

Q

What day is **Sept. 29th**?

A

**9 29** can be read as "くつつく"

(Note: The pronunciation of '929' in Japanese is similar to the wording of "bond")

This day was named  
"the day of bonding".

Adhesives are widely used around us, making people's daily life more versatile and convenient. In order to give you a better understanding of the correct use of adhesives and the function of different types of products, Japan Adhesive Industry Association created this manual. On September 29th, whether at school or at home, try some manual stuff associated with adhesives!

**Share this knowledge with your family!**

Sept. 29th is **"the day of bonding"!**

#### About Japan Adhesive Industry Association

Japan Adhesive Industry Association is composed of a number of adhesive manufacturers in Japan. All members have been actively promoting the production and research and development of environmentally friendly, safe and high quality adhesive products. In the future, the Association will continue to advance and promote the safety of its products and promote the development of the industry for customers and users.

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## How to Use the Adhesives



Japan Adhesive Industry Association

Question

# Do you really know about Adhesives?

In which scenes will you use adhesives?

People use a variety of glue bars when working on hand-made or repair damaged items. Most of adhesives are used at home or at school.

But do you know that adhesives are classified into many types?

For different bonding materials, we need to choose the right adhesive. Moreover, they can be used in a wide variety of industries.

For example, the manufacture and assembly of cars, airplanes, Shinkansen and rockets, etc.

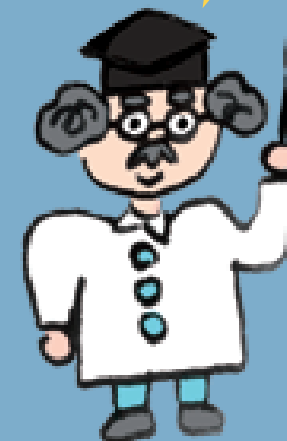
Schools and homes are even more incomparable.

Next, we will detail the type and use of the adhesive.

Learn about  
adhesives  
together!

So curious  
about  
adhesive!

Nice stuff!  
Good to  
know!



# Type of adhesives

There are many types of adhesives and the usage of them are also different. It should be noted that if used improperly, sometimes materials may not be possible to get bonded together. In addition, you'd better to refer to the the instruction before making your decision.



When bonding wood...

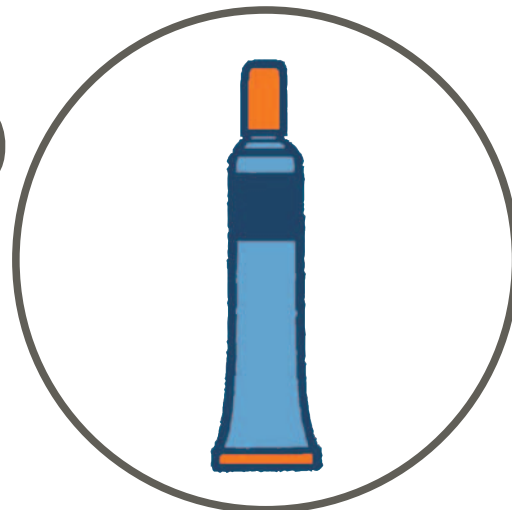
## Woodworking Adhesive

When bonding wood, we can use woodworking adhesives . They are also allowed to be used in hand-made, tailoring, or handicraft production. After drying, the gel will turn into transparent color. It takes about half a day to dry completely.

When bonding plastic bottles...

## Plastic adhesive

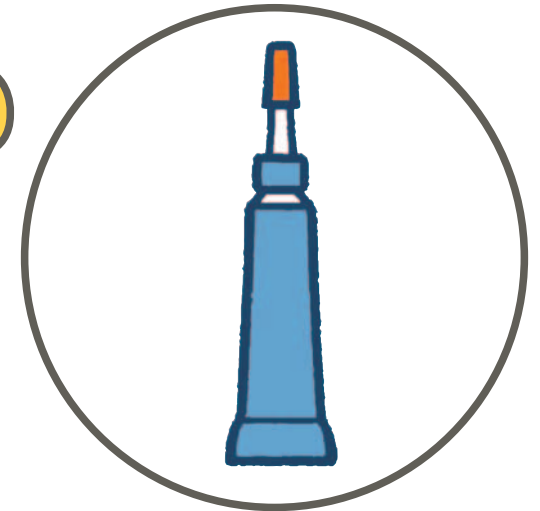
This type of adhesive is used when bonding plastic bottles. The colloid is transparent and can be dried quickly. They are suitable for plastic bottles, milk cartons, foam boards, etc.



