

02.11.2011

**ADLOCK 121 TWO-PART TOUGHENED ACRYLIC ADHESIVE**  
**TECHNICAL DATA SHEET**

**ADLOCK 121 (9002U) – ADVANTAGES:**

**1. RAPID BONDING**

Curing time is 5 – 10 minutes at room temperature.  
Quick curing time shortens manufacturing timescales and improves productivity.

**2. HIGH BONDING STRENGTH**

Bonds strongly to various metals such as steel, stainless steel and aluminium as well as ceramics, FRP etc. Achieves high bonding strength (lap-shear strength, T-peel strength and impact strength).

**3. EXCELLENT HEAT RESISTANCE**

Can use long term at 120 °C.

**4. APPLICATION REQUIRES NO MIXING**

Two separate components are applied to the surfaces to be joined.  
Curing begins once the surfaces are assembled together and the components mix with one another.

**5. VERSATILITY**

Can bond almost any combination of different materials such as steel and stainless steel or FRP which cannot normally be welded together.

**6. LITTLE OR NO SURFACE PREPARATION**

Can bond to even oily surface after simple wiping.  
Simple preparations are enough for most applications.

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**1. PHYSICAL PROPERTIES (LIQUID STATE):**

	<b>COMPONENT A</b>	<b>COMPONENT B</b>
Composition	Modified Acrylate	Modified Acrylate
Colour	Green	Pink
Specific Gravity	1.01	1.01
Flash Point (°C)	15	15
Viscosity at 30 °C (mPa's) BM type 4 rotor, 60rpm	4,000	4,000
Thixotropic Indes (T.I.) 6rpm/60rpm	1.8	1.4

**2. PHYSICAL PROPERTIES (CURED STATE):**

Hardness (Shore D)	55
Tensile Strength (N/mm <sup>2</sup> )	15
Elongation ( % )	25
Volume Shrinking Percentage on Cure	14

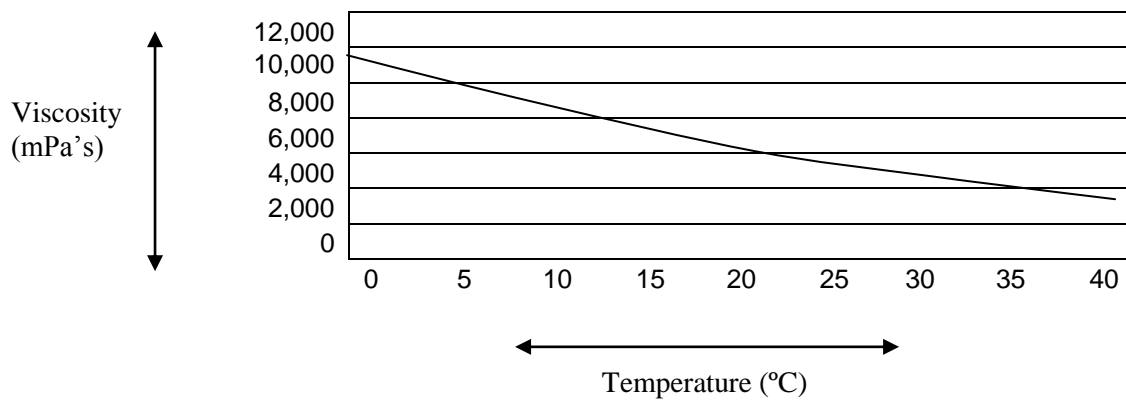
**3. VISCOSITY AT VARIOUS TEMPERATURES:**

**BM Type Viscometer**

**Rotor No. :3      Rotation : 6rpm**

Temperature	0 °C	10 °	20 °C	30 °C	40 °C
Component A	9,700	7,000	5,400	4,000	3,000
Component B	9,700	7,000	5,400	4,000	3,000

