

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
- Withstand 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 socket and stud can be walked on with no 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 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.

SNAD™ - Adhesive Attached Snap System



Technical Information – Product Data Sheet

December 2010

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, this is true especially if the expected use involves extreme environmental conditions or high static shear (dead load) stress.

SNAD Adhesive Snap Specifications:

- Rigid Dome Base

Size	Style	Type	SNAD UB Number	Diameter	Weight each	RIGID BODY		3M™ VHB™ Tape			Overall Height	
						Material	UV Stabilized	Number	Color	Thickness	a	b
SK-50	Socket	Domed	PG1	40MM (1.57in)	5.01 g (0.18 oz)	Polyacetal	Yes	*4900	Gray	1.1MM (0.045 in)	5.5MM (0.22 in)	6.5 MM (0.26 in)
SK-50	Stud		PG3	40MM (1.57in)	4.25 g (0.15 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.

SNAD™ - Adhesive Attached Snap System



Technical Information – Product Data Sheet December 2010

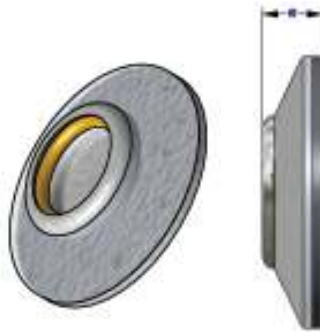
SNAD Adhesive Snap Specifications:

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

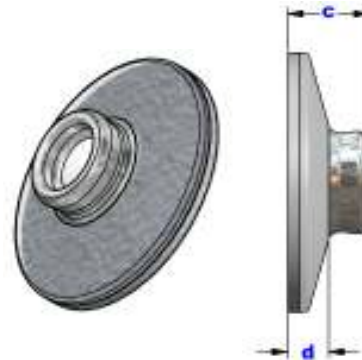
- Flexible Base

Size	Style	Type	SNAD UB Number	Diameter	Weight each	FLEXIBLE BODY		3M™ VHB™ Tape			Overall Height		
						Material	UV Stabilized	Number	Color	Thickness	c	d	e
SK-50	Socket	Flexible	QR8	25.4MM (1.00 in)	0.00g (0.000 oz)	Silicone	Yes	*4900	Gray	1.1MM (0.045in)	8 MM (0.32 in)	4 MM (0.16 in)	6 MM (0.24 in)
SK-50	Stud		QL7	25.4MM (1.00 in)	2.73g (0.096 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 Snap Adhesive Performance" section.

SNAD™ - Adhesive Attached Snap System

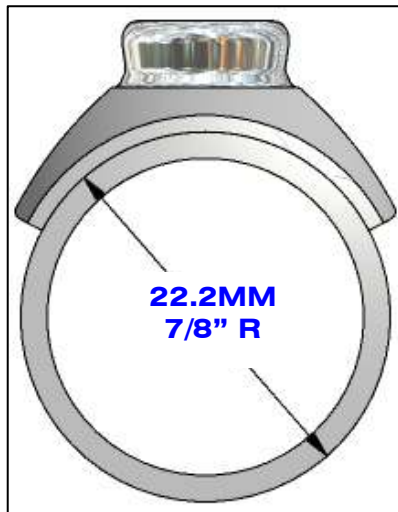


Technical Information – Product Data Sheet December 2010

SNAD Adhesive Snap Specifications:

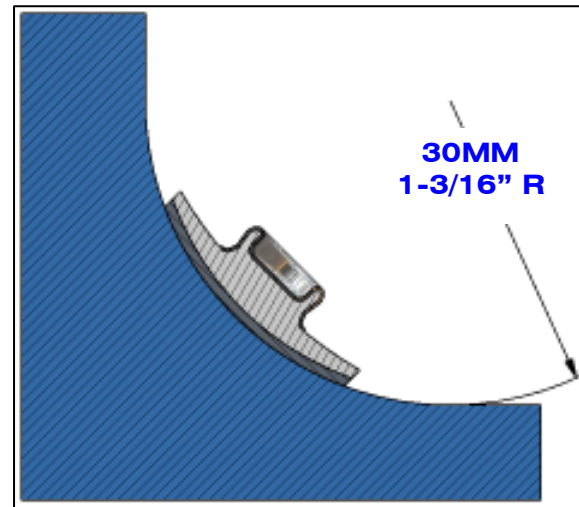
- Flexible Base - Application Recommendations & Considerations:

Minimum EXTERNAL Radius
- Allowance for Proper Adhesion



MINIMUM

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



MINIMUM

SNAD™ - Adhesive Attached Snap System





Technical Information – Product Data Sheet December 2010

Typical Performance Characteristics:

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

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

Snap Tension – Rigid Dome Base Type:

Size	Style	Type		SNAD UB Number	Stud			UB Number	Direct Snap On Action (1)	Peel UnSnap Action (2)
					Size	*Tension	Material			
SK-50	Socket	Dome		PG1	SX-700	STD	BRASS	904	EXTRA HARD	STANDARD
					SK-50	STD	SSTL or BR	AH7	EXTRA HARD	STANDARD
					SK-70	STD	BRASS	D63	EXTRA HARD	STANDARD
					SP -75	HARD	POLY	ET8/Q17	HARD	LIGHT
					SNAD FLEXIBLE	STD	SSTL	QL7	EXTRA HARD	STANDARD
					SNAD DOME	PG3 IS NOT COMPATIBLE				
					Brand X	AVAILABLE BY REQUEST				
SK-50	Stud	Dome		PG3	Socket					
					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
					SK-70	STD	BR/BR	D65	STANDARD	LIGHT
					SP -75	HARD	POLY	Q14/ET6	HARD	STANDARD
					SNAD DOME	PG1 IS NOT COMPATIBLE				
					SNAD FLEXIBLE	QR8 IS NOT COMPATIBLE				
Brand X	AVAILABLE BY REQUEST									

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

YKK Snap Fasteners America Inc. 302 Factory Ave. Lawrenceburg, KY 40342
 phone 502-839-6971 or 1-800-786-2561

SNAD™ - Adhesive Attached Snap System




Technical Information – Product Data Sheet December 2010

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 >

Size	Style	Type	SNAD UB Number	Stud			UB Number	Direct Snap On Action (1)	Peel UnSnap Action (2)	
				Size	*Tension	Material				
SK-50	Socket	Flexible		QR8	SX-700	STD	SSTL	904	To be tested	To be tested
					SK-50	STD	SSTL or BR	AH7	To be tested	To be tested
					SK-70	STD	BRASS	D63	To be tested	To be tested
					SP -75	HARD	POLY	ET8/Q17	To be tested	To be tested
					SNAD FLEXIBLE	STD	SSTL	QL7	To be tested	To be tested
					SNAD DOME	PG3 IS NOT COMPATIBLE				
					Brand X	AVAILABLE BY REQUEST				
				Socket						
SK-50	Stud	Flexible		QL7	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	STANDARD
					SK-70	STD	BR/BR	D65	STANDARD	LIGHT
					SP -75	HARD	POLY	Q14/ET6	STANDARD	LIGHT
					SNAD DOME	HARD	POLY	PG1		
					Brand X	AVAILABLE BY REQUEST				

