

3M™ VHB™ Acrylic Foam Tape Y-4180 Series

1. Product Description:

3M™ VHB™ Acrylic Foam Tapes are made with acrylic foam which is viscoelastic in nature. This gives the foam energy absorbing and stress relaxing properties which provides these tapes with their unique characteristics. And, the acrylic chemistry provides outstanding durability performance. Y-4180 series are suitable for bonding rough surfaces and a wide range of materials, including polyolefin based materials and flexible PVC (polyvinyl chloride) compared to conventional VHB™.

2. Advantages:

1. Good contact with rough surfaces
2. Good adhesion to a wide range of materials
3. Good initial adhesion and workability at low temperature.

3. Product Construction:

Products No.		Y-4180-04	Y-4180-08	Y-4180-12	Y-4180-20
Adhesive type		Acrylic			
Color		Gray opaque			
Thickness	Tape (mm)	0.4	0.8	1.2	2.0
	Paper liner (mm)	0.05 ^(*)	0.10		
Density (g/cm ³)		0.65			

(*)Transparent polyester release liner

4. Typical Properties:

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

Products No.		Y-4180-04	Y-4180-08	Y-4180-12	Y-4180-20
90° peel strength	N/cm	20	27	32	33
T-peel strength	N/cm	11	15	18	24
Dynamic shear strength	N/cm ²	161	101	87	81
Dynamic tensile strength	N/cm ²	73	49	45	41

Test Method:

<90° peel adhesion>

Laminate tape specimen between stainless steel and anodized aluminum foil, Roll down twice in each direction using a 10kg steel roller. 72 hours dwell at room temperature. Testing speed 300 mm/min



<T-Peel Adhesion>

Using anodized aluminum foil. Roll down twice in each direction using a 10kg steel roller.
72 hours dwell at room temperature, Testing speed 300 mm/min

<Dynamic Shear Strength>

To stainless steel, roll down twice in each direction using a 10kg steel roller.
72 hours dwell at 23 degree C. Testing speed 300 mm/min

<Dynamic Tensile Strength>

To stainless steel block, Apply pressure by a 10kg weight for 30sec.
72 hours dwell at 23 degree C. Testing speed 50 mm/min

5. Dynamic shear strength at each temperature::

Products No.		Y-4180-04	Y-4180-08	Y-4180-12	Y-4180-20
Dynamic shear strength (N/cm ²)	-30°C	180	177	177	179
	0°C	159	156	154	156
	23°C	161	101	87	81
	50°C	80	60	52	49
	75°C	48	40	34	33
	100°C	34	24	23	21
	125°C	17	15	13	14
	150°C	11	9	5	7

Test Method:

<Dynamic Shear Strength>

To stainless steel, roll down twice in each direction using a 10kg steel roller.
72 hours dwell at 23 degree C. Test under condition each temperature at 300 mm/min

6. 90° Peel strength to various surfaces:

Products No.		Y-4180-04	Y-4180-08	Y-4180-12	Y-4180-20
90° Peel strength (N/cm)	Stainless steel	20	27	32	33
	Aluminum	18	23	32	33
	SECC	23	26	32	45
	Galvanized steel	18	23	32	47
	ABS	14	19	21	29
	AES	16	20	23	31
	AAS	15	16	19	23
	AS	15	18	23	26
	Acrylic	16	25	29	30
	Polycarbonate	23	25	31	38
	PC/ABS	14	20	22	28
	PET	15	18	29	35
	PBT	15	19	21	29
	PPS	18	20	22	32
	6-nylon	15	21	21	24
	66-nylon	15	19	21	28
	FRP	15	19	21	27
	Glass epoxy	14	20	27	28
	Polystyrene	15	23	27	32
	Polyacetal	10	13	14	17
	Polypropylene	14	18	21	24
	Polyethylene	6	7	7	8
	Hard PVC	21	26	30	40
	Flexible PVC	22	27	31	41
	Flexible PVC (Aging: 80°C x 168H)	10	17	24	41
	Glass	15	17	18	25
	Melamine facing plate	13	17	18	25
	Wood veneer	11	17	21	31
	Calcium silicate plate	9	14	18	22
	Mortar	18	25	25	36
	EPDM (rubber)	6	9	9	9
	CR (rubber)	8	9	9	9
	TPO (elastomer)	8	10	11	11

Test Method:

<90° peel adhesion>

Laminate tape specimen between stainless steel and anodized aluminum foil, Roll down twice in each direction using a 10kg steel roller. 72 hours dwell at room temperature. Testing speed 300 mm/min

7. Durability:

Products No.			Y-4180-04	Y-4180-08	Y-4180-12	Y-4180-20
Dynamic Shear strength (N/cm ²)	Initial (23°C)	72Hrs	161	101	87	81
	Heat Aging (80°C)	720Hrs	246	165	156	107
		1440Hrs	246	165	156	105
		2160Hrs	255	169	158	109
	Heat and Humidity Aging (50°C, 95%RH)	720Hrs	125	79	70	58
		1440Hrs	136	89	80	65
		2160Hrs	141	97	88	66

Test Method:

<Dynamic Shear Strength>

To stainless steel, roll down twice in each direction using a 10kg steel roller.

72 hours dwell at 23 degree C. Aging under each condition, then 24 hours at 23 degree C.

Testing speed 300 mm/min. Dynamic shear strength compared to control one.

8. Other information:

1. Clean up oil, water and dust on the substrates before application
2. Applying pressure (more than 5kg/cm²) and dwelling (more than 72 Hrs) are recommended
3. Over 15 C is recommended for operating temperature
4. Primer can be use for some materials which is difficult to adhere
5. Recommended storage condition is lower than 30 C and lower than 70% RH, without direct sun light

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