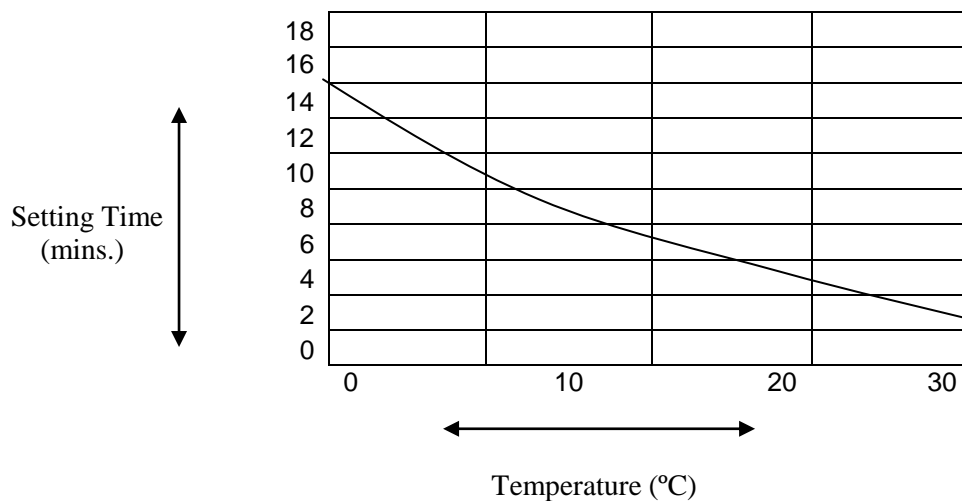
Unit : mPa's



**4. SETTING TIME AT VARIOUS TEMPERATURES:**

Substrate : Steel

Temperature	0 °C	10 °C	20 °C	30 °C
Setting Time (minutes)	15.0 – 17.0	7.0 – 7.5	3.5 – 4.0	1.5 – 2.0



**5. LAP-SHEAR STRENGTH TO VARIOUS METALS:**

	Steel	Stainless Steel	Aluminium	Brass	Zinc Chromate	Ferrite
Steel	23	21	22	20	21	16*
Stainless Steel	---	22	21	21	17	15*
Aluminium	---	---	21	20	17	16*
Brass	---	---	---	21	19	15*
Zinc Chromate	---	---	---	---	16	16*
Ferrite	---	---	---	---	---	15*

- 1) \*Ferrite Failure
- 2) Ferrite Material : FB4B
- 3) Surface Treatment:  
Zinc Chromate and Ferrite are not treated.  
Other test specimens are sandblasted and wiped with acetone.

**6. LAP-SHEAR STRENGTH TO VARIOUS PLASTICS:**

	Sandblast & Solvent Wipe Treatment	Solvent Wipe
Vinyl Chloride	7*	5*
ABS	9*	9*
Polycarbonate	5*	4
Bakelite	8*	4
FRP (Polyester)	17*	13
FRP (Epoxy)	22*	19

