frac{1}{4}$ inch from shortest height and record this dimension. It is quick, easy, and simple to measure practically every type of window by this method—FROM INSIDE and WITHOUT LADDERS and other bulky equipment.

Study Window Construction to Determine Hanging and Framing Detail

The following 17 pages illustrate and describe tested and proved methods of framing and hanging KOOLSHADE Screens for almost every type of window construction you are likely to encounter. *It is essential that you inspect and analyze every window on the job before determining the type of frame and hanger you'll use.*

WINDOW WASHING

Every KOOLSHADE Screen must be framed and hung to allow for simple and easy removal or opening to allow no interference whatever with washing the windows on the outside whether from a ladder or with a safety belt and window washing hooks.

NO INTERFERENCE WITH OPENING OF WINDOWS

Windows that pivot or project outward for ventilation must be screened either so the KOOLSHADE allows space for full opening, or so a panel of the screen can be opened to permit the window to open through it.

STEEL-AND-CONCRETE SILLS AND FRAMES

sometimes require either special hardware or wood hanger strips. When framing windows with this equipment, take special care to determine the best manner to secure your hanger hardware.

HANG FOR *Simplicity* AND *Permanence*

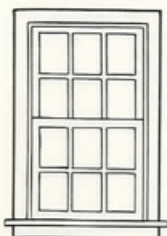
Before definitely deciding any hanging or framing method, stop and ask yourself: 1. Will this method provide the easiest possible opening or removal for washing the windows? 2. Is this the quickest, simplest, and most "fool-proof" way to frame and hang these screens for labor-saving and durability?

1. THE BUTTON-ON METHOD

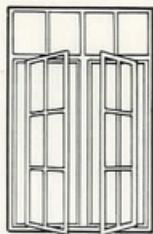
Usually practical for ground floor windows only.

The method illustrated below is probably the oldest and probably the simplest method of hanging framed screens. Its disadvantages are that it can be applied, removed, or "opened" from the outside only, and is therefore impractical for any but ground-floor windows.

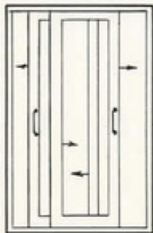
Generally Practical
Only for These Types
of Windows



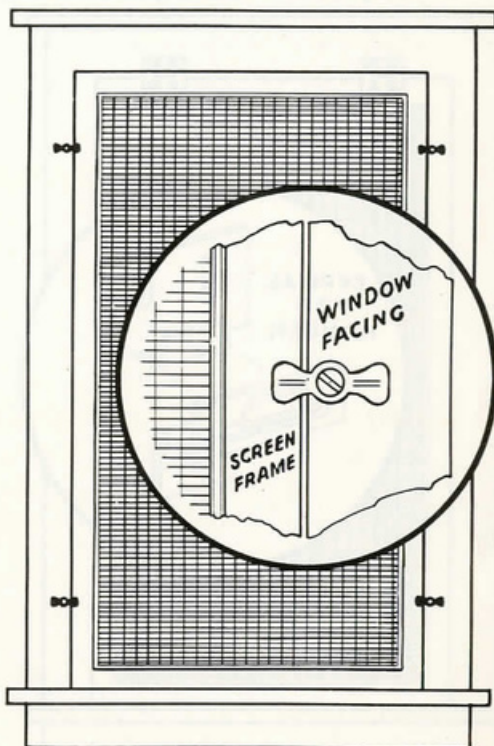
DOUBLE HUNG



IN-SWING CASEMENT



SLIDING HORIZONTAL



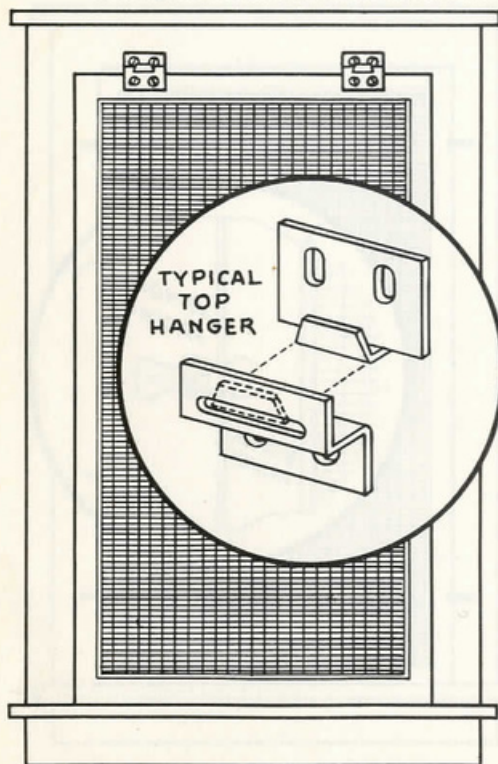
TOP HANGING IS OFTEN SIMPLE

2. THE ORDINARY "TOP-HUNG" SCREEN

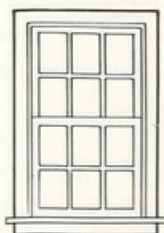
This is probably the most popular method of hanging screens. It is cheap and simple to hang, requires little hardware. Can be applied to upper-story windows from the inside without ladders. Can be unhooked and swung-out for easy window washing, and looks neat and attractive.

Extremely Adaptable to Special Framing

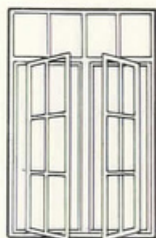
This type of hanger is very practical for framing screens on pivoted and projected-type windows where "open-out" ventilating sections require special framing.



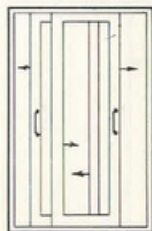
Particularly Practical
for These Types
of Windows



TOP HUNG



IN-SWING CASEMENT



SLIDING HORIZONTAL

On the following pages are other methods of framing top-hung screens to fit various types of pivoted, projected, and out-swing casement windows.

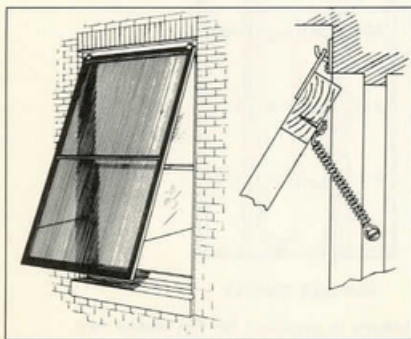
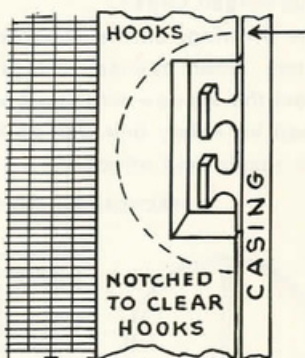
3. "TOP-HUNG" FOR UPPER-STORY WINDOWS WITH WASHING HOOKS

With Safety Spring and Double-Hooked Extension Rods for Easy Washing!

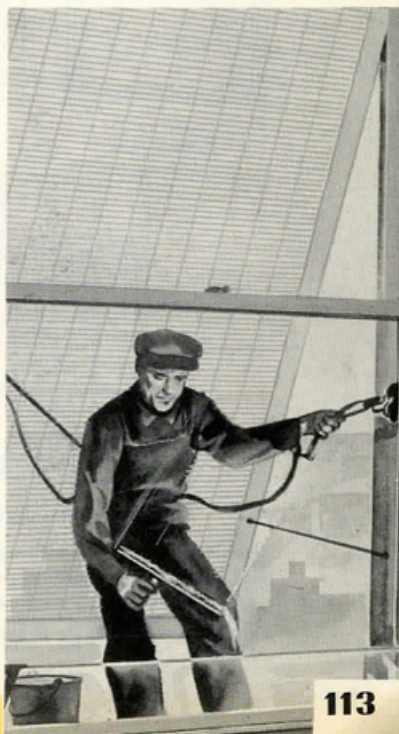
The illustrations below show how simply and inexpensively this seemingly tough problem can be handled. The screen is framed with wide side stiles so they can be notched-out to clear the window washing hooks, and still leave adequate frame strength.

The screen is held securely to the top-hanger hinges by safety springs at the side-top, thus preventing the window washer from jarring it off the hangers.

The extension rods at the bottom fasten to the screen when opened, thus keeping it swung out, in rigid position, out of the window washer's way. It's simple, practical, inexpensive, and it's been proved as high as 34 floors up on sky-scrapers.



Details of safety spring application and extension rods to make room for window washer.

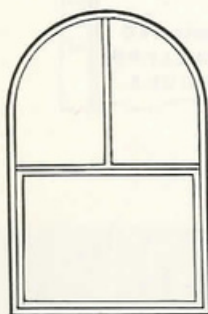


4. EXTENSION SIDE-HINGED...

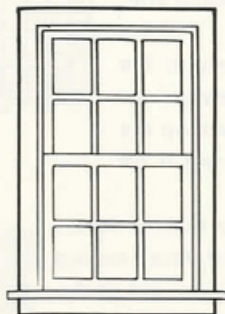
Some window types will require a side-hinged screen to open out like a door. In fact, also, some customers will prefer the side-hinged screen.

The drawings on the opposite page show how the extension hinge, when opened, swings the frame side stile out away from the window washing hooks so the washer can instantly snap his safety belt with no interference from screen frame. It's simple and effective.

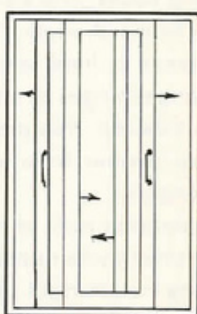
PRACTICAL for THESE TYPES of WINDOWS



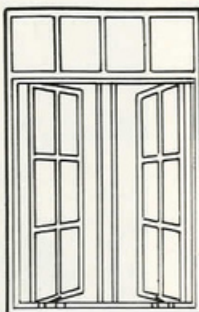
CIRCULAR-TOP
DOUBLE-HUNG



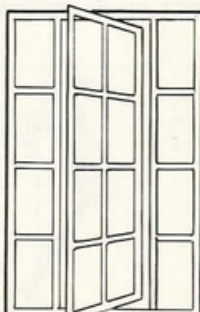
REGULAR
DOUBLE-HUNG



SLIDING
HORIZONTAL



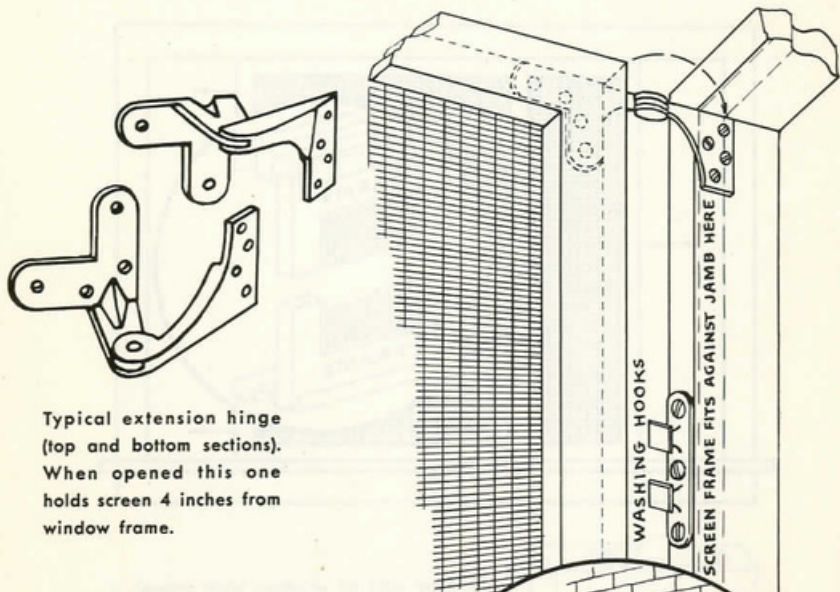
OUT-SWING CASEMENT



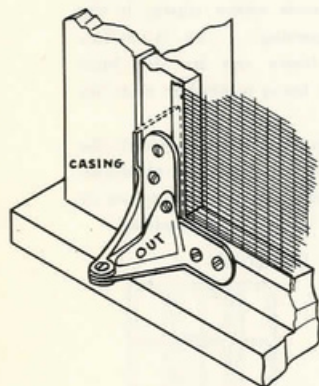
VERTICAL PIVOTED

Hanging screens with extension side hinges is practical for the above two types of windows *only* if the frame or reveal is wide enough to permit the window to be opened sufficiently for one to reach in and unhook the screen. In other words, if there is space enough between window and screen.

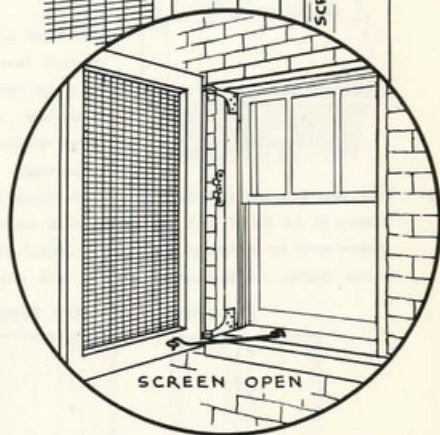
Extended to Clear Window Washing Hooks



Typical extension hinge (top and bottom sections). When opened this one holds screen 4 inches from window frame.

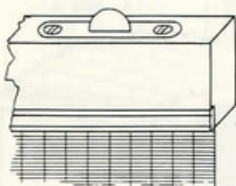
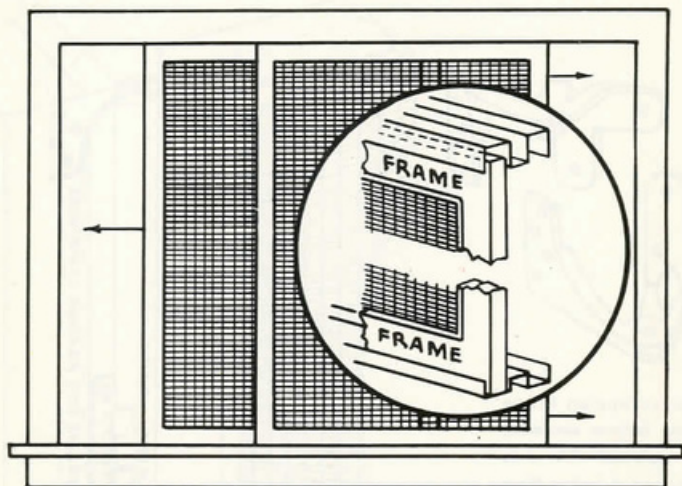


Showing screen closed. Note how hinge reinforces corner of screen frame.



Rigid hooked extension rod should be used with this application to keep opened screen from hampering window washer—and to hold screen securely against damage.

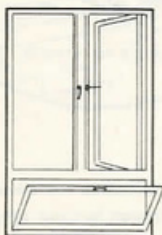
5. SLIDING HORIZONTAL....



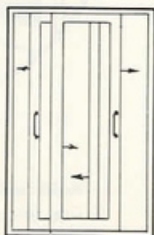
Practical only on windows wide enough to permit two or more screen frames in the same window opening . . . so, in window washing, one frame can be slid back over another to leave a window clear for washing.