When you need to bond quickly...

## Instant Adhesive

The instant adhesive quickly bonds the object. Mainly used in bonding metals, rubber products and other materials. It quickly solidifies when it comes into contact with moisture in the air.



In order to facilitate construction...

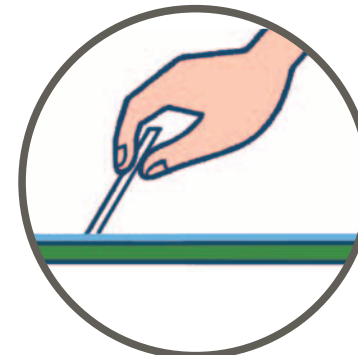
## Hot-Melt Adhesive

Heated by high temperature, the glue will get melt, and after smearing, it will solidify due to the temperature drop. The instrument like a pistol for loading such adhesive on the left is called 'glue gun'.

The secret of applying glue is...

## Lightly and Evenly

The best application of adhesive is to apply it evenly and lightly. This allows the glue to dry under the same thickness and conditions to let object adhere best.



### Tips!

When selecting glue, you need to carefully check the instructions on the product packaging for metal, wood or other types.

Make sure the glue type meets your needs.



Come  
find it!

# Where are Adhesives used?

Come and find out where  
the adhesive are used in the  
right picture!

Please circle the  
used part~



[Answer] wallpaper, laptop, pencil, school bag, book, telescope, LCD TV, furniture, toys, balcony, clothing, slippers, carpet.





## The secret of adhesive①

# Application in Daily Life

From electrical products, smart phones to sports products around us , the application of adhesives is very flexible.

## Computer and Smart phone

When bonding electronic parts of computers, it is necessary to use some adhesive mixed with metal particles to enhance the electrification performance.



## Sports Prosthesis

The 2020 Olympics and Paralympics will be held in Tokyo. Some athlete swill use prostheses to participate in the event. Prostheses are made from carbon sheets. In order to ensure stability, some special adhesives will be used to bond the carbon sheets.

In order to ensure the support ability, the prosthesis is made of a plurality of carbon sheets.

When bonding carbon sheets, we use some special adhesives.



LAPOC SPORTS  
Samurai

©Imasen Electric Industrial Co., Ltd.

## Pencil

When bonding electronic parts of computers, it is necessary to use some adhesive mixed with metal particles to enhance the electrification performance.



## Shoes

The air cushion sole protects foot from the external impact. Adhesive is also used for the bonding of t sole and body.



## Book

When the number of pages is too large, in order to prevent the book from scattering, it is necessary to use an adhesive at the binding portion to enhance the stability.





## The secret of Adhesive ②

# Application in Road and Construction

From residential building materials to interior and exterior walls, tunnels, highways, etc., adhesives are widely used in construction industry.

## Highway

Adhesives are indispensable materials for road construction. They are used when bonding internal siding in road tunnels; when cracks and damage occur on the road surface, adhesive materials such as repairing glue are also required in the repair work.



Really indispensable for urban construction!