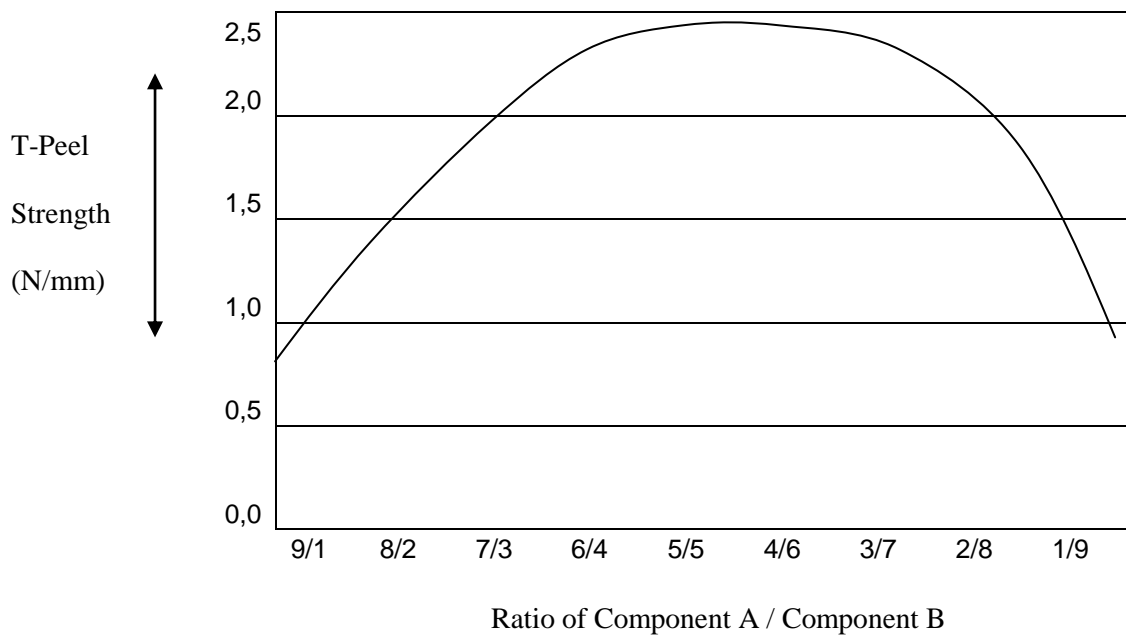
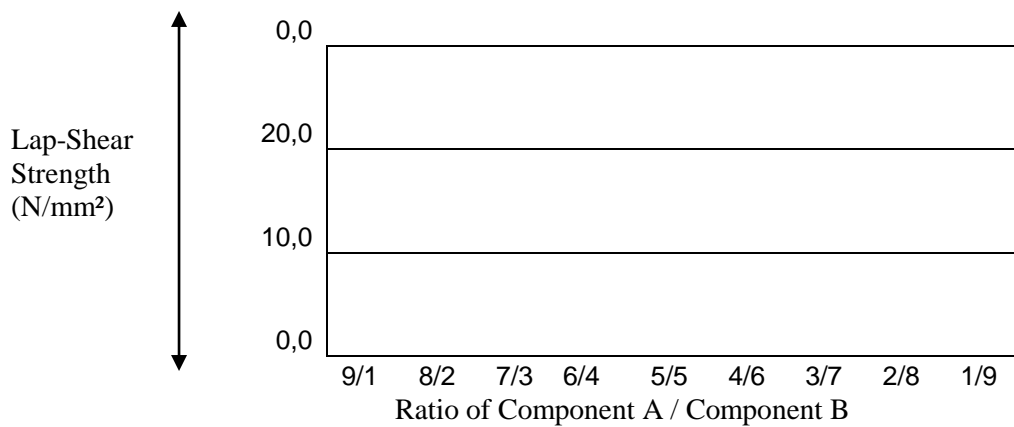
- 4) \*Material Failure
- 5) Methanol was used as solvent.

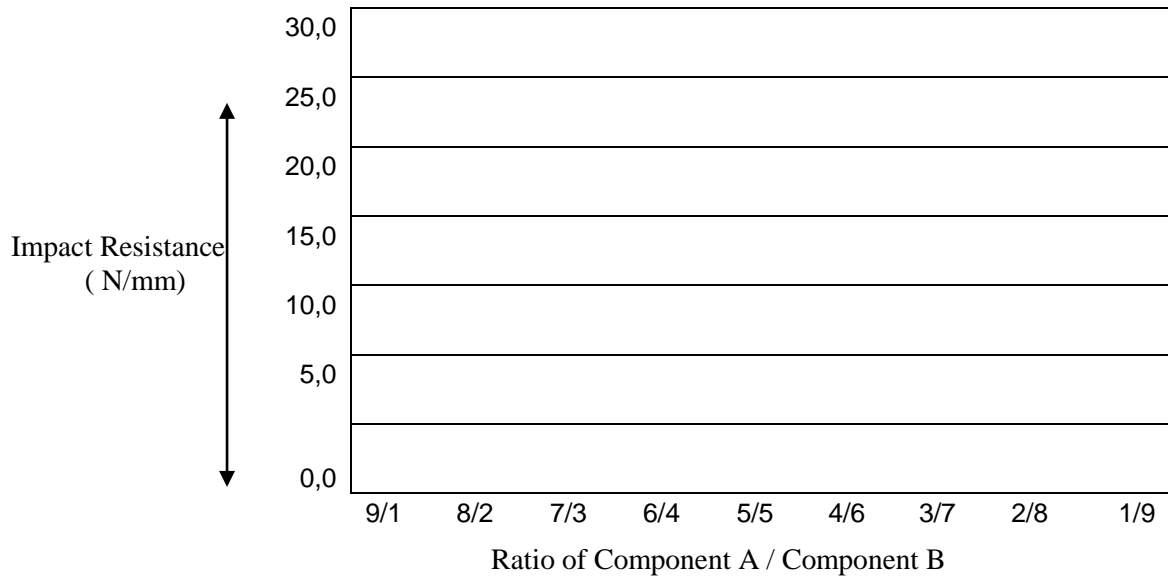
**7. BONDING STRENGTH VS. MIXING RATIO:**

