SNAD® - Adhesive Attached Snap System

YKK Little Parts. Big Difference.

Technical Information – Product Data Sheet

September 2015

Product Description:

Unlike traditional metal screw stud applications, this *Patented Product* will not snag clothing or deteriorate from exposure to sunlight, sand and dirt. Plus, its unique dome shape enables it to be walked on without causing pain. What's even more amazing about the snap component is how it is secured to surfaces. On the underside of the plastic body is a pad of 3M™, VHB™ acrylic conformable foam adhesive that enables the snap to adhere to surfaces without having to drill a hole

U.S. Patent No.: D626,451 and D626,452

General Features:

- Body is made of POM Auto grade UV inhibitor
- Adhesive is a 3M™VHB™ acrylic conformable foam well suited for attaching to:
  - Metals
  - Glass
  - PVC
  - Plastics
- It is compatible with all Major Snap Brands that meet Mil Spec 10884 (MS27980 Style 2)
- The fastener does not penetrate a substrate
- Is available in a selection of resins and VHB adhesives for different applications.

Marine Features:

- Attaches to boat surface with adhesive. No hole!
- Tested by marine canvas professionals
- Withstands pressures 0.6 to 1.0 bar for 5 minutes (tested on 40MM size and ¼ [6.4mm] hole)
- It is very forgiving of DIY'ers
- The Rigid Dome Base Style:
  - The Rigid Dome Style contains a rigid base for flat surfaces for carpet or canvas applications
  - When used on carpet applications, the Dome profile for the socket and the stud can be walked on without causing foot pain
  - Has a grooved design for easy cleaning
- The Flexible Base Style:
  - The Flexible base conforms to surfaces above the capability of the Rigid Dome Base Style.

Benefits:

- Provides secure attachment without damaging surface.
- Misplacements can be easily corrected.
- It is a documented performance adhesive for marine use.
- Will conform to marine non-slip deck patterns
- Contains the same plastic used by auto makers for internal & external applications.
- Will not corrode, discolor or crack
- Does not require a tool to install.
- Won't hurt to walk or sit on.
- Instills confidence in using the best new snap idea in years.
- Can even be used over existing screw holes without leaking.
- Can be used on thin wall boats or RIB's.

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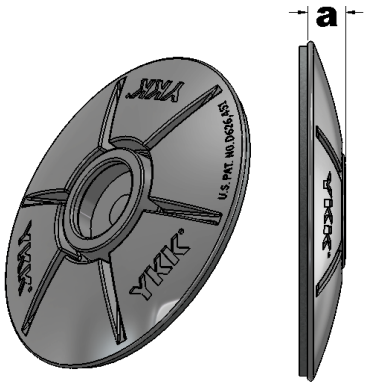
Note: All SNAD snaps should be thoroughly evaluated by the end user under actual use conditions with intended substrates to determine whether a specific SNAD snap adhesive is fit for a particular purpose and suitable for a user's method of application, especially if the expected use involves extreme environmental conditions or high static shear (dead load) stress.

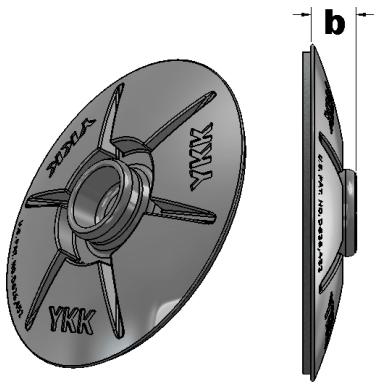
SNAD Adhesive Snap Specifications:
- Rigid Dome Base

Size	Type	Diameter	Style	Tension	SNAD UB Number	Weight each	Overall Height		3M™ VHB™ Tape			Rigid Body	
							a	b	Number	Color	Thickness	Material	UV Stabilized
SK-50	Domed	40MM (1.57 in)	Socket	Light	TE2	5.01g (0.18 oz)	5.5MM (0.22 in)	N/A	*4900	Gray	1.1MM (0.045 in)	Polyacetal	Yes
				Standard	PG1								
			Stud	Standard	PG3	4.25 g (0.15 oz)	N/A	6.5MM (0.26 in)					
		25MM (0.98 in)	Stud	Standard	QW9	1.60 g (0.06 oz)							

Socket



Stud



3M™, VHB™ Tape Family Description:

*4900 This family utilizes multi-purpose, acrylic adhesive on both sides of conformable foam. The adhesive provides excellent adhesion to a broad range of high and medium surface energy substrates including metals, glass, and a wide variety of plastics, as well as plasticized vinyl. The conformable foam provides good contact even with mismatched substrates. See the "Typical SNAD Adhesive Snap Performance" section.