The top channel guides (above) are deeper than the bottom to permit the frame to be fitted into top guide high enough to clear top edge of bottom guide and be dropped into place. Metal ball-guides (above, left) at two or three places on bottom of frame, will provide easier sliding action.

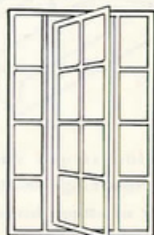
PRACTICAL for THESE TYPES of WINDOWS



COMBINATION
OUT-SWING CASEMENT
AND BOTTOM
VENTILATOR



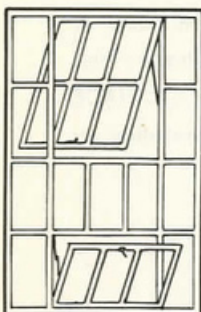
SLIDING
HORIZONTAL
WINDOWS



VERTICAL PIVOTED—
ONLY IF WIDE ENOUGH
TO SLIDE SCREENS FAR
ENOUGH TO CLEAR
WINDOW PIVOT

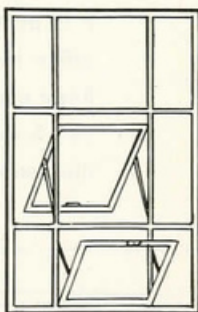
... Frames SLIDE LEFT or RIGHT

in Double Metal Guide Channels Screwed to Sill and Head

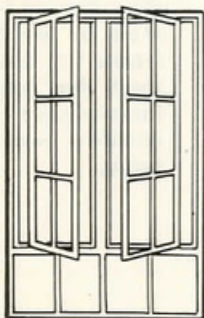


COMMERCIAL
PROJECTED

Sliding Horizontal Screen Frames will fit Commercial and Architectural Projected windows ONLY when the ventilating sections have sufficient closed glass areas on both sides to slide the three-section screen frames to right or left far enough to permit opening of the out-projecting ventilating section — or when the owner does not care to open the out-projecting section.



ARCHITECTURAL
PROJECTED



OUT-SWING CASEMENT

Sliding Horizontals are practical for this type of window, only when the window frame is deep enough to permit opening window far enough to give you "hand room" to slide screen right or left.

It's easy to wash the KOOL-SHADED windows at Allegheny-Ludlum Steel Company, Chicago. Sliding horizontal KOOLSHADE frames over architectural projected windows.

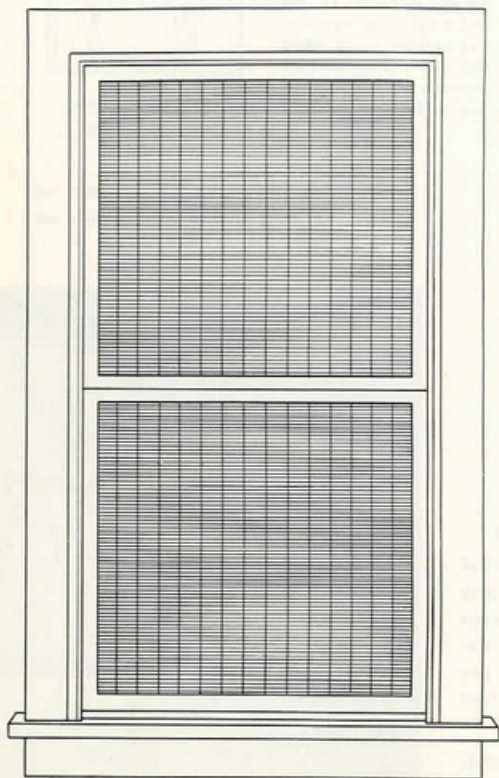
There are other possible methods of hanging KOOLSHADE Sun Screens on these two types of windows.



THIS METHOD IS "A NATURAL" FOR

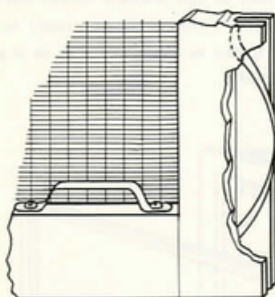
6. THE DOUBLE-SLIDING, VERTICAL . . .

This type of installation has many practical uses. It is particularly popular on standard home or office installations. Ingersoll StormShade — the finest aluminum storm window and KOOLSHADE Sun Screen combination—is usually installed by the double-sliding vertical method.



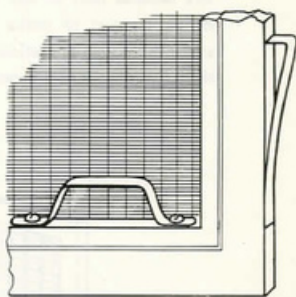
Practical in steel or aluminum frames where there is ample space on blind stop or window frame for double track that has no interference from window washer hooks.

... Held in Frame by Spring Compression Clips



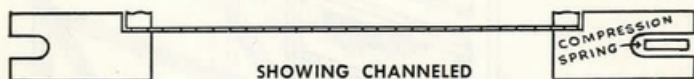
WOOD FRAME

Spring is inset into the wood, as shown in drawing.



METAL FRAME

Spring is fastened to outside of frame, as illustrated.



SHOWING CHANNELED
SIDE RAILS OF WOOD
FRAME — STEEL FRAME

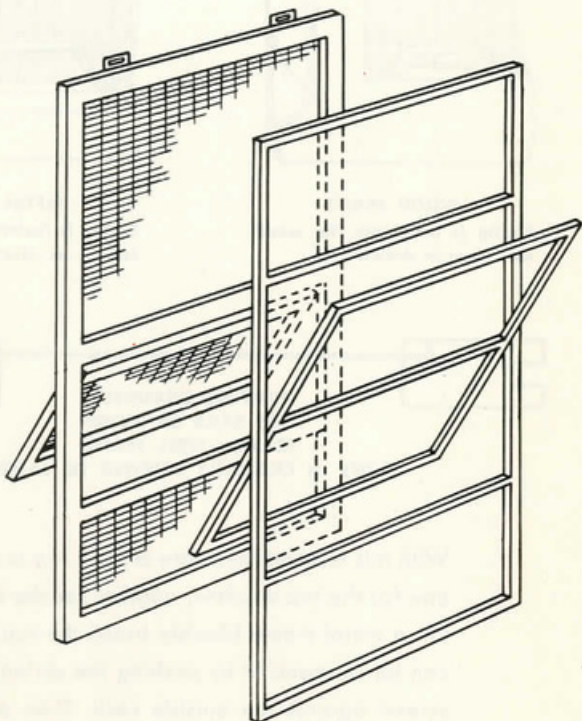
SLIDES IN CHANNELS SCREWED TO JAMBS.

With this method there are always two screens—one for the top window, another for the bottom. On a metal frame (double track) the top screen can be snapped in by pushing the spring on the screen against the outside rack. Then push up the track to the top. The bottom screen then is snapped into place on the inner track.

When wood is used, both upper and lower frames are on a single track and each frame is snapped into position by fitting into one side first.

7. THE HORIZONTALLY PIVOTED

The bottom half of the ventilating section of this window opens out. If the owner desires to make full use of the ventilator it is necessary to put a swinging hinged section in the screen frame as shown below, so a part of the screen can swing out with the ventilator.



TOP-HUNG ONE-PIECE FRAME

With Hinged Open-Out Section for Ventilator

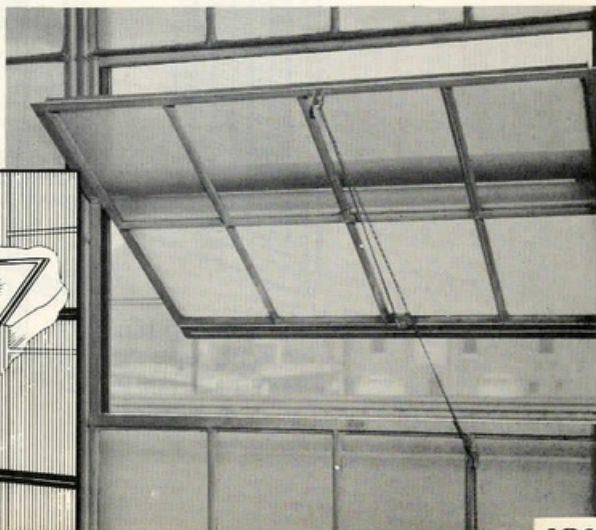
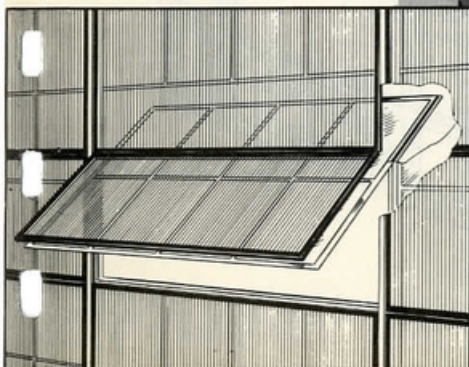
Top-hanging of this type of frame is particularly necessary so the whole screen frame will swing out from a top pivot to clear window washer. Or, for ventilating purposes, only the small hinged "door" can be opened while over-all screen is securely hooked to window frame.

COMMERCIAL OR INDUSTRIAL WINDOW

HOW TO MEASURE

1. It's easy to *measure from the inside!* Open ventilator. Reach out and measure width "G" at several points below and above pivot. Record shortest width less $\frac{1}{4}$ ".
2. With ventilator only partially open, measure height "A" at several points between sill and head. Record shortest height less $\frac{1}{4}$ ".
3. Measure extreme width of ventilating window section at widest point and add $\frac{1}{4}$ " to give you dimension "E," or inside frame width. Width of swinging screen frame section should be $\frac{1}{4}$ " less than "E" to give easy clearance.
4. Now measure distance "F," from head to top of *pivot nut*, and distance "C" from pivot to bottom of ventilating section.
5. Distance "D" must be $\frac{1}{4}$ " less than that from sill to extreme bottom edge of ventilating window section, so window will clear screen frame easily at all points. Fastening device of hinged open-out screen section must be simple and easy to operate with the limited "hand-room" available.

Productive Equipment Corp., Chicago, uses the type of KOOL-SHADE Framing described on these two pages.

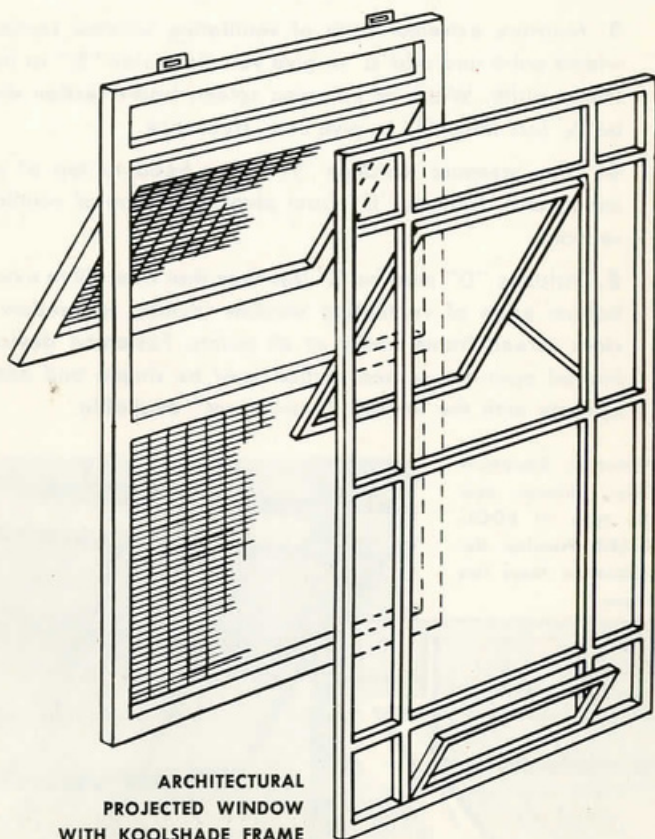


ARCHITECTURAL PROJECTED WINDOWS

8. HOW TO HANG SCREENS ON

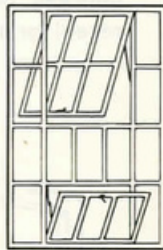
The top-ventilating sections of both Commercial and Architectural Projected windows usually open out—and as explained on the two preceding pages, a hinged swinging screen section must be inserted in the complete screen frame if the owner desires to use the top ventilators.

IT IS QUITE SIMPLE TO MEASURE THESE TWO TYPES OF WINDOWS FROM INSIDE — SEE OPPOSITE PAGE



ARCHITECTURAL
PROJECTED WINDOW
WITH KOOLSHADE FRAME
IN POSITION

PROJECTED-TYPE WINDOWS

ARCHITECTURAL
PROJECTED
WINDOWCOMMERCIAL
PROJECTED
WINDOW

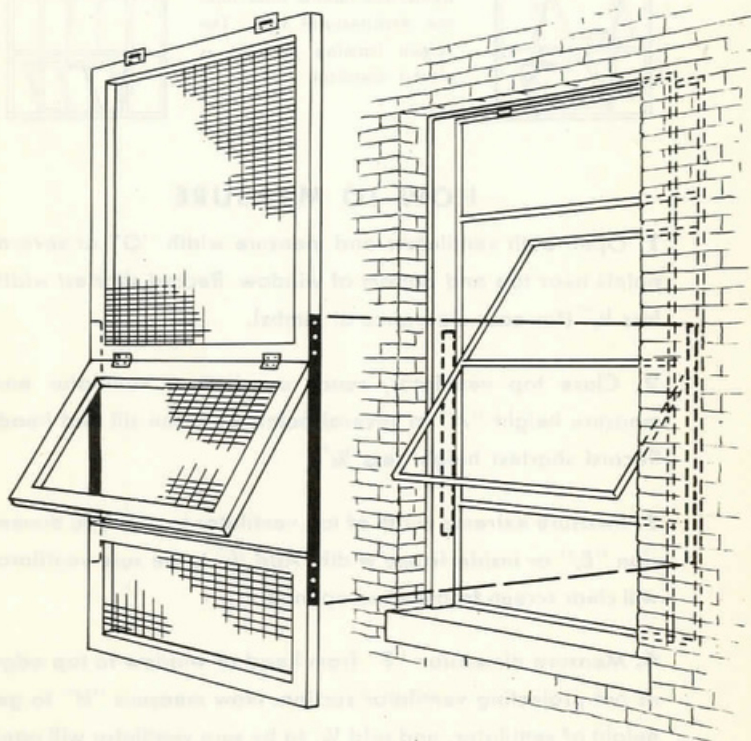
The basic difference in these two types of windows is that the Commercial type has more lights, and smaller ones, than the Architectural type. The screen framing problem is almost identical.

HOW TO MEASURE

1. Open both ventilators and measure width "G" at several points near top and bottom of window. Record shortest width less $\frac{1}{4}$ " (for easy clearance at jambs).
2. Close top ventilator, reach out bottom ventilator and measure height "A" at several points between sill and head. Record shortest height less $\frac{1}{4}$ ".
3. Measure extreme width of top ventilator to give you dimension "E," or *inside frame width*. Add $\frac{1}{4}$ " to be sure ventilator will clear screen frame when opened.
4. Measure dimension "F" from head of window to top edge of out-projecting ventilator section. Now measure "H" to get height of ventilator, and add $\frac{1}{4}$ " to be sure ventilator will open past screen frame.
5. Distance "D" must be $\frac{1}{4}$ " less than that from sill to bottom edge of out-projecting ventilator for easy window opening.

