



## Scotchlite™

### Silver Graphic Transfer Film System

Technical Data Sheet

August 1998

#### Description

3M™ Scotchlite™ Reflective Material - 5720 Silver Graphic Transfer Film (with polyester liner), or 3M™ Scotchlite™ Reflective Material - 5721 Silver Graphic Transfer Film (with paper liner) and 3M™ 571K Ink Kit form a system to make silver reflective transfer graphics by screen printing and heat lamination.

3M 571K ink kit contains 3M™ 571P Ink and 3M™ 571N Coupler.

#### Retroreflective Performance

The coefficient of retroreflection ( $R_A$ ) is measured by methods traceable to either of the following retroreflective intensity testing procedures:

- ASTM E809 and E810 ( $R_A$ )
- CIE 54: 1982 ( $R'$ )

The  $R_A$  values were measured at the listed specific entrance and observation angles.

Entrance angle	Observation angle	Typical $R_A$	Minimum $R_A$
-4.0°	0.2°	500	330

#### Color

Product Number	Daytime Color	Reflected Color
5720	Silver	White
5721	Silver	White

#### Performance

While use of 3M™ Scotchlite™ Reflective Material enhances visibility, no reflective material can guarantee absolute visibility, particularly in adverse weather conditions.

Reflective transfers made and applied per 3M recommendations will typically retain reflectivity and aesthetic appeal for the life of the garment. Performance will vary depending upon actual use, exposure conditions and maintenance. Users should test reflective material to satisfy conformance to their own requirements.

#### Preparation and Application Instructions

**Screen Fabric:** Polyester monofilament, mesh count 110-157 T/inch (43-62 T/cm)

**Blockout:** Use an emulsion designed for plastisol ink.

**Thinning:** The mixed ink will thicken when not in use, but will regain printing viscosity when mixed or applied to the screen and printed.

**Clean-Up:** Use mineral spirits or other recommended solvents for plastisol clean-up. Follow all manufacturer's use recommendations.

#### Adhesive System Mixing Instructions

##### For 3M 571K ink kit

Use plastic containers and mixing utensils. For best results, use mixed adhesive within one hour of mixing (two hour maximum). Thoroughly mix the adhesive components per the following ratio (by weight):

- 3M 571P ink                      100 parts
- 3M 571N coupler                4 parts

For optimum wash durability, 3M™ 571N Coupler must be 3.8% to 6% of the total mixture. Amounts of coupler less than 1% and greater than 7% will result in poor wash performance. When not in use, keep ink and coupler in closed containers.

**Coverage:** Approximately 675 square feet

### Printing

A semiautomatic flat bed press with a medium to hard square profile squeegee is recommended for uniform and consistent printing.

1. Position 3M™ Scotchlite™ Reflective Material - 5720 Silver Graphic Transfer Film or 3M™ Scotchlite™ Reflective Material - 5721 Silver Graphic Transfer Film on the vacuum printing station with the glass bead side up (liner side down).
2. Adjust the flood knife so it applies a thin, uniform layer of ink without damaging the emulsion.
3. Set equipment so that the fill pass takes place immediately before the printing pass.
4. For best results, apply ink such that gelled thickness is 3 mils.

### Gelling

Mixed ink will not dry at room temperature. For best results and handling, the printed image must be gelled using an oven immediately following printing. A correctly gelled transfer will be smooth with a slightly rubbery feel.

1. Use a belt-type screen printing oven with either infrared (IR) or forced-air heat source.

2. Adjust belt speed and oven temperature so that the gelled image will not smear when touched and has a smooth, rubbery feel. The image should not look wet or have a halo around it (under-gelled). Oven condition guidelines: belt temperature of 200°F to 250°F and a dwell time of 30 to 45 seconds.

3. The gelled transfers may be stacked only **after** they have cooled to room temperature.

### Lamination

Work on a flat surface where uniform heat and pressure can be applied. Avoid applying transfer over seams and stitches.