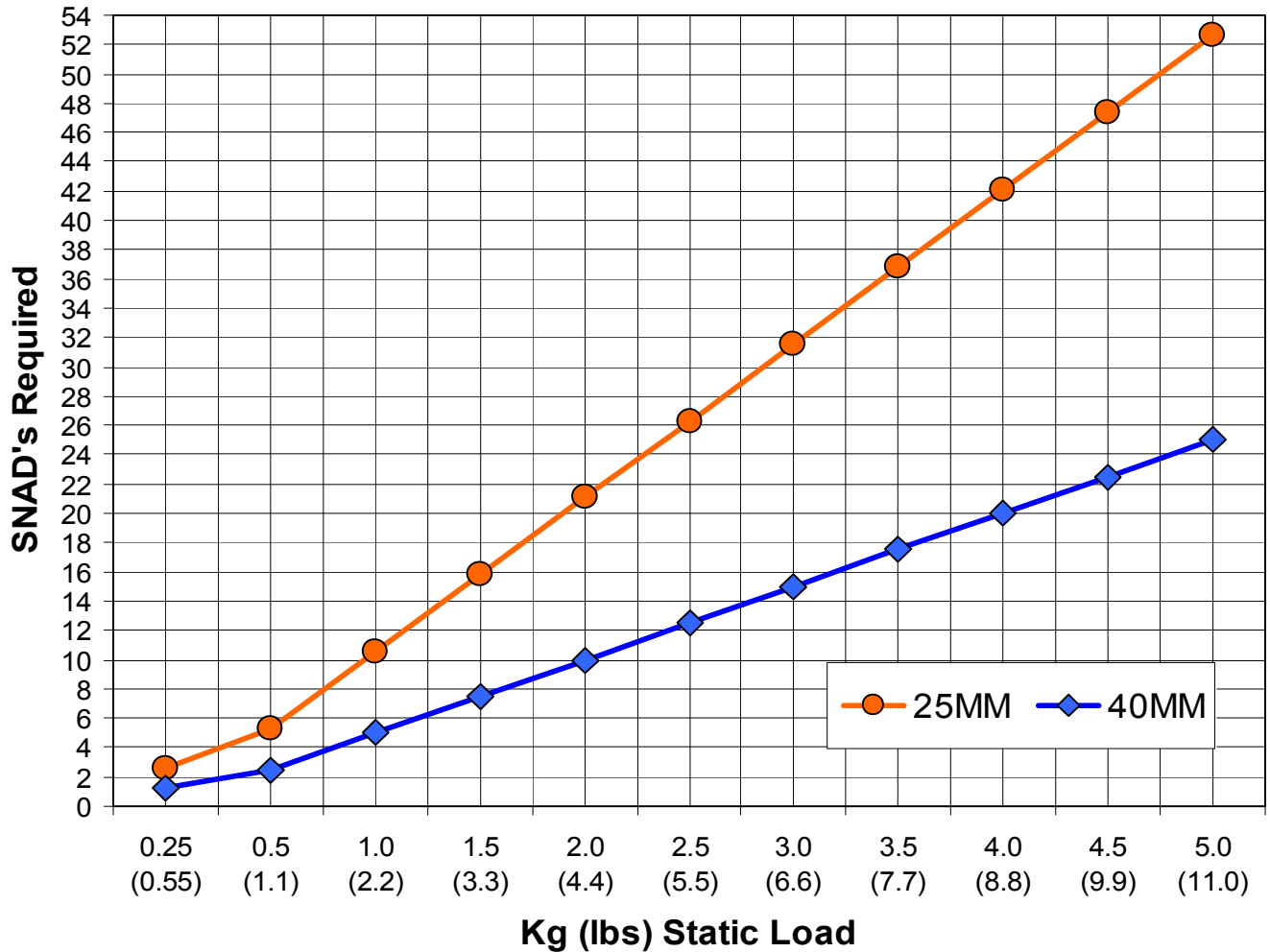
The Stud & Socket *Tension column is the typical identification action value with a post or SX attached stud or socket, not with SNAD Snap components. The SNAD Snap typical actions with these components are listed in the columns marked (1) & (2)

YKK Snap Fasteners America Inc. 302 Factory Ave. Lawrenceburg, KY 40342
 phone 502-839-6971 or 1-800-786-2561



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: $\text{Kg.} \div 0.13 \text{ Kg.} = \# \text{ of SNAD snaps required}$

English: $1.00 \text{ in. Size: (lbs.} \times 16\text{oz.)} \div 4.7 \text{ oz.} = \# \text{ of SNAD snaps required}$

40MM Size:

Metric: $\text{Kg.} \div 0.20 \text{ Kg.} = \# \text{ of SNAD snaps required}$

English: $1.57 \text{ in Size: (lbs.} \times 16\text{oz.)} \div 7.6 \text{ oz.} = \# \text{ of SNAD snaps required}$

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.

