Gripping Material

Pressure Sensitive Adhesive (PSA)-backed 3M™ Gripping Material

- **GM614 (Ultra Soft)**
- **GM631 (Very Soft)**
- **GM641 (Soft)**
- **GM531 (Soft Firm)**
- **GM400 (Firm)**

Preliminary Technical Data & Application Guide **March 2014**

Product Description

3M™ Gripping Material utilizes 3M's proprietary micro-replication technology to create a high-friction surface which can enhance grip and reduce slippage. These Pressure Sensitive Adhesive (PSA) versions of 3M™ Gripping Materials are constructed using a thin flexible fabric backing laminated to an acrylic PSA which is designed to bond to a wide variety of surfaces; including low surface energy substrates. These products all utilize the same 300LSE PSA which allows the Gripping Materials to be easily applied using a peel and stick application. 3M™ Gripping Material products are designed to be used alone, or as a two- part mated system. When used alone (on a single surface), the soft 3M™ Gripping Materials provide a strong secure grip. When used as a two-part mated system, for example, on a glove and handle bar, grip strength is maximized. As firmly as 3M™ Gripping Material holds, it releases just as easily.

Product Construction

Product	Color	Standard Roll Width	Standard Roll Length
3M™ Gripping Material – PSA backed	Black: GM400, GM531 & GM641; Grey: GM631 & GM614	1.0 and 24 inches (2.54, 61 cm)	36 yards (32.9 m), 72 yards (65.8 m)

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Typical Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Property		3M™ Gripping Material				
		GM614	GM631	GM641	GM531	GM400
Weight - oz/yd² (g/m²) – without liner		16.8 (568)	16.8 (568)	16.8 (568)	16.1 (544)	14.8 (502)
Thickness - mils (mm) – without liner		38 (0.97)	38 (0.97)	38 (0.97)	36 (0.91)	32 (0.81)
Gripping Polymer Hardness (Shore A) ASTM D2240		13	30	40	59	73
Coefficient of Friction (COF): ASTM D1894 Grip to Grip System[1] – Dry / Wet Grip to Synthetic Classic Leather[2] – Dry / Wet		 2.9 / 2.5 2.0 / 1.4	 1.7 / 1.5 1.8 / 1.3	 2.6 / 2.1 1.9 / 1.3	 2.3 / 2.0 1.2 / 1.1	 2.9 / 1.6 1.3 / 1.1
Abrasion Resistance: ASTM D3389 (H18, 500g load) Wear through – revolutions Wear rate – mg/revolution		 400 0.50	 1300 0.38	 3000 0.21	 5000 0.11	 >10,000 0.02
Tensile Strength without adhesive: ASTM D5035 - lbf/inch (N/cm)	MD* CD*	23.8 (41.6) 33.9 (59.4)	24.4 (42.7) 28.5 (49.8)	23.7 (41.5) 28.1 (49.3)	28.5 (49.9) 32.1 (56.2)	17.0 (29.8) 17.2 (30.2)
Elongation at Break without adhesive: ASTM D5035 - % Elongation	MD* CD*	57 129	56 94	55 101	50 130	23 28
Tear Resistance without adhesive: ASTM D5734 - lb (N)	MD* CD*	2.9 (13.2) 3.2 (14.5)	2.4 (10.8) 3.0 (13.6)	2.3 (10.4) 2.8 (12.7)	1.6 (7.1) 1.5 (6.7)	1.1 (4.9) 2.3 (10.6)

[1]COF of 3M™ Gripping Material to itself.

[2]Synthetic Nassimi Classic Faux Leather (Vinyl)

*MD: machine direction, *CD: cross direction.

Features

- Composed of tough, durable Thermoplastic Urethane (GM400 and GM531) or Thermoplastic Elastomer (GM614, GM631 and GM641) **Note:** GM614, GM631 and GM641 contain mineral oil which can migrate out of the product under some conditions
- The 3M™ Gripping Materials contain 3,000 stems or 'tiny fingers' per square inch to provide excellent grip performance in both wet and dry conditions
- Stems can provide a cushioned feel for many applications
- Good abrasion resistance
- Reinforced with polyester knit (GM614, GM631, GM641, GM531) or polyester scrim fabric (GM400)
- Wide useable temperature range: -40°F to 140°F (-40°C to 60°C) (Dependent upon the particular application)

Application Ideas

When used to spiral wrap a handle, it is recommended that electrical tape be used to finish off the ends of the wrap. This helps the wrap look great and prevents ends from lifting during use.

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Application Techniques	For maximum bond strength, the substrates surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane and isopropyl alcohol. Test the substrate surface to ensure the solvents clean the surface properly and do not harm the surface. Carefully read and follow the manufacturer's precautions and directions for use when using cleaning solvents. This cleaning recommendation may not be compliant with the rules of certain Air Quality Management Districts in California; consult applicable rules before use. Ideal tape temperature application range is 70°F to 100°F (21°C to 38°C). Application to substrate surfaces that are below 50°C is not recommended because the adhesive can become too firm to adhere readily. Once properly adhered, low temperature holding is generally satisfactory. Firm, even pressure should be used when applying 3M™ Gripping Material to ensure good adhesion between the substrate and adhesive. Minimum tension should be used to avoid stretching and distortion of the product. In some applications, a roller may be used to apply the 3M™ Gripping Material, but care must be taken to ensure that this does not damage the stems of the 3M™ Gripping Material. 3M™ Gripping Material will bond on contact, so parts can be handled immediately. Once applied, adhesive bond strength will continue to increase with time, pressure, and temperature. At room temperature, approximately 50% of the ultimate strength will be achieved after 20 minutes, 90% after 24 hours, and 100% after 72 hours. Bond strength can be improved with firm application pressure and moderate heat, from 100°F (38°C) to 130°F (54°C), which causes the adhesive to develop improved contact with the substrate surface. Abrasion of the substrate surface and / or the use of 3M Primers / Adhesion Promoters such as 3M™ Primer 94 and 3M™ Adhesion Promoter 111 can also be used. Consult the Technical Data Sheets for these and other 3M Primers / Adhesion Promoters for additional information.
Converting	Pressure Sensitive Adhesive backed 3M™ Gripping Materials can be shear cut, die-cut, or converted by other applicable methods. Minimum tension should be used to avoid stretching and distortion of the product. Avoid direct contact with heated processing surfaces, in excess of 160°F (71°C), for prolonged periods of time.
Care & Maintenance	3M™ Gripping Materials can be hand washed with mild detergent in cool to warm water. Surface contamination – lint or other debris – can be easily removed with Scotch® Tape, Scotch® Lint Roller and Scotch® Lint Sheets, or other lint removing mechanisms.
Storage	Store under normal conditions of 60° to 80°F (16° to 27°C) and 40% to 60% Relative Humidity in the original carton.
Shelf Life	To obtain best performance, use this product within 18 months from date of manufacture.

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Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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ISO 9001

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

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Printed in U.S.A.
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