Higashi Osaka Junction ©P IXTA

## Construction

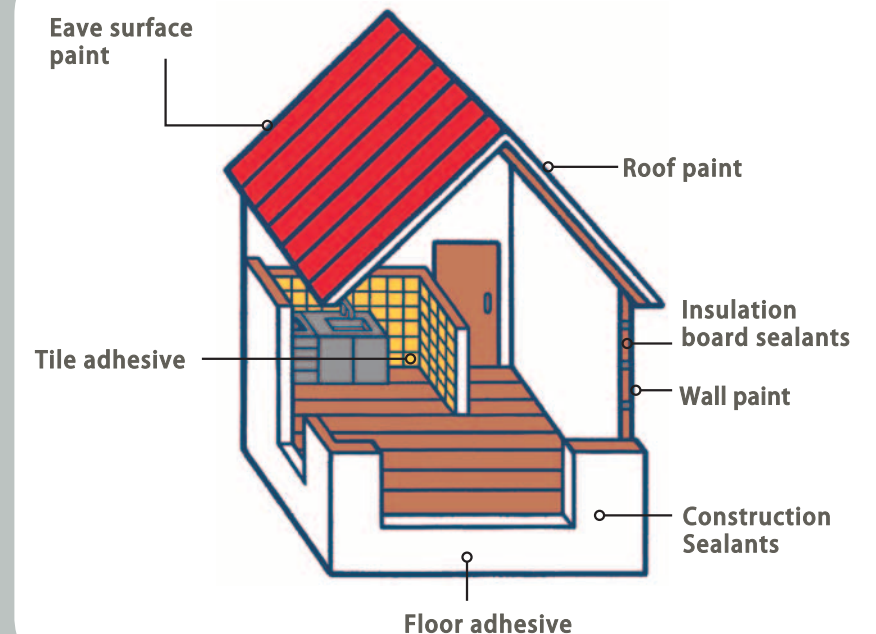
Adhesives play a huge role in building construction and repair work, which can be seen in all aspects of floors, interior walls, eaves, insulation panels, and roof waterproof construction. Moreover, the plywood used in the construction is also bonded adhesives.



Tokyo Station ©P IXTA

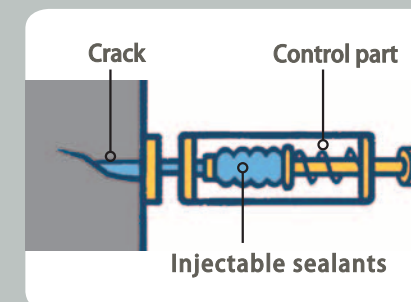
## Housing

Varieties of adhesives are also used in the construction of the house, and most of the interior and exterior building materials are with adhesives.

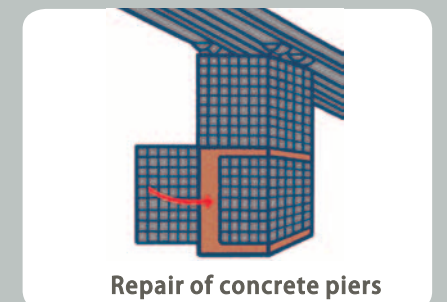


## Bridge

For the repair work of buildings such as bridges, repair adhesives are a good choice. The resin-based repair sealants can be injected into a portion where the crack occurs, or bond fiber repair materials to the damaged portion.

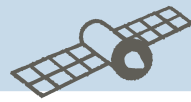


Inject the adhesive into the cracked area to enhance the firmness.



The adhesive fiber sheet is adhered to the damaged portion by the adhesive in order to enhance the firmness.





## The secret of Adhesive ③

# Application in Aviation and Aerospace

Adhesives that incorporate the latest technology are also used on aircrafts such as airplanes and rockets that are used on demanding conditions.



Boeing 787 © Boeing

## Airplane

When assembling airplanes, adhesives play a huge role. In the past, people often used bet or other metal materials. However, some special adhesives can reduce air resistance and the body quality, thus greatly improving the speed of the aircraft and improving fuel efficiency. At the same time, the interior of the cabin also needs adhesive.