9. OUT-SWING WINDOWS WITH NO

Many pivoted and projected windows like those described on the preceding four pages set so close to the reveal of the window or have such a narrow jamb that there is no space between outside edges of out-opening ventilator and the reveal for a screen frame. A typical "close fit" is shown below.



An installation on windows of this type can be handled very neatly by the method described on the opposite page.

SPACE TO CLEAR SCREEN FRAME

Such windows can be easily "sun-screened" with the top-hung framing method illustrated on these pages.

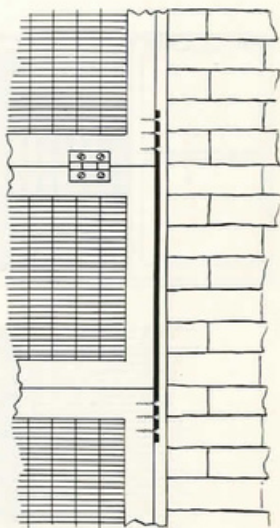
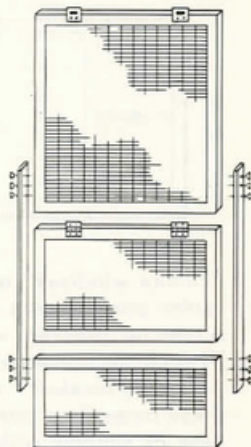
A 3-section frame is made up, with top and bottom sections joined by reinforcing side-stile strips of strap iron ($\frac{7}{8}$ " x 1") with the middle section hinged to the top and swinging out to permit opening of ventilator.

Reinforcing metal strips should extend at least 6 inches over outer edges of top and bottom screen frame sections, with 3 counter-sunk $\frac{7}{8}$ " wood screws on each end.

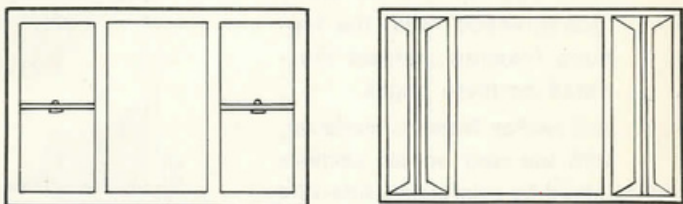
Metal strips frequently have to be recessed into window jamb, or window reveal itself if space is too "tight."

HOW TO MEASURE

Follow directions on preceding four pages for all VERTICAL DIMENSIONS. The width of the wood frame must be width of out-swing window section plus $\frac{1}{4}$ " so out-swing ventilator will clear the frame easily when opened.

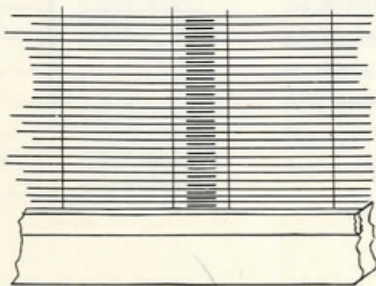
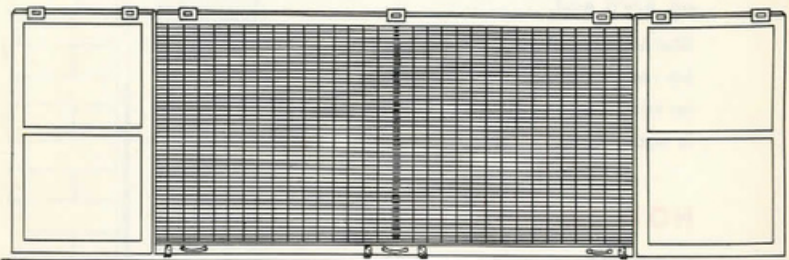


10. HOW TO SCREEN THE FIXED



"Picture windows" and commercial windows with wide fixed center panel shown above represent a special KOOLSHADE screening problem when the fixed section is more than the 72-inch maximum width in which KOOLSHADE is made.

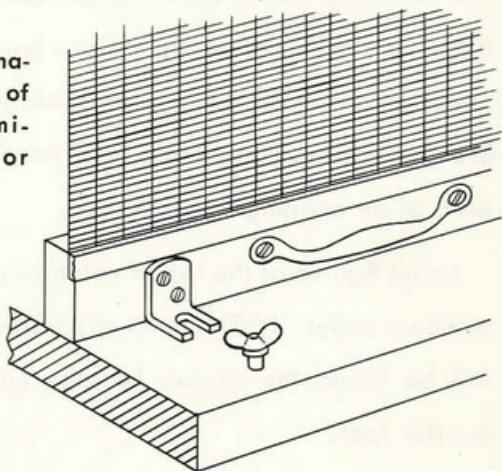
The "frameless" method of inter-lapping joint shown on these pages is a tested and proved method of screening this type of window without having to add unsightly frame side styles down the middle of the fixed single light.



Here is a tested and proved method of handling this special installation: Ventilating sections on each side can be screened with TOP-HUNG frames.

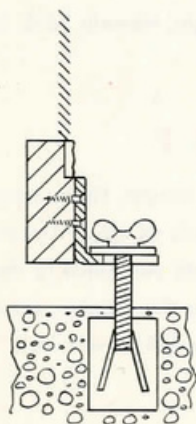
SASH WINDOW WIDER THAN 72 INCHES

The framing material can be of wood, aluminum, steel or bronze.



The angle hook is fastened to lower rail and wing nut fastened to sill. On spaces over 72 inches, angles should be spread about every 36 inches.

KOOLSHADE should be cut and installed so that when lower frame member is hooked under wing nut the KOOLSHADE has been stretched the usual $1/16$ inch.



Wing nut fastenings in stone or concrete sills should be anchored in lead or steel expansion shields.

HANDY SQUARE FOOT TABLES FOR QUICK FIGURING OF ANY WINDOW AREA . . .

Here's How to Read the Square Foot Tables

The following pages show the number of square feet in areas from 16" to 72" wide by various lengths. The table may be used to determine the square footage in a piece of KOOLSHADE fabric. It can also be used for determining the complete area of an opening to be framed.

Large figures at the top of columns show widths. Columns of numbers under "LGTH." indicate the lengths. Under "SQ. FT." will be found the square footage calculated to the nearest quarter foot.

EXAMPLE 1

Find the number of square feet in a piece of KOOLSHADE 52" x 89". Locate columns headed by number 52. On column at left side under "LGTH." find 89. The next figure to the right, namely $32\frac{1}{4}$, is the number of square feet desired.

EXAMPLE 2

A window opening is 36" wide by 86" in length. How many square feet of KoolShade will be required to screen this window? Locate the column headed by 36". Look down this column until you come to the 86" length. The next figure to the right is $21\frac{1}{2}$ —that is the number of square feet in this window. $21\frac{1}{2}$ square feet of KoolShade will be required.

SAVE TIME — USE THESE TABLES . . .

HANDY SQUARE FOOT TABLE

WIDTH 16		WIDTH 17		WIDTH 18		WIDTH 19		WIDTH 20	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
20	2 1/4	20	2 1/4	20	2 1/2	20	2 3/4	20	2 3/4
21	2 1/4	21	2 1/2	21	2 3/4	21	2 3/4	21	3
22	2 1/2	22	2 1/2	22	2 3/4	22	3	22	3
23	2 1/2	23	2 3/4	23	3	23	3	23	3 1/4
24	2 3/4	24	2 3/4	24	3	24	3 1/4	24	3 1/4
25	2 3/4	25	3	25	3 1/4	25	3 1/4	25	3 1/2
26	3	26	3	26	3 1/4	26	3 1/2	26	3 1/2
27	3	27	3 1/4	27	3 1/2	27	3 1/2	27	3 3/4
28	3	28	3 1/4	28	3 1/2	28	3 3/4	28	4
29	3 1/4	29	3 1/2	29	3 3/4	29	3 3/4	29	4
30	3 1/4	30	3 1/2	30	3 3/4	30	4	30	4 1/4
31	3 1/2	31	3 3/4	31	4	31	4	31	4 1/4
32	3 1/2	32	3 3/4	32	4	32	4 1/4	32	4 1/2
33	3 3/4	33	4	33	4 1/4	33	4 1/4	33	4 1/2
34	3 3/4	34	4	34	4 1/4	34	4 1/2	34	4 3/4
35	4	35	4 1/4	35	4 1/2	35	4 1/2	35	4 3/4
36	4	36	4 1/4	36	4 1/2	36	4 3/4	36	5
37	4	37	4 1/4	37	4 3/4	37	5	37	5 1/4
38	4 1/4	38	4 1/2	38	4 3/4	38	5	38	5 1/4
39	4 1/4	39	4 1/2	39	5	39	5 1/4	39	5 1/2
40	4 1/2	40	4 3/4	40	5	40	5 1/4	40	5 1/2
41	4 1/2	41	4 3/4	41	5 1/4	41	5 1/2	41	5 3/4
42	4 3/4	42	5	42	5 1/4	43	5 3/4	43	6
43	4 3/4	43	5	43	5 1/2	45	6	45	6 1/4
44	5	44	5 1/4	44	5 1/2	47	6 1/4	46	6 1/2
45	5	45	5 1/4	45	5 3/4	49	6 1/2	48	6 3/4
46	5	46	5 1/2	47	6	51	6 3/4	50	7
47	5 1/4	47	5 1/2	49	6 1/4	53	7	52	7 1/4
48	5 1/4	48	5 3/4	51	6 1/2	54	7 1/4	54	7 1/2
49	5 1/2	50	6	53	6 3/4	56	7 1/2	55	7 3/4
51	5 3/4	52	6 1/4	55	7	58	7 3/4	57	8
53	6	54	6 1/2	57	7 1/4	60	8	59	8 1/4
56	6 1/4	57	6 3/4	59	7 1/2	62	8 1/4	61	8 1/2
58	6 1/2	59	7	61	7 3/4	64	8 1/2	63	8 3/4
60	6 3/4	61	7 1/4	63	8	66	8 3/4	64	9
63	7	63	7 1/2	65	8 1/4	68	9	66	9 1/4
65	7 1/4	65	7 3/4	67	8 1/2	70	9 1/4	68	9 1/2
67	7 1/2	67	8	69	8 3/4	72	9 1/2	70	9 3/4
69	7 3/4	69	8 1/4	71	9	73	9 3/4	72	10
71	8	71	8 1/2	73	9 1/4	75	10	73	10 1/4
74	8 1/4	74	8 3/4	75	9 1/2	77	10 1/4	75	10 1/2
76	8 1/2	76	9	77	9 3/4	79	10 1/2	77	10 3/4
78	8 3/4	78	9 1/4	79	10	81	10 3/4	79	11
80	9	80	9 1/2	81	10 1/4	83	11	81	11 1/4
83	9 1/4	82	9 3/4	83	10 1/2	85	11 1/4	82	11 1/2
85	9 1/2	84	10	85	10 3/4	87	11 1/2	84	11 3/4
87	9 3/4	86	10 1/4	87	11	89	11 3/4	86	12
89	10	88	10 1/2	89	11 1/4	90	12	88	12 1/4
92	10 1/4	90	10 3/4	91	11 1/2	92	12 1/4	90	12 1/2
94	10 1/2	93	11	93	11 3/4	94	12 1/2	91	12 3/4
96	10 3/4	96	11 1/4	96	12	96	12 3/4	93	13

Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 18" x 47" — find width column 18. Go down line to 47 under lgth. — 6 square feet.

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

WIDTH 21		WIDTH 22		WIDTH 23		WIDTH 24		WIDTH 25	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
21	3	22	3½	23	3¾	24	4	25	4¼
22	3¼	23	3½	24	3¾	25	4¼	26	4½
23	3¼	24	3¾	25	4	26	4¼	27	4¾
24	3½	25	3¾	26	4¼	27	4½	29	5
25	3½	26	4	27	4¼	28	4¾	30	5¼
26	3¾	27	4¼	28	4½	29	4¾	31	5½
27	3¾	28	4¼	29	4¾	30	5	33	5¾
28	4	29	4½	30	4¾	31	5¼	34	6
29	4¼	31	4¾	31	5	33	5½	36	6¼
30	4¼	32	5	32	5¼	34	5¾	37	6½
31	4½	33	5	33	5¼	36	6	39	6¾
32	4¾	34	5¼	34	5½	37	6¼	40	7
33	4¾	36	5½	36	5¾	39	6½	42	7¼
34	5	37	5¾	37	6	40	6¾	43	7½
35	5	38	5¾	39	6¼	42	7	44	7¾
36	5¼	39	6	40	6½	43	7¼	46	8
37	5½	41	6¼	42	6¾	45	7½	47	8¼
39	5¾	42	6½	44	7	46	7¾	49	8½
41	6	44	6¾	45	7¼	48	8	50	8¾
42	6¼	45	7	47	7½	49	8¼	52	9
44	6½	47	7¼	48	7¾	51	8½	53	9¼
46	6¾	49	7½	50	8	52	8¾	55	9½
48	7	50	7¾	51	8¼	54	9	56	9¾
49	7¼	52	8	53	8½	55	9¼	57	10
51	7½	54	8¼	54	8¾	57	9½	59	10¼
53	7¾	55	8½	56	9	58	9¾	60	10½
54	8	57	8¾	58	9¼	60	10	62	10¾
56	8¼	59	9	59	9½	61	10¼	63	11
58	8½	60	9¼	61	9¾	63	10½	65	11¼
60	8¾	62	9½	62	10	64	10¾	66	11½
61	9	63	9¾	64	10¼	66	11	67	11¾
63	9¼	65	10	65	10½	67	11¼	69	12
65	9½	67	10¼	67	10¾	69	11½	70	12¼
67	9¾	68	10½	69	11	70	11¾	72	12½
68	10	70	10¾	70	11¼	72	12	73	12¾
70	10¼	72	11	72	11½	73	12¼	75	13
72	10½	73	11¼	73	11¾	75	12½	76	13¼
73	10¾	75	11½	75	12	76	12¾	77	13½
75	11	77	11¾	76	12¼	78	13	79	13¾
77	11¼	78	12	78	12½	79	13¼	80	14
78	11½	80	12¼	80	12¾	81	13½	82	14¼
80	11¾	81	12½	81	13	82	13¾	83	14½
82	12	83	12¾	83	13¼	84	14	85	14¾
84	12¼	85	13	84	13½	85	14¼	86	15
85	12½	86	13¼	86	13¾	87	14½	88	15¼
87	12¾	88	13½	87	14	88	14¾	89	15½
89	13	90	13¾	89	14¼	90	15	90	15¾
90	13¼	91	14	90	14½	91	15¼	92	16
92	13½	93	14¼	92	14¾	93	15½	93	16¼
94	13¾	95	14½	94	15	94	15¾	95	16½
96	14	96	14¾	96	15¼	96	16	96	16¾