1. Place ink side down on fabric (substrate) and apply heat and pressure as described below.
2. Allow application to cool (room temperature) before removing the transfer liner. Place laminated fabric on a flat surface and remove the liner by lifting one corner and pulling (about 45° angle) in a continuous, smooth manner.

**Note:** Do not exceed lamination temperatures of 375°F (190°C) because the transfer liner may become difficult to remove. If high temperatures are required for bond durability, follow lamination steps at the recommended conditions, and then relaminate at the higher temperature (use a non-stick slip sheet to protect the image).

The following recommendation is a general guideline for **heat press lamination**. The proper temperature/pressure/time conditions must be tested for each fabric to assure adequate adhesion. 3M™ Scotchlite™ Reflective Material - Silver Graphic Transfer Film System is designed for use on cotton, polyester and cotton/polyester blends. Many fabrics can

be used as lamination substrates, however, nylons and fabrics treated with a durable water repellent (DWR) finish are difficult to adhere to and are not recommended.

Temperature	Dwell Time	Pressure
330-350°F (165-175°C)	15-20 seconds	Firm (30-40 psi line pressure)

**Care and Maintenance Instructions**

**Important:** Test each application according to appropriate care instructions required for the finished product. Actual life of the applied graphic transfer made with the 3M™ Scotchlite™ Reflective Material - Silver Graphic Transfer Film System depends on cleaning method and wear conditions.

**Wash:** Machine wash warm, 40°C (105°F)



**Bleach:** Only non-chlorine bleach when needed



**Dry:** Tumble dry low



**Iron:** Use cool iron, 110°C (230°F)



**Dry-clean:** Dry-clean, normal cycle. **Note:** repeated drycleaning will make transfer stiff



**Product Availability**

3M™ Scotchlite™ Reflective Material - 5720 Silver Graphic Transfer Film and 3M™ Scotchlite™ Reflective Material - 5721 Silver Graphic Transfer Film are available in the following standard roll and sheet sizes:

Units	Size	Quantity
Sheet	20 x 24 in	100 sheets
Sheet	70 cm x 100 cm	100 sheets
Roll	12 in x 100 yd	1 roll
Roll	16 in x 100 yd	1 roll
Roll	24 in x 100 yd	1 roll

3M™ 571K Ink Kit contains 1 gallon 3M™ 571P Ink and two bottles (125 grams each) 3M™ 571N Coupler.

Scotchlite reflective material - silver graphic transfer film system components are all available separately.

**Order and Product Information**

To order 3M™ Scotchlite™ Reflective Material Products contact 3M Personal Safety Products Department Customer Service at 800-328-7098 Ext. 2.

**Storage and Shelf Life**

Store in a cool (4°-32°C, 40°-90°F), dry area and use within one year after date of receipt. Store rolls and sheets in their original shipping cartons. Return partially used rolls to the carton or suspend horizontally through the core. Cut sheets should be stored flat.

Store unmixed 3M 571P ink and 3M 571N coupler in original shipping container with airtight lid.

**Important Notice to Purchaser:**

3M makes the following limited warranty in place of any others, express or implied, including any implied warranties of MERCHANTABILITY or fitness for a particular purpose or any implied warranty commonly found in the industry: 3M shall replace or, at its option, refund the price paid for any 3M™ Scotchlite™ Reflective Material or other 3M reflective products ("Products") which at the time of shipment to 3M's purchaser do not meet 3M's published Product specifications.

Because of the unlimited variety of potential applications for Products, BEFORE production use, the converter or end product manufacturer must determine that the Products are suitable for the intended use and are compatible with other component materials. Purchaser is solely responsible for determining the proper amount and placement of Products. While reflective Products enhance visibility, no reflective product can ensure visibility or safety under all possible conditions. **Neither 3M nor any 3M authorized converter shall be liable for any incidental, special, or consequential damages relating to the use or inability to use the Products regardless of legal theory asserted.**



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