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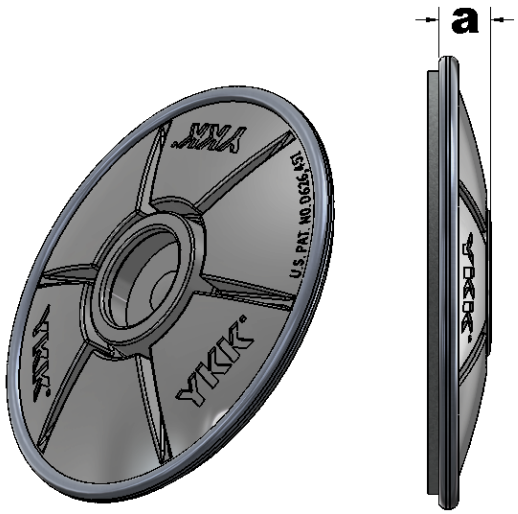
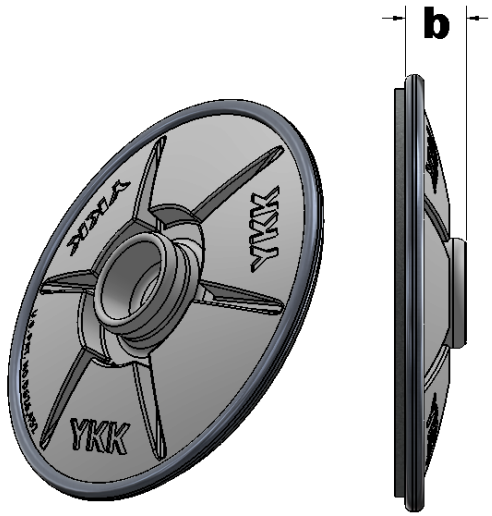
SNAD Adhesive Snap Specifications:
- Power Rigid Dome Base

Size	Type	Diameter	Style	Tension	SNAD UB Number	Weight each	Overall Height		3M™ VHB™ Tape			BODY ASSY		
							a	b	Number	Color	Thickness	Body Material	UV Stabilized	Base Material
SK-50	Power Domed	40.1MM (1.58 in)	Socket	Standard	TY2	4.25 g (0.15 oz)	5.9 MM (0.23 in)	6.7 MM (0.26 in)	*4900	Gray	1.1MM (0.045 in)	Polyacetal	Yes	Aluminum
			Stud	Standard	TY3									

Power Socket



Power Stud



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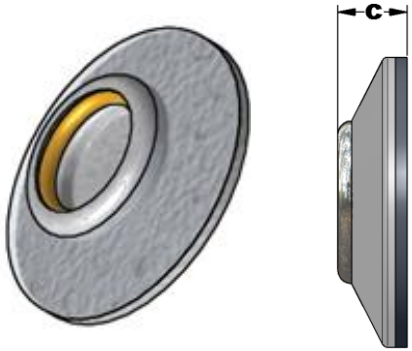
SNAD Adhesive Snap Specifications:

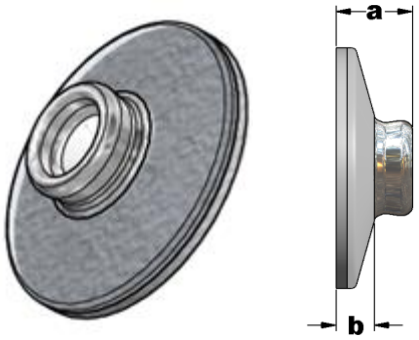
The 25MM Diameter has a smaller footprint area and may be required where application surfaces that are non-conforming beyond the capability of the Rigid Dome Base Style