Test Specimens : Aluminium / Aluminium

Surface Treatment of Test Specimens : Sandblasted and Wiped with Acetone

Composition (A/B)	9/1	8/2	7/3	6/4	5/5	4/6	3/7	2/8	1/9
Lap-Shear Strength (N/mm <sup>2</sup> )	10	16	19	20	21	17	16	13	7
T-Peel Strength (N/mm)	0.8	1.4	1.9	2.0	2.3	2.2	2.2	2.0	0.4
Impact Strength (mJ/mm <sup>2</sup> )	11	21	23	25	27	25	23	22	20





**8. BONDING STRENGTH AT VARIOUS TEMPERATURES:**

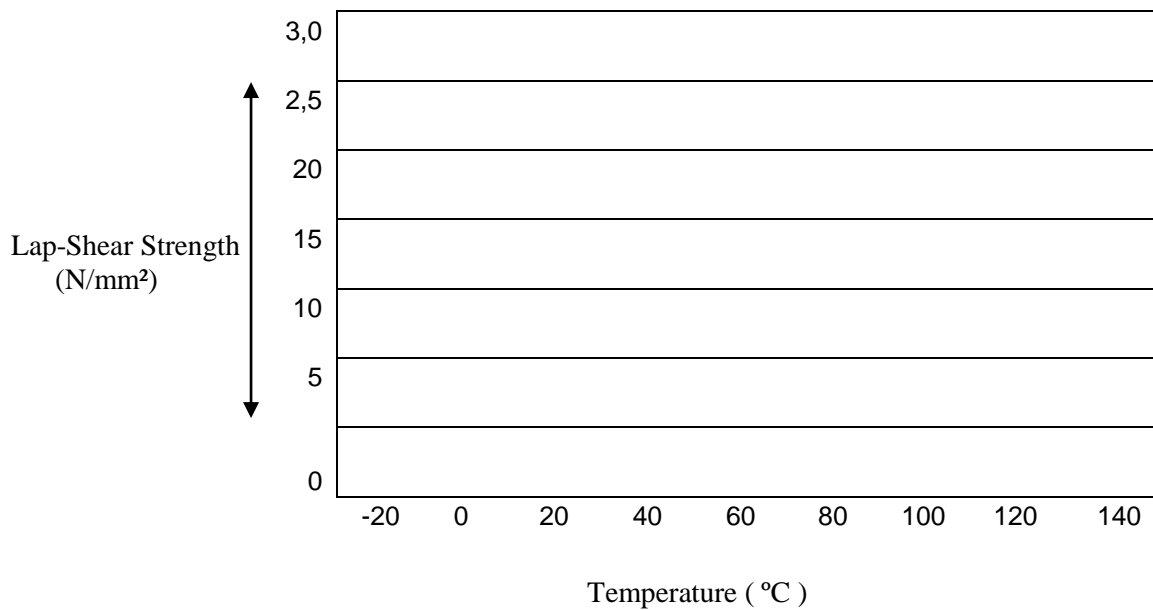
After 24 hours of cure time, leave for 30 minutes at the specified temperature.

A. Lap-Shear Strength (Unit : N/mm<sup>2</sup>)

Test specimens : Aluminium / Aluminium

Surface treatment of test specimens : Sandblasted and wiped with acetone.

Temperature (°C)	-20	0	20	40	60	80	100	120	140
Lap-Shear Strength	24.5	23.5	20.6	16.1	11.6	6.3	3.9	2.6	1.0