HANDY SQUARE FOOT TABLE

WIDTH 26		WIDTH 27		WIDTH 28		WIDTH 29		WIDTH 30	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
26	4¾	27	5	28	5½	29	5¾	30	6¼
27	5	28	5¼	29	5¾	30	6	31	6½
29	5¼	29	5½	31	6	31	6¼	32	6¾
30	5½	30	5¾	32	6¼	32	6½	33	7
32	5¾	32	6	33	6½	33	6¾	35	7¼
33	6	33	6¼	35	6¾	35	7	36	7½
34	6¼	34	6½	36	7	36	7¼	37	7¾
36	6½	36	6¾	37	7¼	37	7½	38	8
37	6¾	37	7	38	7½	38	7¾	39	8¼
39	7	38	7¼	40	7¾	40	8	41	8½
40	7¼	40	7½	41	8	41	8¼	42	8¾
41	7½	41	7¾	42	8¼	42	8½	43	9
43	7¾	42	8	44	8½	43	8¾	44	9¼
44	8	44	8¼	45	8¾	45	9	45	9½
45	8¼	45	8½	46	9	46	9¼	47	9¾
47	8½	46	8¾	47	9¼	47	9½	48	10
48	8¾	48	9	49	9½	48	9¾	49	10¼
50	9	49	9¼	50	9¾	50	10	50	10½
51	9¼	50	9½	52	10	51	10¼	51	10¾
52	9½	52	9¾	53	10½	52	10½	53	11
54	9¾	53	10	54	10½	53	10¾	54	11¼
55	10	55	10¼	55	10¾	54	11	55	11½
56	10¼	56	10½	56	11	56	11¼	56	11¾
58	10½	57	10¾	58	11¼	57	11½	57	12
59	10¾	58	11	59	11½	58	11¾	59	12¼
61	11	60	11¼	60	11¾	60	12	60	12½
62	11¼	61	11½	62	12	61	12¼	61	12¾
63	11½	62	11¾	63	12¼	62	12½	62	13
65	11¾	64	12	64	12½	63	12¾	63	13¼
66	12	65	12¼	65	12¾	64	13	64	13½
68	12¼	66	12½	67	13	66	13¼	66	13¾
69	12½	68	12¾	68	13¼	67	13½	67	14
70	12¾	69	13	69	13½	68	13¾	68	14¼
72	13	70	13¼	71	13¾	69	14	69	14½
73	13¼	72	13½	72	14	71	14¼	71	14¾
75	13½	73	13¾	73	14¼	72	14½	72	15
76	13¾	74	14	74	14½	73	14¾	73	15¼
77	14	76	14¼	76	14¾	74	15	74	15½
79	14¼	77	14½	77	15	76	15¼	75	15¾
80	14½	78	14¾	78	15¼	77	15½	77	16
81	14¾	80	15	80	15½	78	15¾	78	16¼
83	15	81	15¼	81	15¾	79	16	79	16½
84	15¼	82	15½	82	16	81	16¼	80	16¾
86	15½	84	15¾	83	16¼	82	16½	81	17
87	15¾	85	16	85	16½	83	16¾	83	17¼
88	16	86	16¼	86	16¾	84	17	84	17½
90	16¼	88	16½	87	17	86	17¼	85	17¾
91	16½	89	16¾	89	17¼	87	17½	86	18
93	16¾	90	17	90	17½	88	17¾	87	18¼
94	17	92	17¼	91	17¾	89	18	89	18½
96	17¼	93	17½	92	18	90	18¼	90	18¾

Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 29" x 61" — find width column 29. Go down line to 61. Equals 12¼ square feet.

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

WIDTH 31		WIDTH 32		WIDTH 33		WIDTH 34		WIDTH 35	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
31	6 $\frac{3}{4}$	32	7	33	7 $\frac{1}{2}$	34	8	35	8 $\frac{1}{2}$
32	7	33	7 $\frac{1}{4}$	34	7 $\frac{3}{4}$	35	8 $\frac{1}{4}$	36	8 $\frac{3}{4}$
34	7 $\frac{1}{2}$	34	7 $\frac{1}{2}$	35	8	36	8 $\frac{1}{2}$	37	9
35	7 $\frac{1}{2}$	35	7 $\frac{3}{4}$	36	8 $\frac{1}{4}$	37	8 $\frac{3}{4}$	38	9 $\frac{1}{4}$
36	7 $\frac{3}{4}$	36	8	37	8 $\frac{1}{2}$	38	9	39	9 $\frac{1}{2}$
37	8	37	8 $\frac{1}{4}$	38	8 $\frac{3}{4}$	39	9 $\frac{1}{4}$	40	9 $\frac{3}{4}$
38	8 $\frac{1}{4}$	38	8 $\frac{1}{2}$	39	9	40	9 $\frac{1}{2}$	41	10
39	8 $\frac{1}{2}$	39	8 $\frac{3}{4}$	40	9 $\frac{1}{4}$	41	9 $\frac{3}{4}$	42	10 $\frac{1}{4}$
41	8 $\frac{3}{4}$	41	9	41	9 $\frac{1}{2}$	42	10	43	10 $\frac{1}{2}$
42	9	42	9 $\frac{1}{4}$	42	9 $\frac{3}{4}$	43	10 $\frac{1}{4}$	44	10 $\frac{3}{4}$
43	9 $\frac{1}{4}$	43	9 $\frac{1}{2}$	44	10	44	10 $\frac{1}{2}$	45	11
44	9 $\frac{1}{2}$	44	9 $\frac{3}{4}$	45	10 $\frac{1}{4}$	45	10 $\frac{3}{4}$	46	11 $\frac{1}{4}$
45	9 $\frac{3}{4}$	45	10	46	10 $\frac{1}{2}$	47	11	47	11 $\frac{1}{2}$
46	10	46	10 $\frac{1}{4}$	47	10 $\frac{3}{4}$	48	11 $\frac{1}{4}$	48	11 $\frac{3}{4}$
48	10 $\frac{1}{4}$	47	10 $\frac{1}{2}$	48	11	49	11 $\frac{1}{2}$	49	12
49	10 $\frac{1}{2}$	48	10 $\frac{3}{4}$	49	11 $\frac{1}{4}$	50	11 $\frac{3}{4}$	50	12 $\frac{1}{4}$
50	10 $\frac{3}{4}$	49	11	50	11 $\frac{1}{2}$	51	12	51	12 $\frac{1}{2}$
51	11	51	11 $\frac{1}{4}$	51	11 $\frac{3}{4}$	52	12 $\frac{1}{4}$	52	12 $\frac{3}{4}$
52	11 $\frac{1}{4}$	52	11 $\frac{1}{2}$	52	12	53	12 $\frac{1}{2}$	53	13
53	11 $\frac{1}{2}$	53	11 $\frac{3}{4}$	53	12 $\frac{1}{4}$	54	12 $\frac{3}{4}$	54	13 $\frac{1}{4}$
55	11 $\frac{3}{4}$	54	12	54	12 $\frac{1}{2}$	55	13	55	13 $\frac{1}{4}$
56	12	55	12 $\frac{1}{4}$	56	12 $\frac{3}{4}$	56	13 $\frac{1}{4}$	56	13 $\frac{1}{2}$
57	12 $\frac{1}{4}$	56	12 $\frac{1}{2}$	57	13	57	13 $\frac{1}{2}$	57	13 $\frac{3}{4}$
58	12 $\frac{1}{2}$	57	12 $\frac{3}{4}$	58	13 $\frac{1}{4}$	58	13 $\frac{3}{4}$	58	14
59	12 $\frac{3}{4}$	58	13	59	13 $\frac{1}{2}$	59	14	59	14 $\frac{1}{4}$
60	13	60	13 $\frac{1}{4}$	60	13 $\frac{3}{4}$	60	14 $\frac{1}{4}$	60	14 $\frac{1}{2}$
61	13 $\frac{1}{4}$	61	13 $\frac{1}{2}$	61	14	61	14 $\frac{1}{2}$	61	14 $\frac{3}{4}$
63	13 $\frac{1}{2}$	62	13 $\frac{3}{4}$	62	14 $\frac{1}{4}$	62	14 $\frac{3}{4}$	62	15
64	13 $\frac{3}{4}$	63	14	63	14 $\frac{1}{2}$	64	15	63	15 $\frac{1}{4}$
65	14	64	14 $\frac{1}{4}$	64	14 $\frac{3}{4}$	65	15 $\frac{1}{4}$	64	15 $\frac{1}{2}$
66	14 $\frac{1}{4}$	65	14 $\frac{1}{2}$	65	15	66	15 $\frac{1}{2}$	66	15 $\frac{3}{4}$
67	14 $\frac{1}{2}$	66	14 $\frac{3}{4}$	66	15 $\frac{1}{4}$	67	15 $\frac{3}{4}$	66	16
69	14 $\frac{3}{4}$	67	15	68	15 $\frac{1}{2}$	68	16	67	16 $\frac{1}{4}$
70	15	69	15 $\frac{1}{4}$	69	15 $\frac{3}{4}$	69	16 $\frac{1}{4}$	68	16 $\frac{1}{2}$
71	15 $\frac{1}{4}$	70	15 $\frac{1}{2}$	70	16	70	16 $\frac{1}{2}$	69	16 $\frac{3}{4}$
72	15 $\frac{1}{2}$	71	15 $\frac{3}{4}$	71	16 $\frac{1}{4}$	71	16 $\frac{3}{4}$	70	17
73	15 $\frac{3}{4}$	72	16	72	16 $\frac{1}{2}$	72	17	71	17 $\frac{1}{4}$
74	16	73	16 $\frac{1}{4}$	73	16 $\frac{3}{4}$	73	17 $\frac{1}{4}$	72	17 $\frac{1}{2}$
75	16 $\frac{1}{4}$	74	16 $\frac{1}{2}$	74	17	74	17 $\frac{1}{2}$	73	17 $\frac{3}{4}$
77	16 $\frac{1}{2}$	75	16 $\frac{3}{4}$	75	17 $\frac{1}{4}$	75	17 $\frac{3}{4}$	74	18
78	16 $\frac{3}{4}$	77	17	76	17 $\frac{1}{2}$	76	18	75	18 $\frac{1}{4}$
79	17	78	17 $\frac{1}{4}$	77	17 $\frac{3}{4}$	77	18 $\frac{1}{4}$	76	18 $\frac{1}{2}$
80	17 $\frac{1}{4}$	79	17 $\frac{1}{2}$	78	18	78	18 $\frac{1}{2}$	77	18 $\frac{3}{4}$
81	17 $\frac{1}{2}$	80	17 $\frac{3}{4}$	80	18 $\frac{1}{4}$	79	18 $\frac{3}{4}$	78	19
82	17 $\frac{3}{4}$	81	18	81	18 $\frac{1}{2}$	80	19	79	19 $\frac{1}{4}$
84	18	82	18 $\frac{1}{4}$	82	18 $\frac{3}{4}$	82	19 $\frac{1}{4}$	80	19 $\frac{1}{2}$
85	18 $\frac{1}{4}$	83	18 $\frac{1}{2}$	83	19	83	19 $\frac{1}{2}$	81	19 $\frac{3}{4}$
86	18 $\frac{1}{2}$	84	18 $\frac{3}{4}$	84	19 $\frac{1}{4}$	84	19 $\frac{3}{4}$	82	20
87	18 $\frac{3}{4}$	85	19	85	19 $\frac{1}{2}$	85	20	83	20 $\frac{1}{4}$
88	19	87	19 $\frac{1}{4}$	86	19 $\frac{3}{4}$	86	20 $\frac{1}{4}$	84	20 $\frac{1}{2}$
89	19 $\frac{1}{4}$	88	19 $\frac{1}{2}$	87	20	87	20 $\frac{1}{2}$	85	20 $\frac{3}{4}$

HANDY SQUARE FOOT TABLE

WIDTH 36		WIDTH 37		WIDTH 38		WIDTH 39		WIDTH 40	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
36	9	37	9½	38	10	39	10½	40	11¼
37	9¼	38	9¾	39	10¼	40	10¾	41	11½
38	9½	39	10	40	10½	41	11	42	11¾
39	9¾	40	10¼	41	10¾	42	11½	43	12
40	10	41	10½	42	11	43	11¾	44	12¼
41	10¼	42	10¾	43	11¼	44	12	45	12½
42	10½	43	11	44	11½	45	12¼	46	12¾
43	10¾	44	11¼	45	12	46	12½	47	13
44	11	45	11½	46	12¼	47	12¾	48	13¼
45	11¼	46	11¾	47	12½	48	13	49	13½
46	11½	47	12	48	12¾	49	13¼	50	14
47	11¾	48	12¼	49	13	50	13½	51	14¼
48	12	49	12½	50	13¼	51	13¾	52	14½
49	12¼	50	12¾	51	13½	52	14	53	14¾
50	12½	51	13	52	13¾	53	14¼	54	15
51	12¾	52	13¼	53	14	54	14¾	55	15¼
52	13	53	13½	54	14¼	55	15	56	15½
53	13¼	54	14	55	14½	56	15¼	57	15¾
54	13½	55	14¼	56	14¾	57	15½	58	16
55	13¾	56	14½	57	15	58	15¾	59	16½
56	14	57	14¾	58	15¼	59	16	60	16¾
57	14¼	58	15	59	15½	60	16¼	61	17
58	14½	59	15¼	60	15¾	61	16½	62	17¼
59	14¾	60	15½	61	16	62	16¾	63	17½
60	15	61	15¾	62	16¼	63	17	64	17¾
61	15¼	62	16	63	16¾	64	17¼	65	18
62	15½	63	16¼	64	17	65	17½	66	18¼
63	15¾	64	16½	65	17¼	66	18	67	18½
64	16	65	16¾	66	17½	67	18¼	68	19
65	16¼	66	17	67	17¾	68	18½	69	19¼
66	16½	67	17¼	68	18	69	18¾	70	19½
67	16¾	68	17½	69	18¼	70	19	71	19¾
68	17	69	17¾	70	18½	71	19¼	72	20
69	17¼	70	18	71	18¾	72	19½	73	20¼
70	17½	71	18¼	72	19	73	19¾	74	20½
71	17¾	72	18½	73	19¼	74	20	75	20¾
72	18	73	18¾	74	19½	75	20¼	76	21
73	18¼	74	19	75	19¾	76	20½	77	21½
74	18½	75	19¼	76	20	77	20¾	78	21¾
75	18¾	76	19½	77	20¼	78	21¼	79	22
76	19	77	19¾	78	20½	79	21½	80	22¼
77	19¼	78	20	79	20¾	80	21¾	81	22½
78	19½	79	20¼	80	21	81	22	82	22¾
79	19¾	80	20½	81	21½	82	22¼	83	23
80	20	81	20¾	82	21¾	83	22½	84	23¼
81	20¼	82	21	83	22	84	22¾	85	23½
82	20½	83	21¼	84	22¼	85	23	86	24
83	20¾	84	21½	85	22½	86	23¼	87	24¼
84	21	85	21¾	86	22¾	87	23½	88	24½
85	21¼	86	22	87	23	88	23¾	89	24¾
86	21½	87	22¼	88	23¼	89	24	90	25

*Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 36" x 44" — find width column 36. Go down line to 44. Equals 11 square feet.

