



Technical Bulletin

March 16, 2017

Technical Bulletin #254 3M™ Scotchlite™ Reflective Material – C790 Carbon Black Stretch Transfer Film

Laminating Conditions Guide

3M™ Scotchlite™ Reflective Material – C790 Carbon Black Stretch Transfer Film is designed to be used at temperatures lower than typically used for other Scotchlite transfer films. This fact, plus its four-way stretchability, enables its use on a wider range of fabrics, including those that are sensitive to heat such as polyurethane and spandex.

This bulletin provides additional details concerning the new range of laminating and process conditions for this product.

Below is a comparison of the lamination temperatures among our consumer solutions products, along with instructions:

3M™ Scotchlite™ Reflective Material			
Lamination Conditions	C725 Silver	C750 Silver	C790 Carbon Black
Temperature	165 °C to 190 °C (325 °F to 375 °F)	165 °C to 177 °C (325 °F to 350 °F)	120 °C to 130 °C (250 °F to 265 °F)
Time	10-20 seconds	10-20 seconds	20-25 seconds

- 1) Platen press lamination for logos and other pieces (approximate conditions):
 - a) Temperature range: 120 °C to 130 °C (250 °F to 265 °F)
 - b) Pressure: 2 to 3 kgf/cm² (30 to 45 psi)
 - c) Time: 20 to 25 sec
 - d) One-step heat transfer is recommended. Re-heating the laminated film after removal of the liner may have adverse effects on its bonding strength or stretchability.

- 2) Continuous lamination for piping, webbing etc. (approximate conditions):
 - a) Temperature range: 120 °C to 130 °C (250 °F to 265 °F)
 - b) Nip pressure: 2 to 3 kgf/cm² (30 to 45 psi)
 - c) Line speed: Not faster than 3 meters/minute (10 ft/min)
- 3) The following procedure helps to optimize the lamination conditions for each fabric:
 - a) Test several different lamination conditions in the recommended range (e.g. vary the temperature and time) on a sample of each fabric.
 - b) Wash the sample according to test method provided by the specifier.
 - c) Examine the washed sample and if you see:
 - i) Cracking: Reduce lamination temperature/pressure setting.
 - ii) Delamination or edge lifting: increase lamination temperature/pressure setting.
- 4) If the adhesive begins oozing out from the film's edge during the heat lamination, then the lamination temperature and/or pressure should be reduced.
- 5) In accordance with good manufacturing practices, 3M recommends that all customers:
 - a) Establish an ongoing quality system which includes maintaining lot/roll identification throughout the garment production process.

- b) Implement continuous testing throughout their production and on their finished garments that reflects their garment needs. This includes wash testing.
 - c) Periodically check their lamination equipment to ensure that the temperature set point matches the platen or roll temperature and that the temperature is uniform across the lamination area.
- 6) 3M™ Scotchlite™ Reflective Materials can adhere to many fabrics. However, some fabrics such as nylons and those treated with a durable water repellent (DWR) finish can be difficult to adhere to. For the best adhesion in these cases, sewing is recommended by using 3M™ Scotchlite™ Reflective Material – Fabric.

When transfer films are used, continuous testing should be done to ensure acceptable adhesion is maintained as input materials may vary. For specific application assistance, contact 3M Technical Service.

- 7) 3M™ Scotchlite™ Reflective Material – C790 Carbon Black Stretch Transfer Film has excellent 4-way stretch on many fabrics. On extremely stretchable fabrics, we recommend wash testing to ensure that appearance is acceptable prior to production, especially for those with very low tensile strength.

Please refer to our website, Scotchlite.com, for new or updated technical bulletins and technical data sheet.

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Personal Safety Division
3M Center, Building 0235-02-F-06
St. Paul, MN 55144-1000
800-328-7098
Scotchlite.com

3M Canada
P.O. Box 5757
London, Ontario, Canada N6A 4T1
800-267-4414

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