- Flexible Base

Size	Style	Type	SNAD UB Number	Diameter	Weight each	FLEXIBLE BODY		3M™ VHB™ Tape			Overall Height		
						Material	UV Stabilized	Number	Color	Thickness	a	b	c
SK-50	Socket	Flexible	QR8	25.4MM (0.98 in)	3.22g (0.113 oz)	Pigmented	Yes	*4900	Gray	1.1MM (0.045in)	8 MM (0.32 in)	4 MM (0.16 in)	6 MM (0.24 in)
			TR5			Clear Silicone							
	Stud		RY2		2.62 g (0.092 oz)	Pigmented							
			TP9			Clear Silicone							
			TT5	40MM (1.57 in)	4.60g (0.162 oz)	Clear Silicone			CLEAR				N/A
			QL7			Pigmented							



SOCKET



STUD

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SNAD Adhesive Snap Specifications:

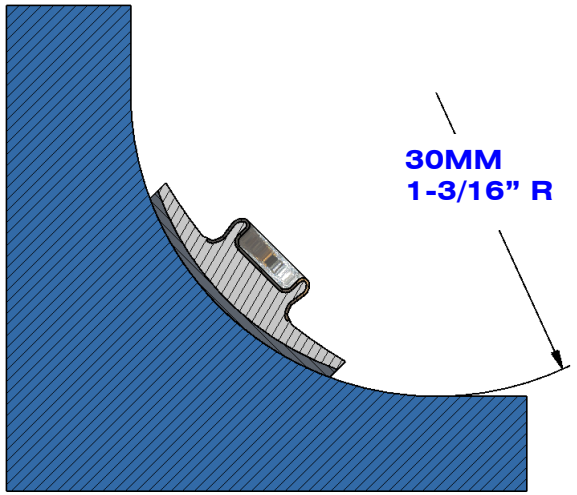
- Flexible Base - Application Recommendations & Considerations:

Minimum INTERNAL Radius
-Allowance for Proper Adhesion

25MM MINIMUM

40MM MINIMUM

Minimum INTERNAL Radius
-Allowance for Female Socket Body to engage and unsnap appropriately



25MM & 40MM MINIMUM

Note: May require surface primer

Typical Performance Characteristics:

Tension	lbs.	Newton
LIGHT	0-10	0-46
STANDARD	11-20	49-89

Tension	lbs.	Newton
HARD	21-30	93-133
EXTRA HARD	30 >	138 >

Snap Tension – Socket Rigid Dome Base Type:

Size	Shape	Style	Type	SNAD UB Number	Stud			UB Number	Direct Snap On Action - 1	Peel Unsnap Action -2
					Size	*Tension	Material			
40MM	DOME	STANDARD TENSION		PG1	SX-700	STD	BRASS	904	EXTRA HARD	STANDARD
					SK-50 / WIRE TIE	STD	SSTL or BR	AH7/TX1	EXTRA HARD	STANDARD
					SK-70	STD	BRASS	D63	EXTRA HARD	STANDARD
					SP -75	HARD	POLY	ET8/Q17	NOT RECOMMENDED	
					SNAD FLEXIBLE	STD	SSTL	QL7		
		POWER STANDARD TENSION		TY2	SNAD DOME	PG3 IS NOT COMPATIBLE				
					Competitor	AVAILABLE BY REQUEST				
		LIGHT TENSION	 MARKED "LT"	TE2	SX-700	STD	BRASS	904	STANDARD	LIGHT
					SK-50 / WIRE TIE	STD	SSTL or BR	AH7/TX1	STANDARD	LIGHT
					SK-70	STD	BRASS	D63	STANDARD	LIGHT
					SP-100	HARD	POLY	ET8/Q17	STANDARD	LIGHT
					SNAD FLEXIBLE	STD	SSTL	QL7	STANDARD	STANDARD
					SP-75	NOT RECOMMENDED				
					SNAD DOME	PG3 IS NOT COMPATIBLE				
					Competitor	AVAILABLE BY REQUEST				

The Stud & Socket ***Tension** column is the typical identification action value with a post or SX attached stud or socket, but not with SNAD Snap components. The SNAD Snap's typical actions with these components are listed in the columns marked (1) & (2)

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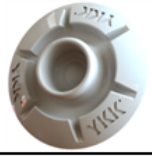
Typical Performance Characteristics:

Tension	lbs.	Newton
LIGHT	0-10	0-46
STANDARD	11-20	49-89

Tension	lbs.	Newton
HARD	21-30	93-133
EXTRA HARD	30 >	138 >

Snap Tension – Stud Rigid Dome Base Type:

Style	Shape	Size	Type	SNAD UB Number	Socket			UB Number	Direct Snap On Action - 1	Peel Unsnap Action -2
					Size	*Tension	Material			
Stud	DOME	25MM		QW9	SX-700	STD	BR/BR	746	LIGHT	LIGHT
					SK-50	STD	BR/BR NIPLT	K85	STANDARD	LIGHT
					SK-50	HARD-MIL	SSTL/PBZ	AH3	STANDARD	LIGHT
		40MM		PG3	SK-70	STD	BR/BR	D65	STANDARD	LIGHT
					SX-700	STD	BR/BR	746	LIGHT	LIGHT
					SK-50	HARD-MIL	SSTL/PBZ	AH3	STANDARD	LIGHT
					SK-70	STD	BR/BR	D65	STANDARD	LIGHT
		40MM POWER SNAD		TY3	SP -75	HARD	POLY	Q14/ET6	HARD	STANDARD
					SNAD DOME	PG1 IS NOT COMPATIBLE				
					SNAD FLEXIBLE	QR8 IS NOT COMPATIBLE				
					Competitor	AVAILABLE BY REQUEST				

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Typical Performance Characteristics:

Snap Tension – Flexible Base Type:

Tension	lbs.	Newton
LIGHT	0-10	0-46
STANDARD	11-20	49-89

Tension	lbs.	Newton
HARD	21-30	93-133
EXTRA HARD	30 >	138 >

Style	Size	Type		SNAD UB Number	Stud			UB Number	Direct Snap On Action - 1	Peel Unsnap Action -2
					Size	*Tension	Material			
Socket	25MM	Pigmented Flexible Base		QR8	SX-700	STD	SSTL	904	TO BE TESTED	
					SK-50	STD	SSTL or BR	AH7		
					SK-70	STD	BRASS	D63		
					SP-75	HARD	POLY	ET8/Q17		
		Clear Flexible Base		TR5	SNAD FLEXIBLE	STD	SSTL	QL7		
					SNAD DOME	PG3 IS NOT COMPATIBLE				
					COMPETITOR	AVAILIBLE BY REQUEST				

Style	Size	Type		SNAD UB Number	Socket			UB Number	Direct Snap On Action - 1	Peel Unsnap Action -2
					Size	*Tension	Material			
STUD	25MM	Pigmented Flexible Base		RY2	SX-700	STD	BR/BR	746	LIGHT	LIGHT
					SK-50	STD	BR/BR NI PLT	K85	STANDARD	LIGHT
				TP9	SK-50	HARD - MIL	SSTL/BR	AH3	STANDARD	STANDARD
					SK-70	STD	BR/BR	D65	STANDARD	LIGHT
	40MM	Clear Flexible Base		TT5	SP-75	HARD	POLY	Q14/ET6	STANDARD	LIGHT
					SNAD DOME	HARD	POLY	PG1	NOT RECOMMENDED	
				QL7	COMPETITOR	AVAILIBLE BY REQUEST				

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Typical Performance Characteristics:

Tension	lbs.	Newton
LIGHT	0-10	0-46
STANDARD	11-20	49-89

Tension	lbs.	Newton
HARD	21-30	93-133
EXTRA HARD	30 >	138 >

SNAD Accessories:

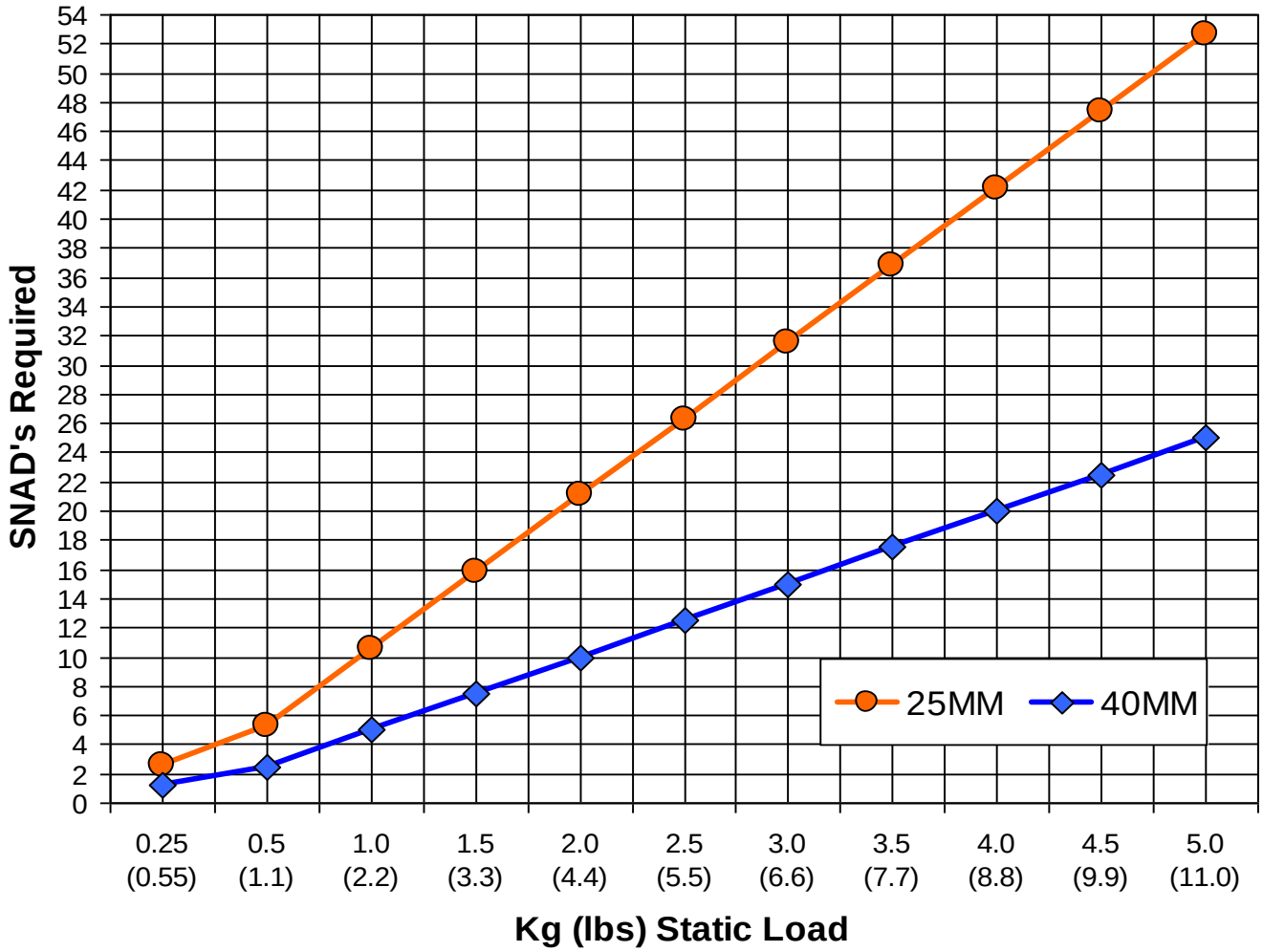
Style	Size	Type		SNAD UB Number	Socket			SIZE	Direct Snap On Action - 1	Peel Unsnap Action -2
					UB	*Tension	Material			
Stud	SK-50	SSTL WIRETIE		TX1	PG1	STANDARD	PLOY	40MM	EXTRA HARD	STANDARD
					TY1	STANDARD	POLY	40MM	STANDARD	LIGHT
					TE2	LIGHT	POLY	40MM	STANDARD	LIGHT
					QR8/TR5	STANDARD	SSTL/SILICONE	25MM	TO BE TESTED	

Typical Applications:

Bird Netting

Typical Selection Recommendations:

How many SNAD Adhesive Snaps are required for your "Static Shear (Dead Load)" application?



Note: To allow for additional safety, always round up the amount required
i.e. 0.25Kg. (0.55 lbs.) = 1.25 (round up to 2 required)

All Static Loads above 5.0 Kg. (11.0 lbs.) uses the following calculation:

25MM Size:

Metric: Kg. ÷ 0.13 Kg.. = # of SNAD snaps required
English: 1.00 in. Size: (lbs. × 16oz.) ÷ 4.7 oz.. = # of SNAD snaps required

40MM Size:

Metric: Kg. ÷ 0.20 Kg. = # of SNAD snaps required
English: 1.57 in Size: (lbs. × 16oz.) ÷ 7.6 oz. = # of SNAD snaps required

As a general rule, for static loads, approximately four square inches of tape should be used for each pound of weight to be supported in order to prevent excessive creep.