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

WIDTH 41		WIDTH 42		WIDTH 43		WIDTH 44		WIDTH 45	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
41	11 3/4	42	12 1/4	43	12 3/4	44	13 1/2	45	14
42	12	43	12 1/2	44	13 1/4	45	13 3/4	46	14 1/2
43	12 1/4	44	12 3/4	45	13 1/2	46	14	47	14 3/4
44	12 1/2	45	13 1/4	46	13 3/4	47	14 1/4	48	15
45	12 3/4	46	13 1/2	47	14	48	14 3/4	49	15 1/4
46	13	47	13 3/4	48	14 1/2	49	15	50	15 3/4
47	13 1/2	48	14	49	14 3/4	50	15 1/4	51	16
48	13 3/4	49	14 1/4	50	15	51	15 1/2	52	16 1/4
49	14	50	14 1/2	51	15 1/4	52	16	53	16 1/2
50	14 1/4	51	15	52	15 1/2	53	16 1/4	54	17
51	14 1/2	52	15 1/4	53	15 3/4	54	16 1/2	55	17 1/4
52	14 3/4	53	15 1/2	54	16 1/4	55	16 3/4	56	17 1/2
53	15	54	15 3/4	55	16 1/2	56	17	57	17 3/4
54	15 1/2	55	16	56	16 3/4	57	17 1/2	58	18 1/4
55	15 3/4	56	16 1/4	57	17	58	17 3/4	59	18 1/2
56	16	57	16 3/4	58	17 1/4	59	18	60	18 3/4
57	16 1/4	58	17	59	17 1/2	60	18 1/4	61	19
58	16 1/2	59	17 1/4	60	18	61	18 1/2	62	19 1/2
59	16 3/4	60	17 1/2	61	18 1/4	62	19	63	19 3/4
60	17	61	17 3/4	62	18 1/2	63	19 1/4	64	20
61	17 1/4	62	18	63	18 3/4	64	19 1/2	65	20 1/4
62	17 3/4	63	18 1/2	64	19	65	19 3/4	66	20 3/4
63	18	64	18 3/4	65	19 1/2	66	20 1/4	67	21
64	18 1/4	65	19	66	19 3/4	67	20 1/2	68	21 1/4
65	18 1/2	66	19 1/4	67	20	68	20 3/4	69	21 1/2
66	18 3/4	67	19 1/2	68	20 1/4	69	21	70	21 3/4
67	19	68	19 3/4	69	20 1/2	70	21 1/2	71	22 1/4
68	19 1/4	69	20 1/4	70	21	71	21 3/4	72	22 1/2
69	19 3/4	70	20 1/2	71	21 1/4	72	22	73	22 3/4
70	20	71	20 3/4	72	21 1/2	73	22 1/4	74	23 1/4
71	20 1/4	72	21	73	21 3/4	74	22 1/2	75	23 1/2
72	20 1/2	73	21 1/4	74	22	75	23	76	23 3/4
73	20 3/4	74	21 1/2	75	22 1/2	76	23 1/4	77	24
74	21	75	22	76	22 3/4	77	23 1/2	78	24 1/2
75	21 1/4	76	22 1/4	77	23	78	23 3/4	79	24 3/4
76	21 3/4	77	22 1/2	78	23 1/4	79	24 1/4	80	25
77	22	78	22 3/4	79	23 1/2	80	24 1/2	81	25 1/4
78	22 1/4	79	23	80	24	81	24 3/4	82	25 3/4
79	22 1/2	80	23 1/4	81	24 1/4	82	25	83	26
80	22 3/4	81	23 3/4	82	24 1/2	83	25 1/4	84	26 1/4
81	23	82	24	83	24 3/4	84	25 3/4	85	26 1/2
82	23 1/4	83	24 1/4	84	25	85	26	86	27
83	23 3/4	84	24 1/2	85	25 1/2	86	26 1/4	87	27 1/4
84	24	85	24 3/4	86	25 3/4	87	26 1/2	88	27 1/2
85	24 1/4	86	25	87	26	88	27	89	27 3/4
86	24 1/2	87	25 1/2	88	26 1/4	89	27 1/4	90	28 1/4
87	24 3/4	88	25 3/4	89	26 1/2	90	27 1/2	91	28 1/2
88	25	89	26	90	27	91	27 3/4	92	28 3/4
89	25 1/4	90	26 1/4	91	27 1/4	92	28	93	29
90	25 3/4	91	26 1/2	92	27 1/2	93	28 1/2	94	29 1/2
91	26	92	26 3/4	93	27 3/4	94	28 3/4	95	29 3/4

HANDY SQUARE FOOT TABLE

WIDTH 46		WIDTH 47		WIDTH 48		WIDTH 49		WIDTH 50	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
46	14 $\frac{3}{4}$	47	15 $\frac{1}{4}$	48	16	49	16 $\frac{3}{4}$	50	17 $\frac{1}{4}$
47	15	48	15 $\frac{3}{4}$	49	16 $\frac{1}{4}$	50	17	51	17 $\frac{3}{4}$
48	15 $\frac{1}{4}$	49	16	50	16 $\frac{3}{4}$	51	17 $\frac{1}{4}$	52	18
49	15 $\frac{3}{4}$	50	16 $\frac{1}{4}$	51	17	52	17 $\frac{3}{4}$	53	18 $\frac{1}{2}$
50	16	51	16 $\frac{3}{4}$	52	17 $\frac{1}{4}$	53	18	54	18 $\frac{3}{4}$
51	16 $\frac{1}{4}$	52	17	53	17 $\frac{3}{4}$	54	18 $\frac{1}{2}$	55	19
52	16 $\frac{1}{2}$	53	17 $\frac{1}{4}$	54	18	55	18 $\frac{3}{4}$	56	19 $\frac{1}{2}$
53	17	54	17 $\frac{3}{4}$	55	18 $\frac{1}{4}$	56	19	57	19 $\frac{3}{4}$
54	17 $\frac{1}{4}$	55	18	56	18 $\frac{3}{4}$	57	19 $\frac{1}{2}$	58	20 $\frac{1}{4}$
55	17 $\frac{1}{2}$	56	18 $\frac{1}{4}$	57	19	58	19 $\frac{3}{4}$	59	20 $\frac{1}{2}$
56	18	57	18 $\frac{1}{2}$	58	19 $\frac{1}{4}$	59	20	60	20 $\frac{3}{4}$
57	18 $\frac{1}{4}$	58	19	59	19 $\frac{3}{4}$	60	20 $\frac{1}{4}$	61	21 $\frac{1}{4}$
58	18 $\frac{1}{2}$	59	19 $\frac{1}{4}$	60	20	61	20 $\frac{3}{4}$	62	21 $\frac{1}{2}$
59	18 $\frac{3}{4}$	60	19 $\frac{1}{2}$	61	20 $\frac{1}{4}$	62	21	63	22
60	19 $\frac{1}{4}$	61	20	62	20 $\frac{3}{4}$	63	21 $\frac{1}{4}$	64	22 $\frac{1}{4}$
61	19 $\frac{1}{2}$	62	20 $\frac{1}{4}$	63	21	64	21 $\frac{3}{4}$	65	22 $\frac{1}{2}$
62	19 $\frac{3}{4}$	63	20 $\frac{1}{2}$	64	21 $\frac{1}{4}$	65	22	66	23
63	20 $\frac{1}{4}$	64	21	65	21 $\frac{3}{4}$	66	22 $\frac{1}{2}$	67	23 $\frac{1}{4}$
64	20 $\frac{1}{2}$	65	21 $\frac{1}{4}$	66	22	67	22 $\frac{3}{4}$	68	23 $\frac{1}{2}$
65	20 $\frac{3}{4}$	66	21 $\frac{1}{2}$	67	22 $\frac{1}{4}$	68	23 $\frac{1}{4}$	69	24
66	21	67	21 $\frac{3}{4}$	68	22 $\frac{3}{4}$	69	23 $\frac{1}{2}$	70	24 $\frac{1}{4}$
67	21 $\frac{1}{2}$	68	22 $\frac{1}{4}$	69	23	70	23 $\frac{3}{4}$	71	24 $\frac{3}{4}$
68	21 $\frac{3}{4}$	69	22 $\frac{1}{2}$	70	23 $\frac{1}{4}$	71	24 $\frac{1}{4}$	72	25
69	22	70	22 $\frac{3}{4}$	71	23 $\frac{3}{4}$	72	24 $\frac{1}{2}$	73	25 $\frac{1}{4}$
70	22 $\frac{1}{4}$	71	23 $\frac{1}{4}$	72	24	73	24 $\frac{3}{4}$	74	25 $\frac{3}{4}$
71	22 $\frac{3}{4}$	72	23 $\frac{1}{2}$	73	24 $\frac{1}{4}$	74	25 $\frac{1}{4}$	75	26
72	23	73	23 $\frac{3}{4}$	74	24 $\frac{3}{4}$	75	25 $\frac{1}{2}$	76	26 $\frac{1}{2}$
73	23 $\frac{1}{4}$	74	24 $\frac{1}{4}$	75	25	76	25 $\frac{3}{4}$	77	26 $\frac{3}{4}$
74	23 $\frac{3}{4}$	75	24 $\frac{1}{2}$	76	25 $\frac{1}{4}$	77	26 $\frac{1}{4}$	78	27
75	24	76	24 $\frac{3}{4}$	77	25 $\frac{3}{4}$	78	26 $\frac{1}{2}$	79	27 $\frac{1}{2}$
76	24 $\frac{1}{4}$	77	25 $\frac{1}{4}$	78	26	79	27	80	27 $\frac{3}{4}$
77	24 $\frac{1}{2}$	78	25 $\frac{1}{2}$	79	26 $\frac{1}{4}$	80	27 $\frac{1}{4}$	81	28 $\frac{1}{4}$
78	25	79	25 $\frac{3}{4}$	80	26 $\frac{3}{4}$	81	27 $\frac{1}{2}$	82	28 $\frac{1}{2}$
79	25 $\frac{1}{4}$	80	26	81	27	82	28	83	28 $\frac{3}{4}$
80	25 $\frac{1}{2}$	81	26 $\frac{1}{2}$	82	27 $\frac{1}{4}$	83	28 $\frac{1}{4}$	84	29 $\frac{1}{4}$
81	26	82	26 $\frac{3}{4}$	83	27 $\frac{3}{4}$	84	28 $\frac{1}{2}$	85	29 $\frac{1}{2}$
82	26 $\frac{1}{4}$	83	27	84	28	85	29	86	29 $\frac{3}{4}$
83	26 $\frac{1}{2}$	84	27 $\frac{1}{2}$	85	28 $\frac{1}{4}$	86	29 $\frac{1}{4}$	87	30
84	26 $\frac{3}{4}$	85	27 $\frac{3}{4}$	86	28 $\frac{3}{4}$	87	29 $\frac{1}{2}$	88	30 $\frac{1}{2}$
85	27 $\frac{1}{4}$	86	28	87	29	88	30	89	31
86	27 $\frac{1}{2}$	87	28 $\frac{1}{2}$	88	29 $\frac{1}{4}$	89	30 $\frac{1}{4}$	90	31 $\frac{1}{4}$
87	27 $\frac{3}{4}$	88	28 $\frac{3}{4}$	89	29 $\frac{3}{4}$	90	30 $\frac{3}{4}$	91	31 $\frac{1}{2}$
88	28	89	29	90	30	91	31	92	32
89	28 $\frac{1}{2}$	90	29 $\frac{1}{2}$	91	30 $\frac{1}{4}$	92	31 $\frac{1}{4}$	93	32 $\frac{1}{4}$
90	28 $\frac{3}{4}$	91	29 $\frac{3}{4}$	92	30 $\frac{3}{4}$	93	31 $\frac{3}{4}$	94	32 $\frac{3}{4}$
91	29	92	30	93	31	94	32	95	33
92	29 $\frac{1}{2}$	93	30 $\frac{1}{4}$	94	31 $\frac{1}{4}$	95	32 $\frac{1}{4}$	96	33 $\frac{1}{4}$
93	29 $\frac{3}{4}$	94	30 $\frac{3}{4}$	95	31 $\frac{3}{4}$	96	32 $\frac{3}{4}$	97	33 $\frac{3}{4}$
94	30	95	31	96	32	97	33	98	34
95	30 $\frac{1}{4}$	96	31 $\frac{1}{4}$	97	32 $\frac{1}{4}$	98	33 $\frac{1}{4}$	99	34 $\frac{1}{2}$
96	30 $\frac{3}{4}$	97	31 $\frac{3}{4}$	98	32 $\frac{3}{4}$	99	33 $\frac{3}{4}$	100	34 $\frac{3}{4}$

Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 43" x 69" — find width column 43. Go down line to 69. Equals 20 $\frac{1}{2}$ square feet.