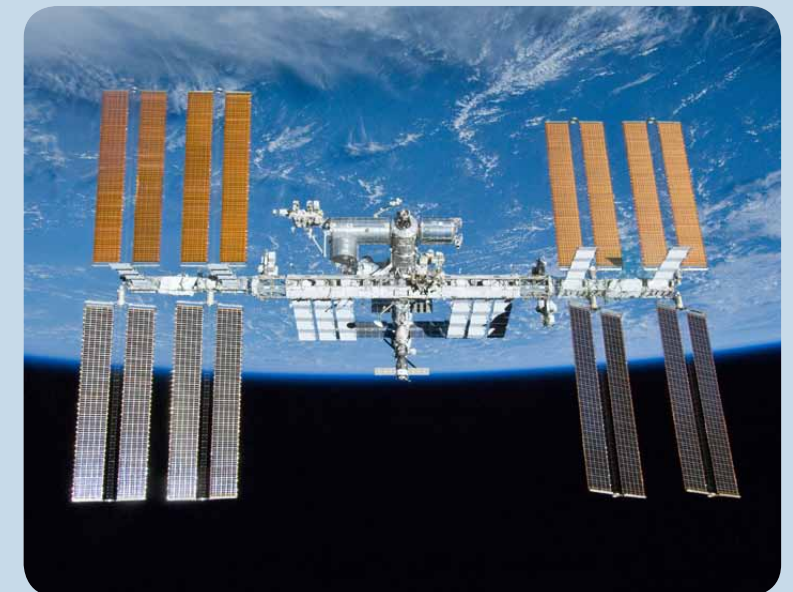
H-IIIB Rocket 4 ©JAXA

## Airplane

The rocket's external bonding and a large number of insulation panels are designed to withstand the heat generated by friction with the air and block the heat of the sun in space. In order to enhance the stability of the insulation board, a large number of elastic and high temperature resistant adhesives are used on the surface of the rocket.

## Space station

Various materials are also used in the aerospace industry to reduce weight. The adhesive can achieve a large area of bonding between objects, so it has more excellent stability than metal parts such as rivets and bolts. When repairing the space station, the special repair glue for the universe can be used as well.



International Space Station under the space shuttle lens ©JAXA/NASA

Adhesives can withstand such harsh environments!







## The secret of Adhesive ④

# Application in Transportation

Transportation such as Shinkansen and motor vehicles has very high safety requirements. Adhesives play an important role in such fields.

## Shinkansen

Adhesives are widely used in the car floor, roof, seats, interiors and other parts. Railway vehicles have an average durability requirement of more than 15 years.



Hokuriku Shinkansen E7 Series © J R East

Adhesives are used on the seals of the windows, on ceiling of the car, and on the floor.

## Vehicles

Adhesives are widely used in the car floor, roof, seats, interiors and other parts. Railway vehicles have an average durability requirement of more than 15 years.

Also used in the latest technology!



AudiA7©Audi



## The secret of Adhesive ⑤

# Application in Historical Heritage

Adhesives have long been used in Japan. Adhesives are also used to repair historic buildings.

## Atomic Bomb Dome

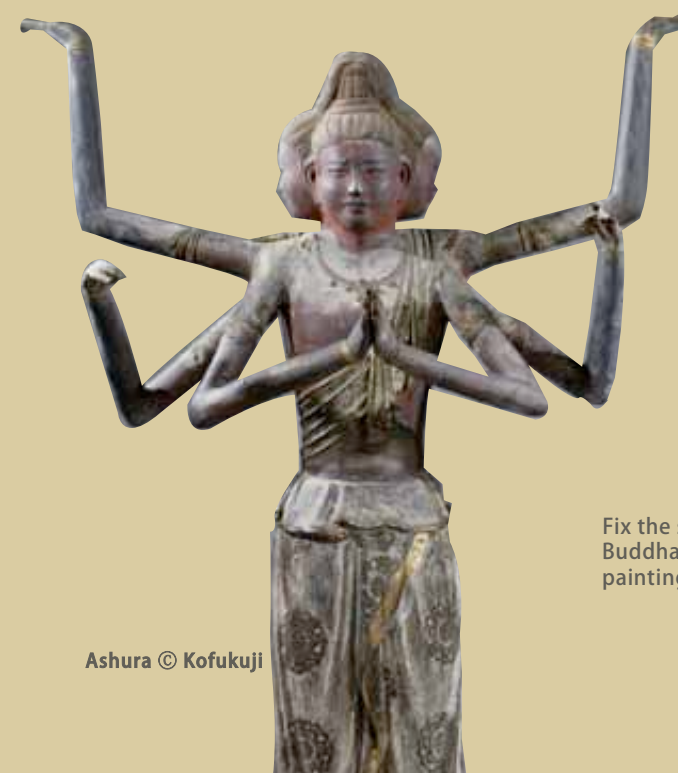
Atomic Bomb Dome, which is which is also a World Heritage Site, 70 years after the end of World War II, large and small cracks have appeared in the building as a whole. Therefore, the cracks were injected into the repair sealants so that the dome was well protected.