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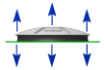
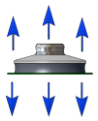
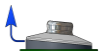
Typical SNAD Snap Product and Adhesive Performance:

							Dynamic Load			Static Load	Temperature Rating	
												
Size	**Style**	**Type**	**SNAD UB Number**	**Diameter**	**Feature**	**Surface Area**	**Tensile**	**Shear**	**Peel**	**Shear**	**Min**	**Max**
SK-50	Socket	Domed	PG1	40MM (1.57in)	Tape Adhesive	1256.6 mm² 1.95 in²	734 N (165 lbs)	547 N (123 lbs)	187 N (42 lbs)	2 N (7.6 oz)	-35°C (-31°F)	75° C (167°F)
	Stud		PG3									
												
SK-50	Socket	Flexible	QR8	25.4MM (1.00 in)	Tape Adhesive	490.9 mm² 0.76 in²	285 N (64 lbs)	236 N (53 lbs)	98 N (22 lbs)	1.3 N (4.7 oz)		
	Stud		QL7									
	Socket		QR8	25.4MM (1.00 in)	Silicone Body	na	187 N (42 lbs)	236 N (53 lbs)	98 N (22 lbs)	na		
	Stud		QL7									

Typical 3M™, VHB™ Tape Performance Characteristics:

For specific VHB Tape performance also see "3M VHB technical data" publication

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

Recommended Substrate Applications:

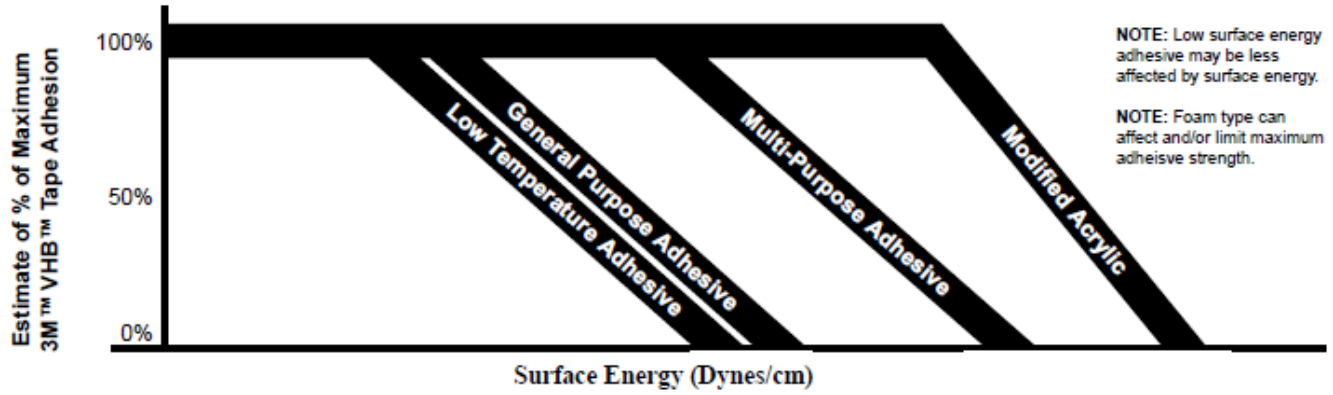
3M™ VHB™ Tapes UL746C Listings - File MH 17478 Category QOQW2 Component - Polymeric Adhesive Systems, Electrical Equipment			
VHB™ Tape Family	Substrates	Temperature Rating	
		Min	Max
4900	Ceramic	-35°C (-31°F)	110°C (230°F)
	Aluminum, galvanized steel, stainless steel, enameled steel, nickel coated ABS, glass (with or without silane coating) PVC, glass/epoxy, PBT, polycarbonate, acrylic/polyurethane paint, polyester paint	-35°C (-31°F)	90° C (194°F)
	ABS	-35°C (-31°F)	75° C (167°F)

3M™, VHB™ Tape – Out Gassing, Dielectric Breakdown Strength, Dielectric Constant, Thermal Conductivity, Resistivity, Water Vapor Transmission Rate (WVTR), Solvent and Fuel Resistance, etc. can be reviewed at 3M website http://solutions.3m.com/wps/portal/3M/en_US/VHB/Tapes/Document-Center/Technical-Data/

Choose the right SNAD Adhesive Snap for the substrate: Adhesives must flow onto the substrate surfaces in order to achieve an intimate contact area and allow the molecular force of attraction to develop. The degree of flow of the adhesive onto the substrate is largely determined by the surface energy of the substrate.