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

WIDTH 51		WIDTH 52		WIDTH 53		WIDTH 54		WIDTH 55	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
51	18	52	18 $\frac{3}{4}$	53	19 $\frac{1}{2}$	54	20 $\frac{1}{4}$	55	12
52	18 $\frac{1}{2}$	53	19	54	20	55	20 $\frac{3}{4}$	56	21 $\frac{1}{2}$
53	18 $\frac{3}{4}$	54	19 $\frac{1}{2}$	55	20 $\frac{1}{4}$	56	21	57	21 $\frac{3}{4}$
54	19 $\frac{1}{4}$	55	19 $\frac{3}{4}$	56	20 $\frac{1}{2}$	57	21 $\frac{1}{2}$	58	22 $\frac{1}{4}$
55	19 $\frac{1}{2}$	56	20 $\frac{1}{4}$	57	21	58	21 $\frac{3}{4}$	59	22 $\frac{1}{2}$
56	19 $\frac{3}{4}$	57	20 $\frac{1}{2}$	58	21 $\frac{1}{4}$	59	22 $\frac{1}{4}$	60	23
57	20 $\frac{1}{4}$	58	21	59	21 $\frac{3}{4}$	60	22 $\frac{1}{2}$	61	23 $\frac{1}{4}$
58	20 $\frac{1}{2}$	59	21 $\frac{1}{4}$	60	22	61	23	62	23 $\frac{3}{4}$
59	21	60	21 $\frac{3}{4}$	61	22 $\frac{1}{2}$	62	23 $\frac{1}{4}$	63	24
60	21 $\frac{1}{4}$	61	22	62	22 $\frac{3}{4}$	63	23 $\frac{3}{4}$	64	24 $\frac{1}{2}$
61	21 $\frac{1}{2}$	62	22 $\frac{1}{2}$	63	23 $\frac{1}{4}$	64	24	65	24 $\frac{3}{4}$
62	22	63	22 $\frac{3}{4}$	64	23 $\frac{1}{2}$	65	24 $\frac{1}{2}$	66	25 $\frac{1}{4}$
63	22 $\frac{1}{4}$	64	23	65	24	66	24 $\frac{3}{4}$	67	25 $\frac{1}{2}$
64	22 $\frac{3}{4}$	65	23 $\frac{1}{2}$	66	24 $\frac{1}{4}$	67	25 $\frac{1}{4}$	68	26
65	23	66	23 $\frac{3}{4}$	67	24 $\frac{3}{4}$	68	25 $\frac{1}{2}$	69	26 $\frac{1}{4}$
66	23 $\frac{1}{2}$	67	24 $\frac{1}{4}$	68	25	69	25 $\frac{3}{4}$	70	26 $\frac{3}{4}$
67	23 $\frac{3}{4}$	68	24 $\frac{1}{2}$	69	25 $\frac{1}{2}$	70	26 $\frac{1}{4}$	71	27
68	24	69	25	70	25 $\frac{3}{4}$	71	26 $\frac{3}{4}$	72	27 $\frac{1}{2}$
69	24 $\frac{1}{2}$	70	25 $\frac{1}{4}$	71	26 $\frac{1}{4}$	72	27	73	28
70	24 $\frac{3}{4}$	71	25 $\frac{3}{4}$	72	26 $\frac{1}{2}$	73	27 $\frac{1}{2}$	74	28 $\frac{1}{4}$
71	25 $\frac{1}{4}$	72	26	73	26 $\frac{3}{4}$	74	27 $\frac{3}{4}$	75	28 $\frac{3}{4}$
72	25 $\frac{1}{2}$	73	26 $\frac{1}{4}$	74	27 $\frac{1}{4}$	75	28 $\frac{1}{4}$	76	29
73	25 $\frac{3}{4}$	74	26 $\frac{3}{4}$	75	27 $\frac{1}{2}$	76	28 $\frac{1}{2}$	77	29 $\frac{1}{2}$
74	26 $\frac{1}{4}$	75	27	76	28	77	29	78	29 $\frac{3}{4}$
75	26 $\frac{1}{2}$	76	27 $\frac{1}{2}$	77	28 $\frac{1}{4}$	78	29 $\frac{1}{4}$	79	30 $\frac{1}{4}$
76	27	77	27 $\frac{3}{4}$	78	28 $\frac{3}{4}$	79	29 $\frac{3}{4}$	80	30 $\frac{1}{2}$
77	27 $\frac{1}{4}$	78	28 $\frac{1}{4}$	79	29	80	30	81	31
78	27 $\frac{3}{4}$	79	28 $\frac{1}{2}$	80	29 $\frac{1}{2}$	81	30 $\frac{1}{2}$	82	31 $\frac{1}{4}$
79	28	80	29	81	29 $\frac{3}{4}$	82	30 $\frac{3}{4}$	83	31 $\frac{3}{4}$
80	28 $\frac{1}{4}$	81	29 $\frac{1}{4}$	82	30 $\frac{1}{4}$	83	31 $\frac{1}{4}$	84	32
81	28 $\frac{3}{4}$	82	29 $\frac{1}{2}$	83	30 $\frac{1}{2}$	84	31 $\frac{1}{2}$	85	32 $\frac{1}{2}$
82	29	83	30	84	31	85	32	86	32 $\frac{3}{4}$
83	29 $\frac{1}{2}$	84	30 $\frac{1}{4}$	85	31 $\frac{1}{4}$	86	32 $\frac{1}{4}$	87	33 $\frac{1}{4}$
84	29 $\frac{3}{4}$	85	30 $\frac{3}{4}$	86	31 $\frac{3}{4}$	87	32 $\frac{3}{4}$	88	33 $\frac{3}{4}$
85	30	86	31	87	32	88	33	89	34
86	30 $\frac{1}{2}$	87	31 $\frac{1}{2}$	88	32 $\frac{1}{2}$	89	33 $\frac{1}{2}$	90	34 $\frac{1}{2}$
87	30 $\frac{3}{4}$	88	31 $\frac{3}{4}$	89	32 $\frac{3}{4}$	90	33 $\frac{3}{4}$	91	34 $\frac{3}{4}$
88	31 $\frac{1}{4}$	89	32 $\frac{1}{4}$	90	33 $\frac{1}{4}$	91	34 $\frac{1}{4}$	92	35 $\frac{1}{4}$
89	31 $\frac{1}{2}$	90	32 $\frac{1}{2}$	91	33 $\frac{1}{2}$	92	34 $\frac{1}{2}$	93	35 $\frac{1}{2}$
90	32	91	32 $\frac{3}{4}$	92	34	93	35	94	36
91	32 $\frac{1}{4}$	92	33 $\frac{1}{4}$	93	34 $\frac{1}{4}$	94	35 $\frac{1}{4}$	95	36 $\frac{1}{4}$
92	32 $\frac{1}{2}$	93	33 $\frac{1}{2}$	94	34 $\frac{1}{2}$	95	35 $\frac{1}{2}$	96	36 $\frac{3}{4}$
93	33	94	34	95	35	96	36	97	37
94	33 $\frac{1}{4}$	95	34 $\frac{1}{4}$	96	35 $\frac{1}{4}$	97	36 $\frac{1}{4}$	98	37 $\frac{1}{2}$
95	33 $\frac{3}{4}$	96	34 $\frac{3}{4}$	97	35 $\frac{3}{4}$	98	36 $\frac{3}{4}$	99	37 $\frac{3}{4}$
96	34	97	35	98	36	99	37 $\frac{1}{4}$	100	38 $\frac{1}{4}$
97	34 $\frac{1}{4}$	98	35 $\frac{1}{2}$	99	36 $\frac{1}{2}$	100	37 $\frac{1}{2}$	101	38 $\frac{1}{2}$
98	34 $\frac{3}{4}$	99	35 $\frac{3}{4}$	100	36 $\frac{3}{4}$	101	38	102	39
99	35	100	36	101	37 $\frac{1}{4}$	102	38 $\frac{1}{4}$	103	39 $\frac{1}{4}$
100	35 $\frac{1}{2}$	101	36 $\frac{1}{2}$	102	37 $\frac{1}{2}$	103	38 $\frac{3}{4}$	104	39 $\frac{3}{4}$
101	35 $\frac{3}{4}$	102	36 $\frac{3}{4}$	103	38	104	39	105	40

HANDY SQUARE FOOT TABLE

56		57		58		59		60	
LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.
56	21 3/4	57	22 1/2	58	23 1/4	59	24 1/4	60	25
57	22 1/4	58	23	59	23 3/4	60	24 1/2	61	25 1/2
58	22 1/2	59	23 1/4	60	24 1/4	61	25	62	25 3/4
59	23	60	23 3/4	61	24 1/2	62	25 1/2	63	26 1/4
60	23 1/4	61	24 1/4	62	25	63	25 3/4	64	26 3/4
61	23 3/4	62	24 1/2	63	25 1/2	64	26 1/4	65	27
62	24	63	25	64	25 3/4	65	26 1/2	66	27 1/2
63	24 1/2	64	25 1/4	65	26 1/4	66	27	67	28
64	25	65	25 3/4	66	26 1/2	67	27 1/2	68	28 1/4
65	25 1/4	66	26 1/4	67	27	68	27 3/4	69	28 3/4
66	25 3/4	67	26 1/2	68	27 1/2	69	28 1/4	70	29 1/4
67	26	68	27	69	27 3/4	70	28 3/4	71	29 1/2
68	26 1/2	69	27 1/4	70	28 1/4	71	29	72	30
69	26 3/4	70	27 3/4	71	28 1/2	72	29 1/2	73	30 1/2
70	27 1/4	71	28	72	29	73	30	74	30 3/4
71	27 1/2	72	28 1/2	73	29 1/2	74	30 1/4	75	31 1/4
72	28	73	29	74	29 3/4	75	30 3/4	76	31 3/4
73	28 1/2	74	29 1/4	75	30 1/4	76	31 1/4	77	32
74	28 3/4	75	29 3/4	76	30 1/2	77	31 1/2	78	32 1/2
75	29 1/4	76	30	77	31	78	32	79	33
76	29 1/2	77	30 1/2	78	31 1/2	79	32 1/2	80	33 1/4
77	30	78	30 3/4	79	31 3/4	80	32 3/4	81	33 3/4
78	30 1/2	79	31 1/4	80	32 1/4	81	33 1/4	82	34 1/4
79	30 3/4	80	31 3/4	81	32 3/4	82	33 3/4	83	34 1/2
80	31	81	32	82	33	83	34	84	35
81	31 1/2	82	32 1/2	83	33 1/2	84	34 1/2	85	35 1/2
82	32	83	32 3/4	84	33 3/4	85	34 3/4	86	35 3/4
83	32 1/4	84	33 1/4	85	34 1/4	86	35 1/4	87	36 1/4
84	32 3/4	85	33 3/4	86	34 3/4	87	35 3/4	88	36 3/4
85	33	86	34	87	35	88	36	89	37
86	33 1/2	87	34 1/2	88	35 1/2	89	36 1/2	90	37 1/2
87	33 3/4	88	34 3/4	89	35 3/4	90	37	91	38
88	34 1/4	89	35 1/4	90	36 1/4	91	37 1/4	92	38 1/4
89	34 1/2	90	35 3/4	91	36 3/4	92	37 3/4	93	38 3/4
90	35	91	36	92	37	93	38	94	39 1/4
91	35 1/2	92	36 1/2	93	37 1/2	94	38 1/2	95	39 1/2
92	35 3/4	93	36 3/4	94	37 3/4	95	39	96	40
93	36 1/4	94	37 1/4	95	38 1/4	96	39 1/4	97	40 1/2
94	36 1/2	95	37 1/2	96	38 3/4	97	39 3/4	98	40 3/4
95	37	96	38	97	39	98	40 1/4	99	41 1/4
96	37 1/4	97	38 1/2	98	39 1/2	99	40 1/2	100	41 3/4
97	37 3/4	98	38 3/4	99	40	100	41	101	42
98	38	99	39 1/4	100	40 1/4	101	41 1/2	102	42 1/2
99	38 1/2	100	39 1/2	101	40 3/4	102	41 3/4	103	43
100	39	101	40	102	41	103	42 1/4	104	43 1/4
101	39 1/4	102	40 1/2	103	41 1/2	104	42 1/2	105	43 3/4
102	39 3/4	103	40 3/4	104	42	105	43	106	44 1/4
103	40	104	41 1/4	105	42 1/4	106	43 1/2	107	44 1/2
104	40 1/2	105	41 1/2	106	42 3/4	107	43 3/4	108	45
105	40 3/4	106	42	107	43	108	44 1/4	109	45 1/2
106	41 1/4	107	42 1/4	108	43 1/2	109	44 3/4	110	45 3/4

Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 56" x 83" — find width column 56. Go down line to 83. Equals 32 1/4 square feet.

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

61		62		63		64	
LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.	LGTH.	WIDTH SQ. FT.
61	25 $\frac{3}{4}$	62	26 $\frac{3}{4}$	63	27 $\frac{1}{4}$	64	28 $\frac{1}{2}$
62	26 $\frac{1}{4}$	63	27 $\frac{1}{4}$	64	28	65	29
63	26 $\frac{3}{4}$	64	27 $\frac{1}{2}$	65	28 $\frac{1}{4}$	66	29 $\frac{1}{4}$
64	27	65	28	66	29	67	29 $\frac{3}{4}$
65	27 $\frac{1}{2}$	66	28 $\frac{1}{2}$	67	29 $\frac{1}{4}$	68	30 $\frac{1}{4}$
66	28	67	28 $\frac{3}{4}$	68	29 $\frac{3}{4}$	69	30 $\frac{3}{4}$
67	28 $\frac{1}{2}$	68	29 $\frac{1}{4}$	69	30 $\frac{1}{4}$	70	31 $\frac{3}{4}$
68	28 $\frac{3}{4}$	69	29 $\frac{3}{4}$	70	30 $\frac{3}{4}$	71	31 $\frac{1}{2}$
69	29 $\frac{1}{4}$	70	30 $\frac{1}{4}$	71	31	72	32
70	29 $\frac{3}{4}$	71	30 $\frac{1}{2}$	72	31 $\frac{1}{2}$	73	32 $\frac{1}{2}$
71	30	72	31	73	32	74	33
72	30 $\frac{1}{2}$	73	31 $\frac{1}{2}$	74	32 $\frac{1}{2}$	75	33 $\frac{1}{4}$
73	31	74	31 $\frac{3}{4}$	75	32 $\frac{3}{4}$	76	33 $\frac{3}{4}$
74	31 $\frac{1}{4}$	75	32 $\frac{1}{4}$	76	33 $\frac{1}{4}$	77	34 $\frac{1}{4}$
75	31 $\frac{3}{4}$	76	32 $\frac{3}{4}$	77	33 $\frac{3}{4}$	78	34 $\frac{3}{4}$
76	32 $\frac{1}{4}$	77	33 $\frac{1}{4}$	78	34 $\frac{1}{4}$	79	35 $\frac{1}{4}$
77	32 $\frac{1}{2}$	78	33 $\frac{1}{2}$	79	34 $\frac{1}{2}$	80	35 $\frac{1}{2}$
78	33	79	34	80	35	81	36
79	33 $\frac{1}{2}$	80	34 $\frac{1}{2}$	81	35 $\frac{1}{2}$	82	36 $\frac{1}{2}$
80	34	81	35	82	36	83	37
81	34 $\frac{1}{4}$	82	35 $\frac{1}{4}$	83	36 $\frac{1}{4}$	84	37 $\frac{1}{4}$
82	34 $\frac{3}{4}$	83	35 $\frac{3}{4}$	84	36 $\frac{3}{4}$	85	37 $\frac{3}{4}$
83	35 $\frac{1}{4}$	84	36 $\frac{1}{4}$	85	37 $\frac{1}{4}$	86	38 $\frac{1}{4}$
84	35 $\frac{1}{2}$	85	36 $\frac{1}{2}$	86	37 $\frac{3}{4}$	87	38 $\frac{3}{4}$
85	36	86	37	87	38	88	39 $\frac{1}{4}$
86	36 $\frac{1}{2}$	87	37 $\frac{1}{2}$	88	38 $\frac{1}{2}$	89	39 $\frac{1}{2}$
87	36 $\frac{3}{4}$	88	38	89	39	90	40
88	37 $\frac{1}{4}$	89	38 $\frac{1}{4}$	90	39 $\frac{1}{2}$	92	41
89	37 $\frac{3}{4}$	90	38 $\frac{3}{4}$	91	39 $\frac{3}{4}$	94	41 $\frac{3}{4}$
90	38 $\frac{1}{4}$	91	39 $\frac{1}{4}$	92	40 $\frac{1}{4}$	96	42 $\frac{3}{4}$
91	38 $\frac{1}{2}$	92	39 $\frac{1}{2}$	93	40 $\frac{3}{4}$	98	43 $\frac{1}{2}$
92	39	93	40	94	41 $\frac{1}{4}$	100	44 $\frac{1}{2}$
93	39 $\frac{1}{2}$	94	40 $\frac{1}{2}$	95	41 $\frac{1}{2}$	102	45 $\frac{1}{4}$
94	39 $\frac{3}{4}$	95	41	95	42	104	46 $\frac{1}{4}$
95	40 $\frac{1}{4}$	96	41 $\frac{1}{4}$	97	42 $\frac{1}{2}$	106	47 $\frac{1}{4}$
96	40 $\frac{3}{4}$	97	41 $\frac{3}{4}$	98	43	108	48
97	41	98	42 $\frac{1}{4}$	99	43 $\frac{1}{4}$	110	49
98	41 $\frac{1}{2}$	99	42 $\frac{3}{4}$	100	43 $\frac{3}{4}$	112	49 $\frac{3}{4}$
99	42	100	43	101	44 $\frac{1}{4}$	114	50 $\frac{3}{4}$
100	42 $\frac{1}{4}$	101	43 $\frac{1}{2}$	102	44 $\frac{3}{4}$	116	51 $\frac{1}{2}$
101	42 $\frac{3}{4}$	102	44	103	45	118	52 $\frac{1}{2}$
102	43 $\frac{1}{4}$	103	44 $\frac{1}{4}$	104	45 $\frac{1}{2}$	120	53 $\frac{1}{4}$
103	43 $\frac{3}{4}$	104	44 $\frac{3}{4}$	105	46	122	54 $\frac{1}{4}$
104	44	105	45 $\frac{1}{4}$	106	46 $\frac{1}{2}$	124	55 $\frac{1}{4}$
105	44 $\frac{1}{2}$	106	45 $\frac{3}{4}$	107	46 $\frac{3}{4}$	126	56
106	45	107	46	108	47 $\frac{1}{4}$	128	57
107	45 $\frac{1}{4}$	108	46 $\frac{1}{2}$	109	47 $\frac{3}{4}$	130	57 $\frac{3}{4}$
108	45 $\frac{3}{4}$	109	47	110	48 $\frac{1}{4}$	132	58 $\frac{3}{4}$
109	46 $\frac{1}{4}$	110	47 $\frac{1}{4}$	111	48 $\frac{1}{2}$	134	59 $\frac{1}{2}$
110	46 $\frac{1}{2}$	111	47 $\frac{3}{4}$	112	49	136	60 $\frac{1}{2}$
111	47	112	48 $\frac{1}{4}$	113	49 $\frac{1}{2}$	138	61 $\frac{1}{4}$

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 63" x 74" — find width column 63. Go down line to 74. Equals 32½ square feet.

