



# Scotchlite™

## “Flat-Top” Wide Angle Reflective Engineer Grade Sheeting

### Description

3M™ Scotchlite™ “Flat-Top” Wide Angle Reflective Engineer Grade Sheeting is a highly durable, adhesive coated opaque sheeting. Engineer Grade Sheeting remains brilliantly reflective even when totally wet by rain. It also retains its reflectivity when viewed at wide entrance angles. *These materials are for use as industrial signing materials only and are not warranted for use on vehicles.*

Sheeting series 5200 is designed for the production of small signs and markings which may require application at low temperatures and for applications to moderately rough surfaces. Sheeting series 5200 is not intended to be used for large signs.

3M Commercial Graphics Division products are not tested against automotive manufacturers’ specifications and are therefore not warranted for use in fabricating graphics for automotive OEM’s.

This bulletin does not contain printing or application procedures for the subject product. The appropriate Instruction Bulletin(s) may be obtained by submitting the form supplied with the product or by contacting your local 3M sales representative.

Property	Series 2200	Series 3200	Series 5200
Colors	2271 Yellow 2272 Red 2275 Blue 2277 Green 2279 Brown 2290 White	3271 Yellow 3272 Red 3275 Blue 3277 Green 3279 Brown 3290 White	5271 Yellow 5272 Red 5277 Green 5290 White
Adhesive	Heat activated	Pressure sensitive	High tack pressure sensitive
Minimum application temperature	Vacuum applicator 220°C for 1 minute	65°F (18°C)	-10°F (-27°C)
Substrates	Flat surfaces only (all sheetings)		

### Effective Performance Life

When printed and applied in accordance with 3M recommended procedures, the following performance may be expected. Performance statements are based upon representative experience obtained from exposure tests conducted throughout the United States; however, actual performance will be determined by substrate selection and preparation, exposure conditions, and maintenance.

Exceptions to vertical exposure durability statement are:

- Sheeting screen printed with orange 706, gold color 709, and yellow 714 will have a performance life of four years.  
 Sheeting screen printed with orange 716 or brown 717 will have a performance life of five years.
- Due to climatic conditions, some cracking may be experienced on signs exposed in the northern United States where temperatures drop below 0 degrees F (-18 degrees C).
- The warranty applies to sheetings that are exposed at a vertical angle (defined as 90 ± 10 degrees). A significant decrease in durability may be experienced if sheetings are exposed other than vertical. Such non-vertical applications must be on a test and approval basis to determine acceptability. 3M does not warrant non-vertical exposures.

### Vertical Exposure

Product Number	Industrial Signing	
	Unprinted	Printed
2271, 2272, 2275, 2277, 2279, 2290,	7 yrs	7 yrs
3271, 3272, 3275, 3277, 3279, 3290,	7 yrs	7 yrs
5290, 5271, 5272, 5277	3 yrs	3 yrs

## Fabrication

### Screen Printing

3M™ Scotchlite™ Transparent Screen Printing Ink Series 700

### Overprint Clear

Not recommended

## Physical Properties

Values given are typical and are not intended for use in specifications. If a specification is desired, a custom specification will be prepared. Any requests for a specification should be submitted through your local 3M sales representative or distributor. Actual test methods will be supplied to anyone submitting a written request to 3M at the address given in this bulletin.

### Minimum Coefficient of Retroreflection (Candelas/Foot Candle/Square Foot)

Observation Angle*	Entrance Angle**	White	Yellow	Red	Green	Blue	Brown
0.2	-4	70	50	14.5	9.0	4.0	2.0
0.2	+30	30	22	6.0	3.5	1.7	1.0
0.5	-4	30	25	7.5	4.5	2.0	1.0
0.5	+30	15	13	3.0	2.0	0.8	0.5

Reflectivity conforms to Federal Specification FP-85 Table 718-3A and L-S-300C Table III Reflectivity 1.

\*Observation Angle - The angle formed by the light beam striking the reflective surface and the light beam returning to the observer. (From 800 feet, a motorist normally views an emblem or marking at approximately a 0.2 degree observation angle.)

\*\*Entrance Angle - The angle formed by a light beam striking a surface at a point and a line perpendicular to the surface at that same point.

### Physical Properties

Property	English Units	Metric Units
Average thickness	.007 inch	0.18mm
Adhesion	5 lb./in. at 77°F	0.9 kg/cm at 25°C
Dimensional stability	1/64 inch	0.4mm
Applied performance range	-30° to + 200°F	-34° to + 93°C
Opaque	Opaque	

## Reflective Brilliance

The brilliance values of Scotchlite engineer grade sheeting are tabulated below in terms of minimum candlepower per foot candle per square foot (candelas/lux/square meter).

The figures are minimum brightness values. The sheeting will have a brilliance of at least 90 percent of these values when totally wet by rain. To assure uniform day and night appearance and brilliance, multiple pieces of sheeting used together as a set should be matched.

## Shelf Life

The shelf life of the sheeting is 2 years and should be applied within 2 years of the receipt of the sheeting if unprocessed. Processed sheeting should be applied within 1 year of processing and within 2 years of receipt of the sheeting.

Note: Markings clear coated with 4430R and premasked must be stored at temperatures below 85 degrees F (30 degrees C). If stored above this temperature, blocking of the premask to the sheeting will occur.

## 3M Related Literature

Listed below is related 3M Technical Literature that may be of interest.

Subject	Instruction Bulletins
Design of markings	2.1
Scotchlite ink series 700	3.7
Scoring and cutting	4.1
Premasking and prespacing	4.3
Surface preparation	5.1, 5.2
Application	5.5
Storage, maintenance and removal	6.5
Warranty Of Products Bulletin	

## For Further Assistance

Call or write for 3M Commercial Graphics Division product information or assistance.

In the United States:

**3M Commercial Graphics Division**

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General inquiries: 1-800-374-6772

General fax: 1-651-736-4233

<http://www.3M.com/imagegraphics>

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**3M Canada**

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