This illustration demonstrates the effect of surface energy on adhesive interfacial contact. High surface energy materials draw the adhesive closer for high bond strength.

Relationship of Adhesion and Surface Energy for 3M™ VHB™ Tape Adhesive Families



HIGH		MEDIUM		LOW
400-1100	42-50	38-39	36-37	18-33
Aluminum	Kapton®	ABS	PVA	EVA
Stainless Steel	Phenolic	Polycarbonate (Lexan®)	Polystyrene	Polyethylene
Copper	Nylon	PVC	Acetal	Polypropylene
Zinc	Alkyd Enamel	Noryl®	Kynar® Paint	Tedlar®
Tin	Polyester	Acrylic	Powder Paint	Silicone
Lead	Epoxy Paint	Polane® Paint		PTFE
Anodized Aluminum	Polyurethane	Powder Paint		
Glass				

NOTES: There are a wide variety of formulations, surfaces, finishes and surface treatments available on substrate materials which can affect adhesion. This chart is intended to provide only a rough estimate of the adhesion levels which can be expected on some common materials relative to a reference surface such as aluminum. Light abrasion of a surface will significantly increase adhesion levels on many materials, except when using tapes 4952/4932.

- Allow for thermal expansion/contraction: 3M™, VHB™ Tapes can perform well in applications where two bonded surfaces may expand and contract differentially. Assuming good adhesion to the substrates, the tapes can typically tolerate differential movement in the shear plane up to 3 times their thickness.

- Bond Flexibility: While an advantage for many applications where allowing differential movement is a benefit, the tape bonds are typically more flexible than alternative bonding methods. Suitable design modifications or periodic use of rigid fasteners or adhesives may be needed if additional stiffness is required.

- Severe Cold Temperatures: Applications which require performance at severe cold temperatures must be thoroughly evaluated by the user if the intended use will subject the tape product to high impact stresses. A technical bulletin called “3M™ VHB™ Tape Cold Temperature Performance” (70-0707-3991-0) is available for additional information.

- Clean: Most substrates are best prepared by cleaning with a 50:50 mixture of isopropyl alcohol (IPA*) and water prior to applying 3M™, VHB™ Tapes.
  - Exceptions to the general procedure that may require additional surface preparation include:

- Heavy Oils: A degreaser or solvent-based cleaner may be required to remove heavy oil or grease from a surface and should be followed by cleaning with IPA/water.
- Abrasion: Abrading a surface; followed by cleaning with IPA/water can remove heavy dirt or oxidation and can increase the surface area to improve adhesion.
- Adhesion Promoters: Priming a surface can significantly improve initial and ultimate adhesion to many materials such as plastics and paints.
- Porous surfaces: Most porous and fibered materials such as wood, particleboard, concrete, etc. need to be sealed to provide a unified surface.
- Unique Materials: Special surface preparation may be needed for glass and glass-like materials, copper and copper containing metals, and plastics or rubber that contain components that migrate (e.g. plasticizers).

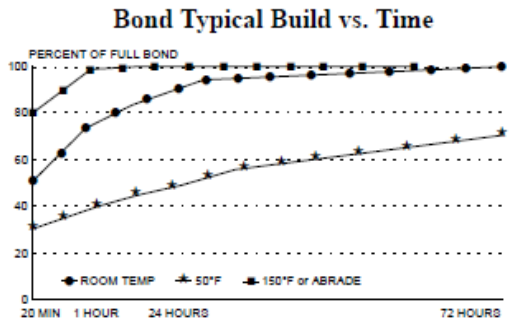
Refer to the 3M Technical Bulletin "Surface Preparation for 3M™ VHB™ Tape Applications" for additional details and suggestions. (70-0704-8701-5)

*Note: These cleaner solutions contain greater than 250 g/l of volatile organic compounds (VOC). Please consult your local Air Quality Regulations to be sure the cleaner is compliant. When using solvents, be sure to follow the manufacturer's precautions and directions for use when handling such materials.