WIDTH 65		WIDTH 66		WIDTH 67		WIDTH 68	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
65	29¼	66	30¼	67	31¼	68	32¼
66	29¾	67	30¾	68	31¾	69	32½
67	30¼	68	31¼	69	32¼	70	33
68	30¾	69	31¾	70	32½	71	33½
69	31¼	70	32	71	33	72	34
70	31½	71	32½	72	33½	73	34½
71	32	72	33	73	34	74	35
72	32½	73	33½	74	34½	75	35½
73	33	74	34	75	35	76	36
74	33½	75	34½	76	35½	77	36½
75	34	76	35	77	35¾	78	36¾
76	34¼	77	35¼	78	36¼	79	37¼
77	34¾	78	35¾	79	36¾	80	37¾
78	35¼	79	36¼	80	37¼	81	38¼
79	35¾	80	36¾	81	37¾	82	38¾
80	36¼	81	37¼	82	38¼	83	39¼
81	36½	82	37½	83	38¾	84	39¾
82	37	83	38	84	39	85	40¼
83	37½	84	38½	85	39½	86	40¾
84	38	85	39	86	40	87	41
85	38½	86	39½	87	40½	88	41½
86	38¾	87	40	88	41	89	42
87	39¼	88	40¼	89	41½	90	42½
88	39¾	89	40¾	90	41¾	92	43½
89	40¼	90	41¼	92	42¾	94	44½
90	40¾	92	42¼	94	43¾	96	45½
92	41½	94	43	96	44¾	98	46¼
94	42½	96	44	98	45½	100	47¼
96	43¼	98	45	100	46½	102	48¼
98	44¼	100	46	102	47½	104	49¼
100	45¼	102	46¾	104	48½	106	50
102	46	104	47¾	106	49¼	108	51
104	47	106	48½	108	50¼	110	52
106	47¾	108	49½	110	51¼	112	53
108	48¾	110	50½	112	52¼	114	54
110	49¾	112	51¼	114	53	116	54¾
112	50½	114	52¼	116	54	118	55¾
114	51½	116	53¼	118	55	120	56¾
116	52½	118	54	120	55¾	122	57¾
118	53¼	120	55	122	56¾	124	58½
120	54¼	122	56	124	57¾	126	59½
122	55	124	56¾	126	58¾	128	60½
124	56	126	57¾	128	59½	130	61½
126	57	128	58¾	130	60½	132	62½
128	57¾	130	59½	132	61½	134	63¼
130	58¾	132	60½	134	62¼	136	64¼
132	59½	134	61½	136	63¼	138	65¼
134	60½	136	62¼	138	64¼	140	66¼
136	61½	138	63¼	140	65¼	142	67
138	62¼	140	64¼	142	66	144	68
140	63¼	142	65	144	67	146	69

HANDY SQUARE FOOT TABLE

Where any figure is omitted use next higher figure.

EXAMPLE

Piece KOOL-SHADE 70" x 82" — find width column 70. Go down line to 82. Equals 40 square feet.

WIDTH 69		WIDTH 70		WIDTH 71		WIDTH 72	
LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.	LGTH.	SQ. FT.
69	33	70	34	71	35	72	36
70	33½	71	34½	72	35½	73	36½
71	34	72	35	73	36	74	37
72	34½	73	35½	74	36½	75	37½
73	35	74	36	75	37	76	38
74	35½	75	36½	76	37½	77	38½
75	36	76	37	77	38	78	39
76	36½	77	37½	78	38½	79	39½
77	37	78	38	79	39	80	40
78	37½	79	38½	80	39½	81	40½
79	38	80	39	81	40	82	41
80	38½	81	39½	82	40½	83	41½
81	38¾	82	40	83	41	84	42
82	39¼	83	40½	84	41½	85	42½
83	39¾	84	41	85	42	86	43
84	40¼	85	41½	86	42½	87	43½
85	40¾	86	41¾	87	43	88	44
86	41¼	87	42¼	88	43½	89	44½
87	41¾	88	42¾	89	44	90	45
88	42¼	89	43¼	90	44½	92	46
89	42¾	90	43¾	92	45½	94	47
90	43¼	92	44¾	94	46¼	96	48
92	44	94	45¾	96	47¼	98	49
94	45	96	46¾	98	48¼	100	50
96	46	98	47¾	100	49¼	102	51
98	47	100	48¾	102	50¼	104	52
100	48	102	49½	104	51¼	106	53
102	49	104	50½	106	52¼	108	54
104	50	106	51½	108	53¼	110	55
106	50¾	108	52½	110	54¼	112	56
108	51¾	110	53½	112	55¼	114	57
110	52¾	112	54½	114	56¼	116	58
112	53¾	114	55½	116	57¼	118	59
114	54¾	116	56½	118	58¼	120	60
116	55½	118	57½	120	59¼	122	61
118	56½	120	58¼	122	60¼	124	62
120	57½	122	59¼	124	61¼	126	63
122	58½	124	60¼	126	62¼	128	64
124	59½	126	61¼	128	63¼	130	65
126	60½	128	62¼	130	64	132	66
128	61½	130	63¼	132	65	134	67
130	62¼	132	64¼	134	66	136	68
132	63¼	134	65¼	136	67	138	69
134	64¼	136	66¼	138	68	140	70
136	65¼	138	67	140	69	142	71
138	66¼	140	68	142	70	144	72
140	67	142	69	144	71	146	73
142	68	144	70	146	72	148	74
144	69	146	71	148	73	150	75
146	70	148	72	150	74	152	76
148	71	150	73	152	75	154	77

KOOLSHADE SUN SCREEN

In Combination with Storm Windows and
Ingersoll Extruded Aluminum Frames

*It's Now
Available!*

*This complete all-weather-all year
around window assembly is called...*

INGERSOLL
STORM-SHADE



Stormshade is an ideal window installation for any home—yet is equally practical on commercial and industrial buildings.

STORMSHADE COMBINES THESE WINTER THE SUMMERTIME COMFORT DERIVED



Storm Windows that are "as light as a feather"

Note the picture at the left. It illustrates more effectively than words the amazing lightness and ease of handling of Stormshade storm windows . . . and the KoolShade sun screens are even lighter.

No Seasonal Repairs or Maintenance required

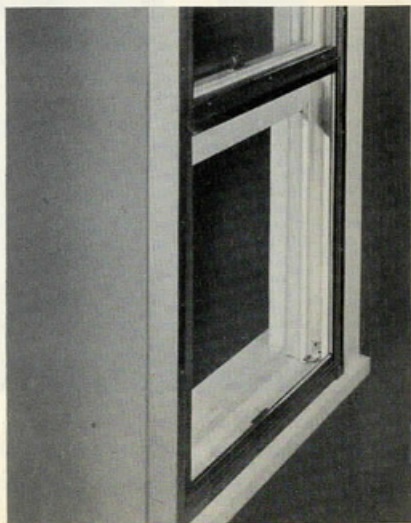
The light durable aluminum frames require no painting. They cannot rust or rot. They always maintain their clean new appearance.

Stormshade always fits perfectly. No Drafts—No Dust—No Rattles

Ingersoll Extruded Aluminum Frames can be adjusted to take care of any warp in the basic wood window frame. A neat and perfect fit is always assured.

Cuts Fuel Bills as much as 30%

At least 30% of normal heat loss in a room occurs around the windows. Stormshade prevents this loss. Result . . . lower fuel bills.

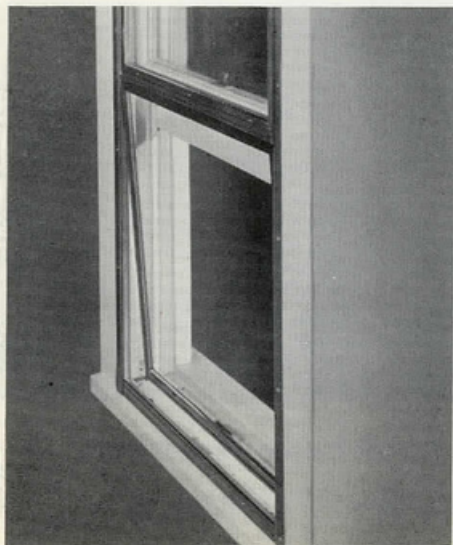


Complete change from Storm windows to Screens in 30 seconds

Sliding easily in their aluminum track, storm windows can be removed and KoolShade sun screen inserted in just a few seconds. The individual windows and screens are so light a girl or a child can handle them with ease.

OTHER ADVANTAGES...

- Clear vision, windows do not steam or frost
- Aids performance of air conditioning systems
- Attractive year around appearance



Simple Ventilating Arrangement

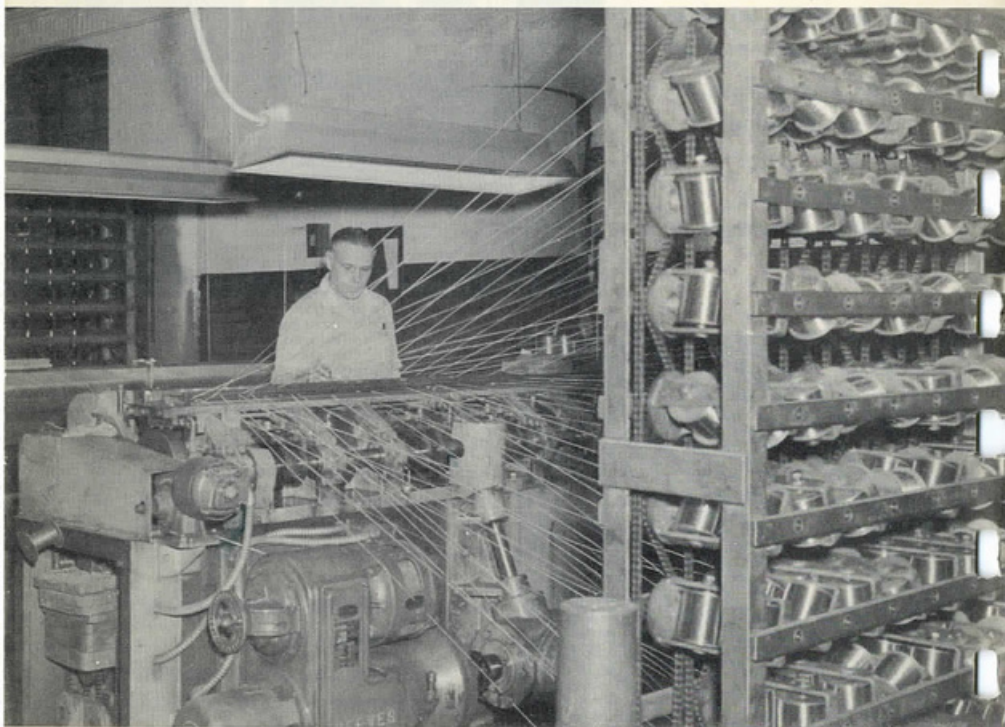
For winter ventilation the Stormshade frame is equipped with a neat aluminum shelf onto which the storm window can quickly be shifted to allow plenty of fresh air to enter the room.

Low sill adapter—removable to make cleaning easy

An exclusive feature of STORMSHADE is the removable sill adapter. It can readily be slipped out to make it easy and comfortable to sit on the basic wood sill while washing the outside of the windows.

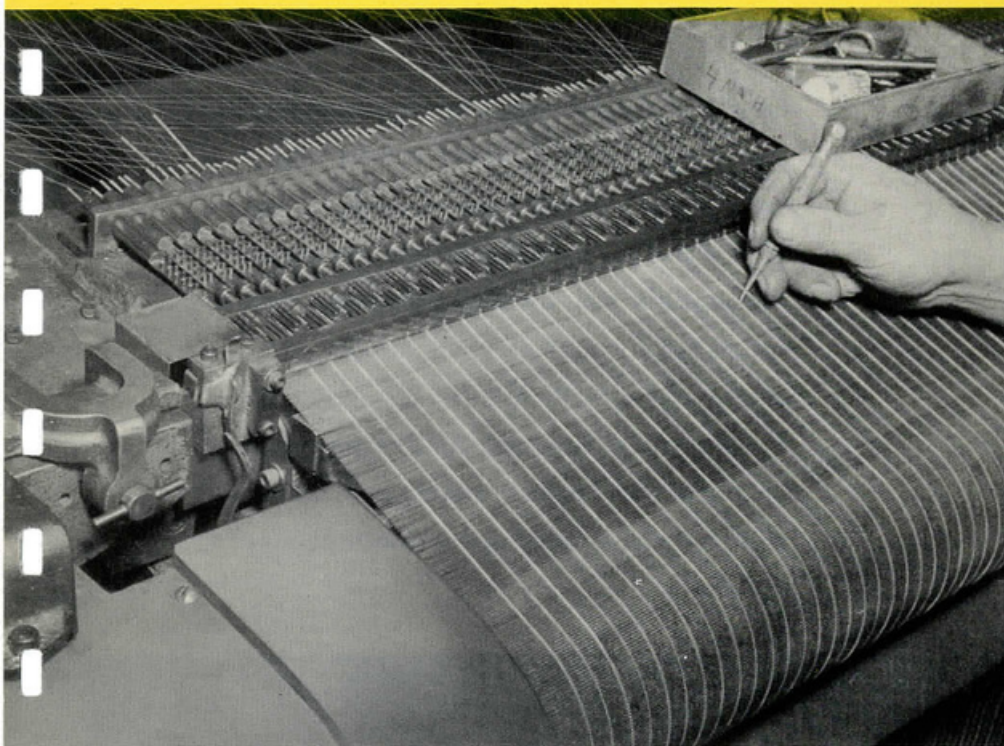
Engineering Genius Makes Possi

Dr. John Grebe had an idea . . . the idea that was to become KoolShade. He demonstrated his idea on a little hand operated machine that could make a strip of KoolShade less than two inches wide. From there Ingersoll engineers carried on . . . worked out an amazing precision machine that fabricates over 120 square feet of KoolShade each hour in 72" rolls. Other even higher speed machines fabricate rolls of 36, 48, 56, 60 and 66 inch widths.