SNAD™ - Adhesive Attached Snap System



Technical Information – Product Data Sheet December 2010

Typical SNAD Snap Product and Adhesive Performance:

Size	Style	Type	SNAD UB Number	Diameter	Feature	Surface Area	Dynamic Load			Static Load	Temperature Rating	
							Tensile	Shear	Peel	Shear	Min	Max
SK-50	Socket	Domed	PG1	40MM (1.57in)	Tape Adhesive	1256.6 mm ² 1.95 in ²	734 N (165 lbs)	605 N (136 lbs)	187 N (42 lbs)	2 N (7.6 oz)	-35°C (-31°F)	75° C (167°F)
	Stud		PG2									
SK-50	Socket	Flexible	QR8	25.4MM (1.00 in)	Tape Adhesive	490.9 mm ² 0.76 in ²	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									

Technical Information – Product Data Sheet

December 2010

Typical 3M™, VHB™ Tape Performance Characteristics:

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

Dynamic Adhesion Performance						
3M™ VHB™ Tape	90° Peel Adhesion		Normal Tensile		Dynamic Overlap Shear	
	N/100 mm	lb./in	kPa	lb./in	kPa	lb./in
4900	385	22	585	85	480	70



90° Peel Adhesion - Based on ASTM D3330 -To stainless steel, room temperature, jaw speed 12 in/min (305 mm/min). Average force to remove is measured. 72 hour dwell.



Normal Tensile (T-Block Tensile) - ASTM D-897 - To aluminum, room temperature, 1 in² (6.45 cm²), jaw speed 2 in/min (50 mm/min.) Peak force to separate is measured. 72 hour dwell.



Dynamic Overlap Shear - ASTM D-1002 - To stainless steel, room temperature, 1 in² (6.45 cm²), jaw speed 0.5 in/min (12.7 mm/min.) Peak force to separate is measured. 72 hour dwell

Tape	Static Shear				
	Weight (grams) that 1/2 square inch will hold 10,000 minutes (7 days)				
	72°F (22°C)	150°F (66°C)	200°F (93°C)	250°F (121°C)	350°F (177°C)
4900	1000	500	500	na	na

Temperature Tolerance			
Short Term (Minutes, Hours)		Long Term (Days, Weeks)	
° F	° C	° F	° C
300	-149	200	-93



Static Shear - ASTM D3654 - To stainless steel, tested at various temperatures and gram loadings. 0.5 in² (3.22 cm²). Will hold listed weight for 10,000 minutes (approximately 7 days). Conversion: 1500 g/0.5 in² equals 6.6 lb./in²; 500 g/0.5 in² = 2.2 lb./in².

Short Term Temperature Tolerance - No change in room temperature dynamic shear properties following 4 hours conditioning at indicated temperature with 100 g/static load. (Represents minutes and hours in a process type temperature exposure).

Long Term Temperature Tolerance - Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for days or weeks).

Technical Information – Product Data Sheet December 2010

Additional Typical Performance Characteristics:

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)