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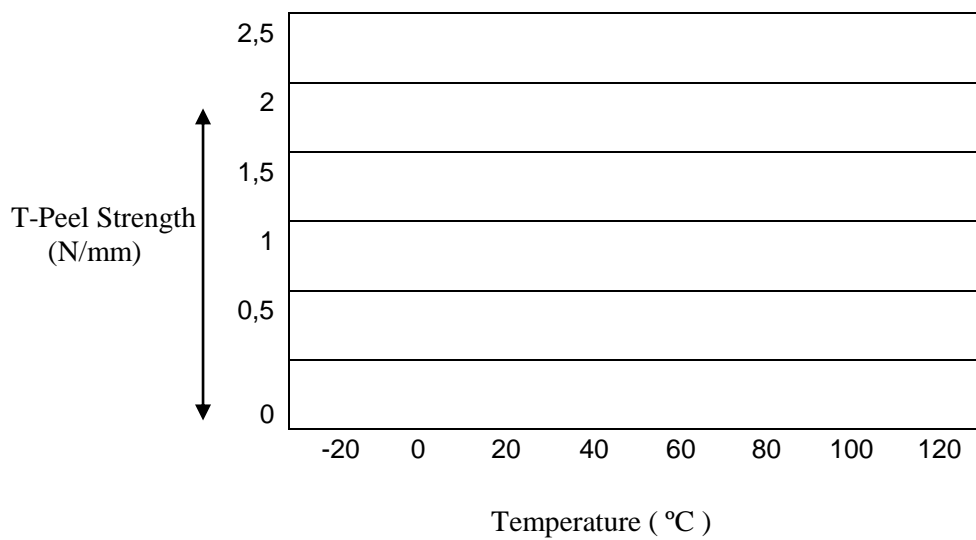
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B. T-Peel Strength (Unit : N/mm)

Test specimens : Aluminium / Aluminium

Surface treatment of test specimens : Sandblasted and wiped with acetone.

Temperature (°C)	-20	0	20	40	60	80	100	120
T-Peel Strength	0.3	1.4	2.3	1.6	1.2	0.4	0.2	0.1





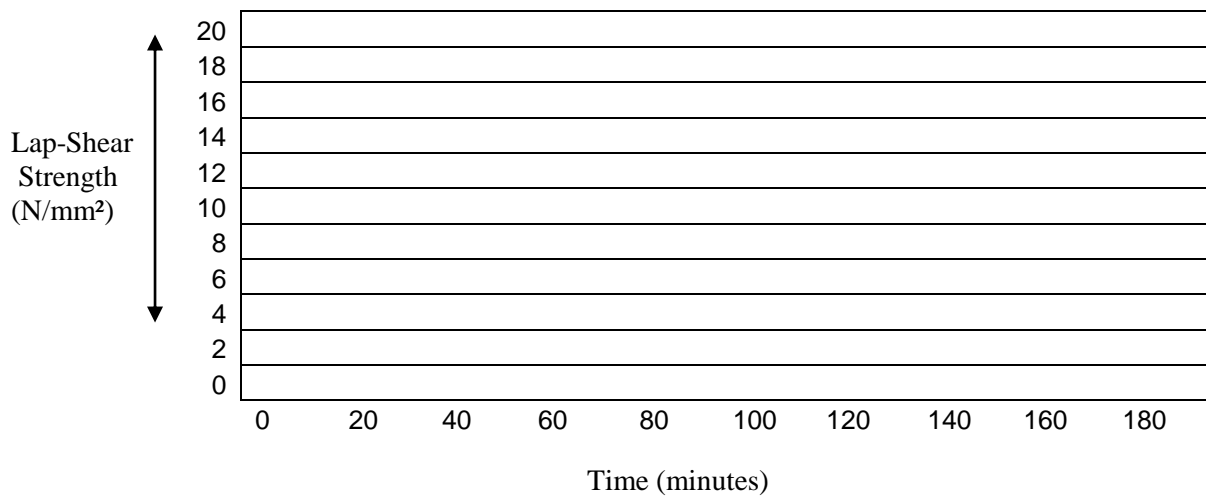
**9. TIME TO SET AND BONDING STRENGTH:**

Bond to metal at specified temperature and later measure lap-shear strength at specified time after bonding.

Test specimens : Aluminium / Aluminium

Surface treatment of test specimens : Sandblasted and wiped with acetone.

Temperature ( °C )	Lap-Shear Strength (N/mm <sup>2</sup> )					
	10 min.	20 min.	30 min.	60 min.	180 min.	24 hrs.
10	3	5	7	9	11	23
20	8	15	17	19	19	21
30	12	13	14	15	16	16



10 °C
20 °C
30 °C

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### 10. HEAT RESISTANCE:

After 24 hours of cure, leave bonded test specimens for specified days in oven at 120 °C and later measure strength at 23 °C.