**One of the Battery of Koolshade Machines
at the Ingersoll Plant, West Pullman, Ill.**

ble the Production of Koolshade

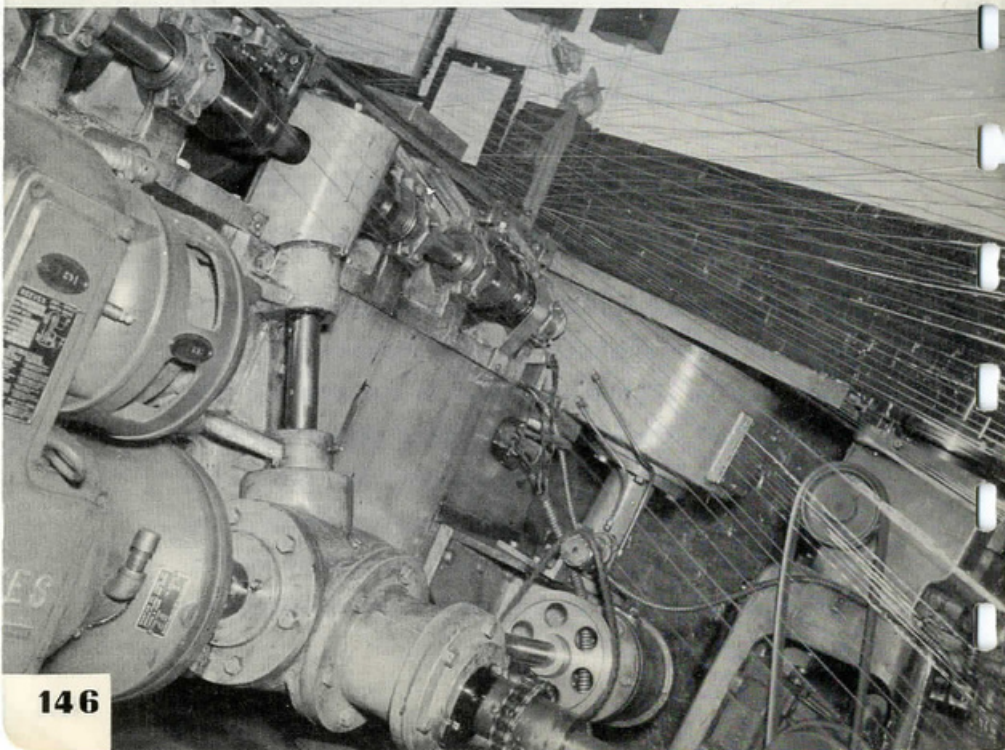


A Precision Built Product Rolls Off Each Intricate Yet Accurate Machine

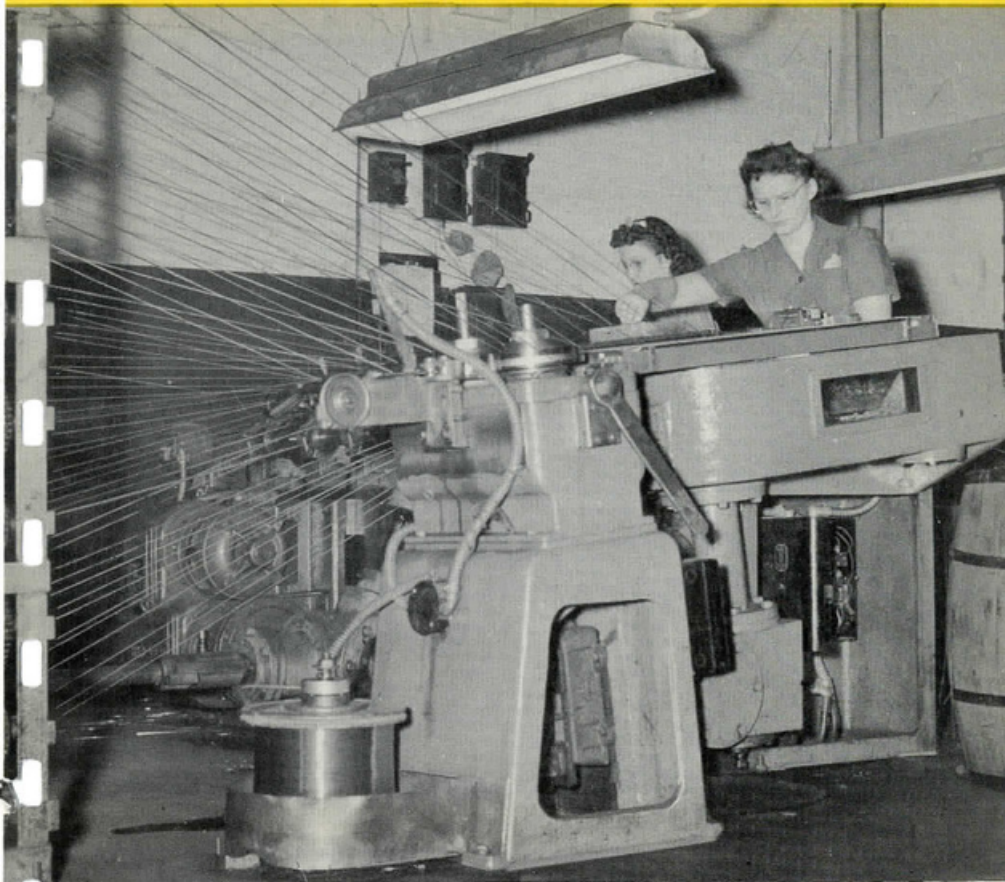
Only the finest grade of commercial bronze wire can be used. The adjustment of each machine is so delicate that the slightest variation in the wire will stop the machine. The louvers are rolled paper thin from a fine .0179 basic wire. The upright wires are .0113. Yet out of these tiny wires is woven a sturdy, long lasting sun-screen. Careful and continuous inspection plus automatic controls detect and correct every possible flaw.

FROM MYRIADS OF TINY WIRES

From 294 spools, wire is fed across to that part of the machine where a twist above each louver clinches it permanently at the 17° angle that gives KoolShade the greatest possible sun shading efficiency. Two spools work together on a hanger, synchronized perfectly to keep a steady flow of wire moving forward. All 294 wires are held under an identical steady pull, an important factor in keeping KoolShade always uniform.

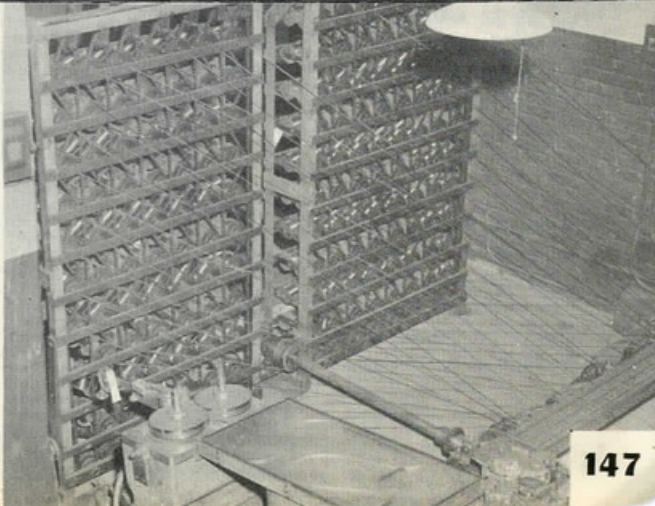


KOOLSHADE FABRIC IS EVOLVED

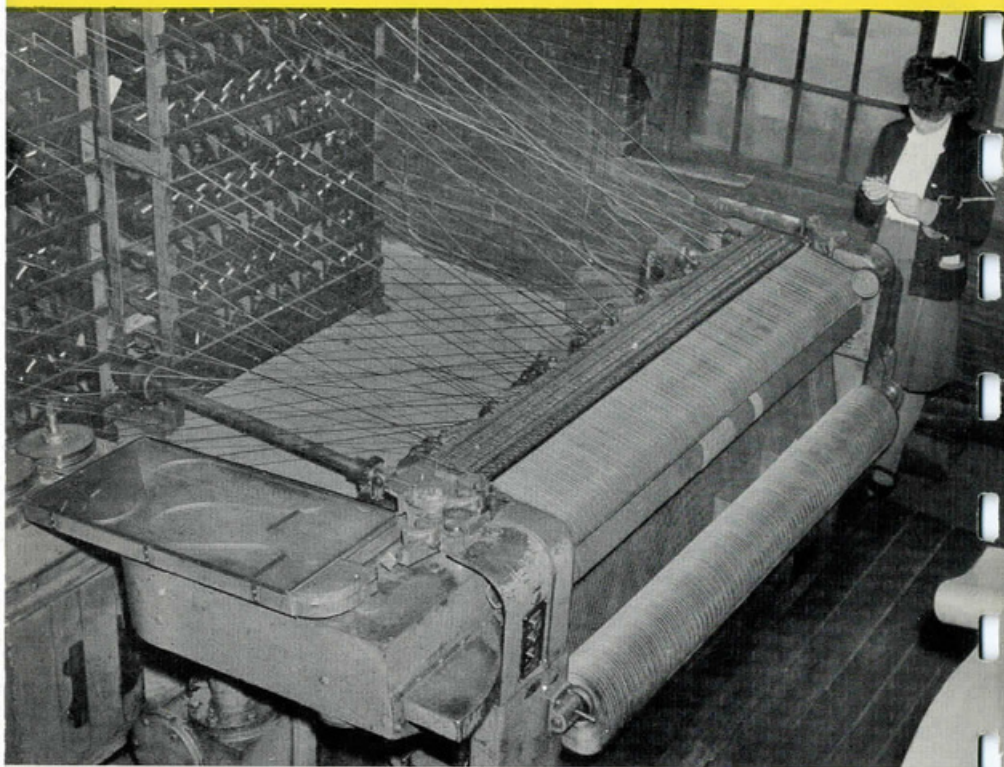


Note how the operators continuously check all adjustments to keep an even flow of wire through the machine.

Here is the battery of spools that feed each KoolShade machine. They feed across to form a giant metallic cobweb.

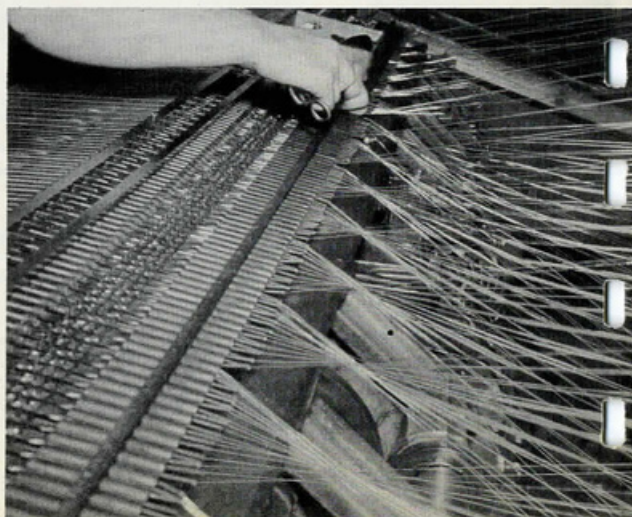


IN THE FLICK OF AN EYE PERMANENTLY SETTING



▲
Note the plate in the foreground on which a flattened length of wire is coiled—this louver is ready to be whipped across into position.

Here is a close-up of the wires from the spools pulled into the exact position necessary to twist around each bronze louver setting it at a 17° angle. ▶

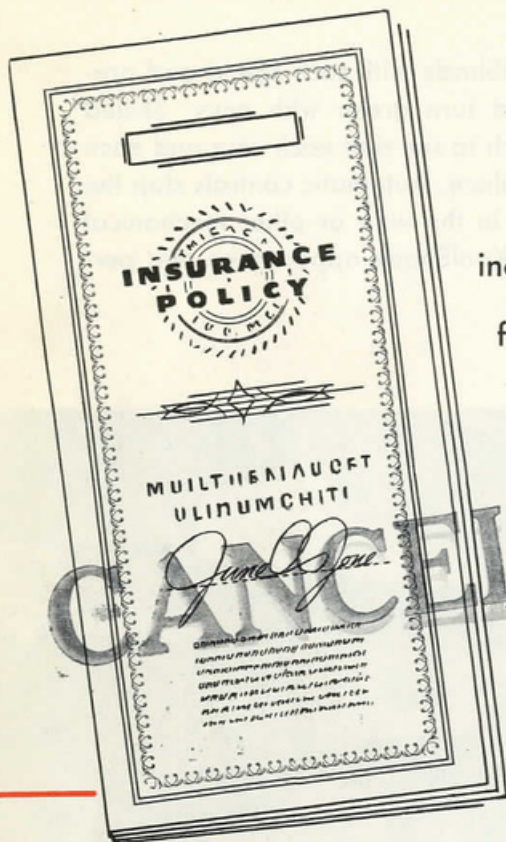


294 WIRES TWIST TIGHT EACH BRONZE LOUVER

These machines spin out KoolShade with such speed and precision that any spider would turn green with envy. Skilled operators keep constant watch to see that each wire and each louver is perfectly spun into place. Automatic controls stop the machine in case of a break in the wire or other mechanical difficulties. The result is that KoolShade appearance and performance never varies.



YOUR KOOLSHADE IN INEXPENSIVE



**DIRECT ALL APPLICATIONS TO:
MOORE, CASE, LYMAN AND HUBBARD**

**Insurance Exchange Building
CHICAGO, ILLINOIS**

Attention: MR. JOHN W. COFFIN

\$1.00 per \$100.00 value
gives you full protection
including accidental damage
for 3 years or on a yearly
basis the cost is 40c
per \$100.00 value.

Against all hazards except
accidental damage the
cost is only 68c per
\$100.00

value for 3
years
coverage
or 25c per
\$100.00 value

on a yearly basis.

STALLATION CAN BE LY INSURED

Against . . .

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FIRE

LIGHTNING

WINDSTORM

CYCLONE

TORNADO

HAIL

EXPLOSION

RIOT

RIOT ATTENDING A STRIKE

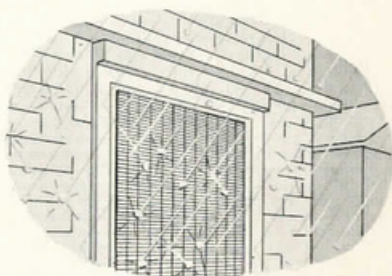
AIRCRAFT

VEHICLES

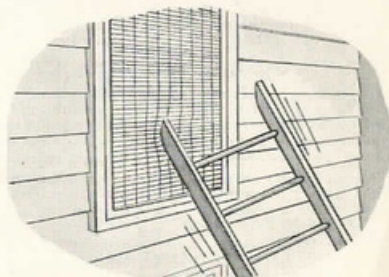
SMOKE

MALICIOUS DAMAGE

SABOTAGE



CANCELLED



NOTES

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NOTES



Remember - It's Cooler in the Shade

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Ingersoll

**KOOLSHADE STORM-SHADE DIVISION
BORG-WARNER CORPORATION**

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