



**3M** Science.  
Applied to Life.™

# Technical Data Sheet

## 3M™ VHB™ Tape - Specialty

### Product Description

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3M™ VHB™ Tape 4646 is a 0.025 inch (0.6 mm) thick dark gray double coated acrylic foam adhesive. It bonds to a broad range of high surface energy substrates including metals, glass and elastomers. It offers high temperature resistance. 3M™ VHB™ Tape 4646 is part of the 4611 tape family. Each

### Product Features

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- Fast and easy-to-use permanent bonding method provides high strength and long-term performance
- Virtually invisible fastening keeps surfaces smooth
- Can replace mechanical fasteners (rivets, welds, screws) or liquid adhesives
- Dark gray, 0.025 in (0.6 mm), general purpose adhesive with firm foam has added features
- Eliminate drilling, grinding, refinishing, screwing, welding and associated clean-up
- Creates a permanent seal against water, moisture and more
- Pressure sensitive adhesive bonds on contact to provide immediate handling strength
- Allows the use of thinner, lighter weight and dissimilar materials

Total Tape Thickness (mil) 25 mil

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Test Method: ASTM D3652

Total Tape Thickness (mm) 0.6 mm

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Test Method: ASTM D3652

Total Tape Thickness 0.025 in

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Test Method: ASTM D3652

Thickness Tolerance ±15 %

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Density 840 kg/m<sup>3</sup>

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Test Method: ASTM D3574

Notes: Foam with adhesive

Density 52 lb/ft<sup>3</sup>

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Dwell/Cure Time: 72.0

Dwell Time Units: hr

Temp C: 23C

Temp F: 73F

Substrate: Aluminum

Notes: 1 in.<sup>2</sup> (6.45 cm<sup>2</sup>), Jaw Speed 2 in./min. (50 mm/min.)

Normal Tensile

100 lb/in<sup>2</sup>

Test Method: ASTM D897

Dwell/Cure Time: 72.0

Dwell Time Units: hr

Temp C: 23C

Temp F: 73F

Substrate: Aluminum

Notes: 1 in.<sup>2</sup> (6.45 cm<sup>2</sup>), Jaw Speed 2 in./min. (50 mm/min.)

Overlap Shear Strength

550 kPa

Test Method: ASTM D1002

Notes: 1 in.<sup>2</sup> (6.45 cm<sup>2</sup>), Jaw Speed 0.5 in/min (12.7 mm/min)

Overlap Shear Strength

80 lb/in<sup>2</sup>

Test Method: ASTM D1002

Notes: 1 in.<sup>2</sup> (6.45 cm<sup>2</sup>), Jaw Speed 0.5 in/min (12.7 mm/min)

Test Method: ASTM D3654

Temp C: 66C

Temp F: 150F

Substrate: Stainless Steel

Notes: Tested at various temperatures and gram loadings. 0.5 in<sup>2</sup> (3.23 cm<sup>2</sup>). Will hold

Static Shear

750 g

Test Method: ASTM D3654

Temp C: 93C

Temp F: 200F

Substrate: Stainless Steel

Notes: Tested at various temperatures and gram loadings. 0.5 in<sup>2</sup> (3.23 cm<sup>2</sup>). Will hold

Static Shear 121C Stainless Steel

750 g

Test Method: ASTM D3654

Temp C: 121C

Temp F: 250F

Substrate: Stainless Steel

Notes: Tested at various temperatures and gram loadings. 0.5 in<sup>2</sup> (3.23 cm<sup>2</sup>). Will hold

Static Shear 177C Stainless Steel

750 g

Test Method: ASTM D3654

Normal Slitting Tolerance

±0.79 mm

Normal Slitting Tolerance

±1/32 in

Core Size (ID)

76.2 mm

Core Size (ID)

3 in

Available Sizes

UL 746C Listings

Solvent and Fuel Resistance

Additional Performance Characteristics

Property

Values

Dissipation Factor 1MHz

See 3M™ VHB™ Tape 4611

Test Method: ASTM D150

Temp C: 23C

Temp F: 72F

Dielectric Strength

See 3M™ VHB™ Tape 4611 V/

Test Method: ASTM D140

Thermal Conductivity

See 3M™ VHB™ Tape 4611 W

Volume Resistivity

See 3M™ VHB™ Tape 4611 Ω-

Test Method: ASTM D257

Temp C: 23C

Temp F: 73F

Surface Resistivity

See 3M™ VHB™ Tape 4611 Ω

Test Method: ASTM D257

UL 879 (File E65361)

## Bottom Matter

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3M

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## Trademarks

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3M and VHB are trademarks of 3M Company

## Automotive Disclaimer

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Automotive Applications: This product is an industrial product and has not been designed for use in automotive electric powertrain battery or high voltage applications. This product does not meet the requirements of IATF 16949 or VDA 6.3. This product may not be manufactured in an IATF certified facility or through an automotive production part approval process (PPAP). Customer is solely responsible for the use of this product in a customer's automotive application and for conducting incoming inspections before use of the product. No written or verbal statement, report, data or recommendation by 3M related to automotive applications is signed by the Technical Director of 3M's Automotive Division. Customer assumes all responsibility for use of this product in a powertrain battery or high voltage application, and 3M will not be liable for any loss or damage, whether direct, indirect, special, incidental, or consequential (including, but not limited to, reasonable attorney's fees, equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability), or the purchase price paid for the product.

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Time: After application, the bond strength will increase as the adhesive flows onto the surface. Ultimate bond strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours at room temperatures. Ultimate bond strength can be achieved more quickly (and in some cases better) at elevated temperatures (e.g. 150°F [66°C] for 1 hour). This can provide better adhesive wetout onto the substrate and the effect of increasing bond strength and achieving ultimate bond strength more quickly.

## References

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Property	Values
3m.com Product Page	<a href="https://www.3m.com/3M/en_US/p/d/b40">https://www.3m.com/3M/en_US/p/d/b40</a>
Safety Data Sheet SDS	<a href="https://www.3m.com/3M/en_US/company/usa/usaAction=msdsSRA&amp;msdsLocale=en_US&amp;">https://www.3m.com/3M/en_US/company/usa/usaAction=msdsSRA&amp;msdsLocale=en_US&amp;</a>

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## ISO Statement

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This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality management system.

## Information

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