- Pressure: The bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and helps improve bond strength. Typically, good surface contact can be attained by applying enough pressure to insure that the tape experiences approximately 15 psi of (100 kPa) pressure. Either roller or platen pressure can be used. Note that rigid surfaces may require 2 or 3 times that much pressure to make the tape experience 15 psi.

- Temperature: The ideal application temperature range is 70°F to 100°F (21°C to 38°C). Pressure sensitive adhesives use viscous flow to achieve substrate contact area. Minimum suggested application temperature:
  - 60°F (15°C): 3M™ VHB™ Tapes 4941, 4945 families

- Time: After application, the bond strength will increase as the adhesive flows onto the surface (also referred to as "wet out"). At room temperature approximately 50% of the ultimate bond strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours. This flow is faster at higher temperatures and slower at lower temperatures.



Time, cont.:

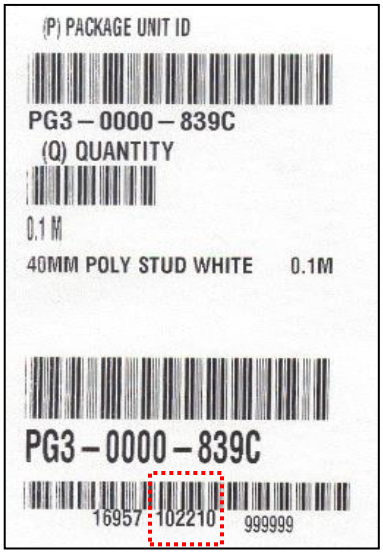
The ultimate bond strength can be achieved more quickly (and in some cases the bond strength can be increased) by exposing the bond to elevated temperatures (e.g. 150°F [66°C] for 1 hour). Exposing the bond to elevated temperatures can help provide a better wet out onto the substrates. Abrading the surfaces or the using primers/ adhesion promoters on the surfaces can also have the effect of increasing bond strength and achieving ultimate bond strength more quickly.

Note: Initial tape application onto surfaces at temperatures below the suggested minimums is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.
To obtain good performance with all 3M™, VHB™ Tapes, it is important to ensure that the surfaces are dry and free of condensed moisture.

Additional SNAD Snap Considerations:

Shelf Life: All SNAD Adhesive Snaps have a shelf life of 24 months from the date of manufacture when stored at 40°F to 100°F (4°C to 38°C) and 0-95% relative humidity. The optimum storage conditions are 72°F (22°C) and 50% relative humidity. The performance of the adhesive is not projected to change even after the shelf life expires; however, YKK does suggest that SNAD snaps are to be used prior to the shelf life date whenever possible.

The manufacturing date is available on all YKK SNAD Snap box labels. The date is typically a 6 digit code, 2 digit month, 2 digit day, and 2 digit year (MMDDYY). It is located on the label bottom line & center position as indicated below.



Technical Information

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

General Information

All applications, surface treatments, solvents, paints, sealers, etc. should be thoroughly evaluated by the user under anticipated use conditions in conjunction with the specific adhesive backed snap component to be used in the application.

If a bond is too strong or too weak for the application, please contact your YKK (U.S.A) Inc. representative or authorized distributor for information regarding available alternative adhesive component options.

Limited Warranty

YKK warrants the SNAD Snap components will be free from defects in materials and workmanship. YKK makes no other and expressly disclaims any other warranties or representations of any kind, either express, implied, statutory or otherwise, including but not limited to any warranty of merchantability or fitness for a particular purpose or use.

Important Notice

The a user is responsible for determining whether the YKK SNAD adhesive backed snap component is fit for a particular purpose and suitable for the user's method of application. Please remember that many factors can affect the use and performance of a YKK product in a particular application. The materials to be bonded with the product, the surface preparation of these materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a YKK product. Given the variety of factors that can affect the use and the performance of the YKK product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate a YKK product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Limitation of Remedies And Liability

If the YKK SNAD adhesive attached snap component is proved to be defective with the warranty period stated above, THE EXCLUSIVE REMEDY, AT YKK'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE YKK SNAD snap component. YKK shall not otherwise be liable for the loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.