



Scotchcal™

High Performance Graphics

Product Bulletin 1-4

June 1997

Replaces PB 1-4 dated August 1993

GLOBAL OEM USE

General Description

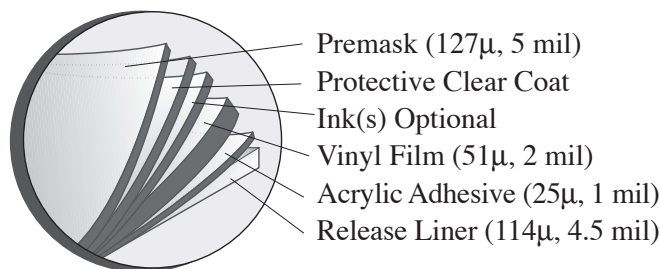
3M™ Scotchcal™ High Performance Graphics provide attractiveness and durability for vehicle identification and surface enhancement. The film material consists of durable PVC with a pressure-sensitive acrylic adhesive for easy installation. The range of colors and textures allows you to accurately match your color coding.

Typical areas for application of Scotchcal film involve the hood, side panels, fender, quarter panels and deck lid. The film may also be used on a rooftop application and wheel rims.

Other applications include door pillar posts, metal molding inserts and taillight bezels. Scotchcal high performance graphics may also be laminated to plastic moldings.

Scotchcal high performance graphics are resistant to solvents, fuels and prolonged ultraviolet exposure. These films can be used on a variety of surfaces to provide lasting protection, while giving your vehicle high visibility.

Product Construction



Performance Properties

Performance tests are run using 3M DCC 654 A specification test procedures. This specification was developed to allow incorporation of many OEM test requirements under one specification. It is utilized during product development and offered as a potential specification example. The values are presented as typical values not to be used for specification purposes.

Product Bulletin 1-4

Page 2

Film Performance	Non-metallic film with ink & high performance Clear Coat	Transparent film with ink & high performance Clear Coat	Metallic film with ink & high performance Clear Coat
Elongation	143%	110%	52%
Aged elongation	99%	105%	42%
X-Gash shrinkage (<76 mm)	Pass	Pass	Pass
Taber 200 cycles, 500 g weight	Pass	Pass	Pass
Acid resistance	Pass	Pass	Pass
Fuel resistance 60/40 Isooctane/toluene	Pass	Pass	Pass

Adhesive Performance	180° Peel Adhesion on High Solids Basecoat/Clear Coat Finish		
Initial (20-30 min) N/m (lb/in)	490 (2.8)	753 (4.3)	683 (3.9)
72 hrs at 22°C (70°F) N/m (lb/in)	665 (3.8)	1086 (6.2)	1051 (6.0)
7 days at 30°C (86°F) N/m (lb/in)	946 (5.4)	788 (4.5)	578 (3.3)
7 days at 38°C (100°F) and 100% RH N/m (lb/in)	700 (4.0)	1121 (6.4)	876 (5.0)
Cycle 144 hrs. at 80°C (178°F) and 130 hrs at 38°C (100°F) and 100% RH, 48 hrs at -30°C (-20°F)	823 (4.7)	1611 (9.2)	963 (5.5)

Environmental Exposure	Non-metallic film with ink & high performance clear coat	Transparent film with ink & high performance clear coat	Metallic film with ink & high performance clear coat
Florida - 2 year, 5° exposure angle, unbacked exposing both front & back of test panel	No noticeable change from control	No noticeable change from control	No noticeable change from control
Arizona - 2 year, 45° exposure angle, unbacked exposing both front & back of test panel	No noticeable change from control	No noticeable change from control	No noticeable change from control

Solvent Resistance	A.A.T.C.C. - Test Method 8-1972		
Windshield washer solvent	Pass	Pass	Pass
Diesel fuel	Pass	Pass	Pass
Motor oil	Pass	Pass	Pass
Antifreeze	Pass	Pass	Pass
Car wash detergent	Pass	Pass	Pass

Application Instructions	<u>Application Tools</u>	<u>3M Part Number</u>
Materials Needed	Gold squeegee	PA-1
	Low friction squeegee sleeve	SA-1
	Air release tool barrel	391x
	Air release tool pin	392x
	VM & P Naptha	
	Lint free cloth	
	Heat gun	

Surface Preparation Ensure application surfaces are smooth and free of paint imperfections such as pits, projections or any other contaminants.

Operators should thoroughly clean the application surface using a clean, lint-free cloth and a solvent such as naptha or isopropyl alcohol; wet solvent wipe should be immediately followed by a dry wipe using a clean lint-free cloth. Do not allow surface recontamination prior to graphic application. The use of detergent and water or isopropyl alcohol and water may be necessary to assist in the application.

Liner Removal Remove the backing paper (liner) by sharply bending the graphic edge towards the face of the graphic using the ball of the thumb or fingernail. The sharp bend at the edge will cause the liner to break away from the graphic adhesive. Remove the liner at a 180° angle exposing the adhesive area. Care should be taken to avoid contaminating the exposed graphic adhesive.

Application Procedure Utilizing designed locators, position the graphic in the desired location. Using a squeegee (3M PA-1) press the graphic to the vehicle surface contacting all areas of the graphic surface using overlapping strokes.

Product Bulletin 1-4

Page 4

Premask Removal Remove the premask (application tape) at 180° angle to the graphic design. Use a slow constant speed, taking care to avoid pulling against graphic areas containing point or sharp corners.

Inspection Inspect graphic for loose edges and bubbles. Squeegee again all graphic edges using a squeegee covered with a low friction sleeve (SA-1). Pierce bubbles using an air release tool at the bubble edge forcing entrapped air out with the sleeve-covered squeegee.

Specific Part Application As there are numerous application surfaces and graphic designs and constructions, it may be necessary to develop specific application instructions that address techniques and methods.

Application Temperatures Optimum application surface and part storage temperatures range from 10°C - 32°C (50°F - 90°F) for 3M graphics.

Important Notice to Purchaser: All statements, technical information and recommendations herein are based on tests 3M believes to be reliable. 3M does not warrant or guarantee the accuracy or completeness of this information. UNLESS SPECIFICALLY STATED OTHERWISE, THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE: seller's and manufacturer's only obligation shall be to replace such quantity of the 3M product proved to be defective. Before using, user shall determine the suitability of the 3M product for its intended use, and user shall assume all risk and liability whatsoever in connection therewith. NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE, IN TORT, CONTRACT OR UNDER ANY OTHER LEGAL THEORY, FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL, OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, OR REVENUES) ARISING OUT OF THE USE OF OR THE INABILITY TO USE OR IN ANY OTHER WAY RELATED TO THE PRODUCT. No statement or recommendation not contained herein shall have any force or effect unless contained in an agreement signed by officers of seller and manufacturer.



Automotive Division

3M Center, Building 223-1S-02
St. Paul, MN 55144-1000

Recycled Paper

40% Post-consumer waste paper
10% Pre-consumer waste paper

Printed in U.S.A. 7092
© 3M 1997 75-3469-1071-6