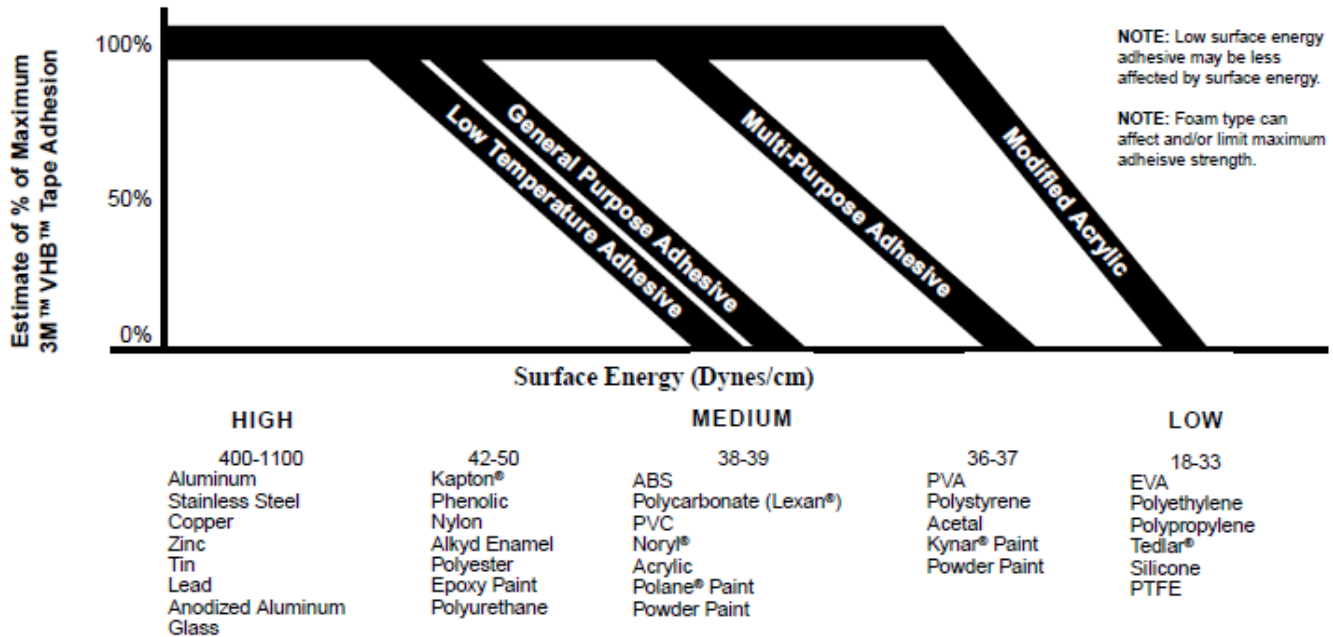
3M™, VHB™ Tape – Out Gassing, Dielectric Breakdown Strength, Dielectric Constant, Thermal Conductivity, Resistivity, Water Vapor Transmission Rate (WVTR), Solvent and Fuel Resistance, etc can be reviewed at 3M website
http://solutions.3m.com/wps/portal/3M/en_US/VHB/Tapes/Document-Center/Technical-Data/

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.

Technical Information – Product Data Sheet December 2010



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

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.

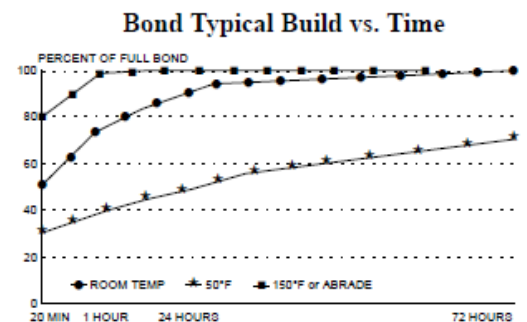
Technical Information – Product Data Sheet December 2010

- **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 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.
General Information	<p>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.</p> <p>If a bond is too strong or too weak for the application, please contact your YKK Snap Fastener representative or authorized distributor for information regarding available alternative adhesive component options.</p>
Limited Warranty	YSU warrants the SNAD Snap components will be free from defects in materials and workmanship. YSU 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 YSU 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 YSU 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 YSU product. Given the variety of factors that can affect the use and the performance of the YSU product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate a YSU 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 YSU SNAD adhesive attached snap component is proved to be defective with the warranty period stated above, THE EXCLUSIVE REMEDY, AT YSU'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE YSU SNAD snap component. YSU 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.

"YKK" and the combined mark of "YKK Little Parts. Big Difference." are registered trademarks of YKK CORPORATION in Japan and other countries/regions

3M™, VHB™ Tape and Scotch-Brite® are registered trademarks of 3M Co., St. Paul, MN
Kapton® and Tedlar® are registered trademarks of E. I. Du Pont De Nemours and Company.

Noryl® is a registered trademark of SABIC Innovative Plastics IP B.V. Company.

Polane® is a registered trademark of SWIMC, Inc.

Kynar® is a registered trademark of Pennwalt Corporation.