Test specimens : Aluminium / Aluminium

Surface treatment of test specimens : Sandblasted and wiped with acetone.

### 11. CHEMICAL RESISTING PROPERTY TEST:

After 24 hours of bonding, immerse bonded test specimens in chemicals at room temperature for 7 hours and later measure lap-shear strength at 23 °C.

Test specimens : Aluminium / Aluminium

Surface treatment of test specimens : Sandblasted and wiped with acetone.

Strength after immersion test

Resisting property (%) = \_\_\_\_\_ x 100

Strength before test

\*Lap-shear strength before immersing in chemicals : 21/N/mm<sup>2</sup>

	Lap-Shear Strength (N/mm <sup>2</sup> )	Resisting Property (%)
Acetone	0	0
Toluene	5	24
Machine Oil	19	90
Ethyl Acetate	0	0
Methanol	0	0
Gasoline	18	86
Hydrochloric Acid (10%)	0	0
Trichloroethane	16	76

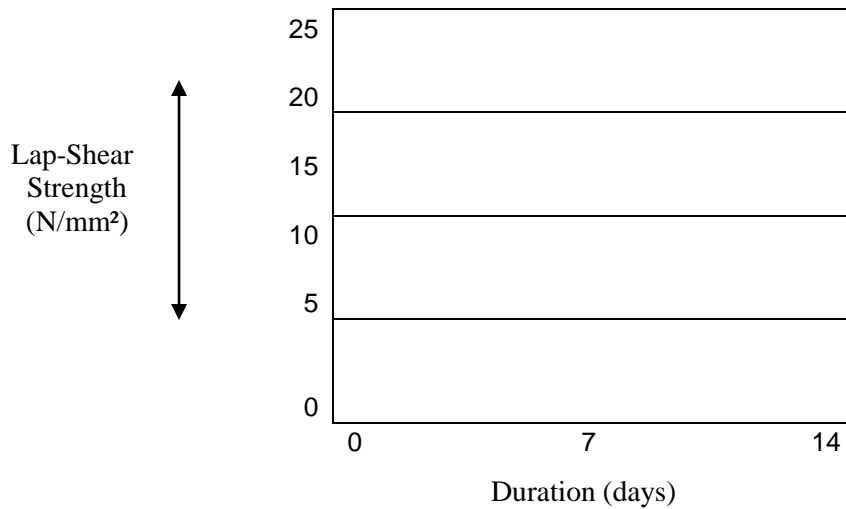
**12. WATER AND HUMIDITY RESISTANCE:**

After 24 hours of bonding, immerse bonded test specimens in water at 40 °C for water resistance and 45 °C X 95 % RH for humidity resistance respectively for specified days and later measure lap-shear strength at 23 °C.

Surface treatment of test specimens : Sandblasted and wiped with acetone.

Unit : N/mm<sup>2</sup>

Duration (days)	0	7	14
Water Resistance (N/mm <sup>2</sup> )	21	10	7
Humidity Resistance (N/mm <sup>2</sup> )	21	12	11



Water Resistance

Humidity Resistance

**Danger of rush**

When separation is found in either component, stir before use.

For more detailed information, refer to Material Safety Data Sheet.

Note: This technical information is based on the results of our reliability test. However, it is not guaranteed that performances listed can always be achieved. Users are expected to understand how the adhesive is intended to be used and consider their own usage under their own work conditions.

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### **13. HOW TO USE:**

1. Remove dust, stains or rust from surfaces to be bonded.  
Removal of oil will make adhesion strong
2. Overlap components A and B on one surface.  
Otherwise, apply component A to one surface and B to the other surface.
3. Put parts to be bonded together while rubbing.  
This ensures even coverage and increased efficiency.
4. Adjust to desired location for bonding and apply pressure with weights or clamp.

### **14. PRECAUTIONS IN HANDLING:**

1. Do not use near fire. Contain acrylic monomer. Workshop should be well-ventilated.
2. Store in a cool and dark place or in a refrigerator to avoid direct sunlight and heat.
3. Do not mix components A and B in large volume.
4. If skin contact occurs, wipe off the adhesive and wash with soap immediately.  
Danger of rash.
5. When separation is found in either component, stir before use.  
For more detailed information, refer to Material Safety Data Sheet.

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