Atomic Bomb Dome © P IXTA

## Buddha Statue

Lacquer is an adhesive which has been used in Japan since ancient times. There are many paintings made of lacquer in the Buddha statue.



Ashura © Kofukuji

Fix the shape of the Buddha image by painting lacquer



So amazing!





Use adhesive as main material

\\ **Attach and make it!** //

work①

## "The ghost party" with adhesive

Let's make ghosts with adhesive and  
colorful beads and malls!



Let's make a  
ghost with  
adhesive!



1



Prepare materials such as aluminum wire,  
color material (wool, beaded, glass ball,  
cellophane, cloth rope, etc.), peeling spray,  
wrap film, tray, etc.

2



Lay a layer of plastic wrap on the tray. In  
order to prevent the glue from sticking to  
the cling film, it is necessary to spray a  
stripper. Next, use the aluminum wire to fold  
out the shape of the monster.

3



Apply a layer of glue along the aluminum wire frame  
or apply a different shape.

4



Glue the interior of the aluminum wire frame  
with glue. At this time, it should be noted that  
the glue is too thick and may not be easy to dry.

5



After drying, put on your favorite bead or cloth rope.

6



Apply a layer of glue to the colorful material.  
After drying, the monster will appear!



Mix the adhesive and use as a secondary material

work②

## "Fossil Discovery"!

Arrange the pieces of wood on the backing and apply the soil and sand mixed with adhesive to make fossil!

Just like real fossils!



Work



Prepare materials such as cardboard, wood, sand, earth, liquid clay.



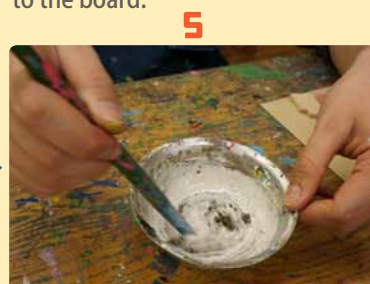
Image your favorite shape and position of the wood. Once the pattern is determined, glue them to the board.



Temporarily remove the stuck pieces of wood, which will speed up the drying to a certain extent.



Mix sand and soil into liquid clay.



Add glue and stir well. The color varies by the amount of glue added.



Apply glue to the wood with an oil brush. After drying, you can apply another layer, or sprinkle with sand, then you will find "fossils"!

As bonding application

work③

## Make Metal Creature "Kinzocron"!

Let's make a living creature using the metal around us!

Work



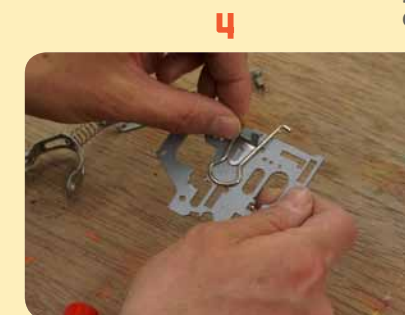
Collect unnecessary metal, empty can, wire (aluminum, iron), nails.



Remember to use gloves to protect your hands when touching metal directly or using tools.



Combine the metal to create the shape of a creature.



If it is difficult to attach, temporarily use tape. Just imagine and create creatures freely!



Kinzokuron is a fictional creature made of metal!