

Toothpick Bridge Contest

How to make a toothpick bridge

Materials and Procedure

You can build your bridge in your own way, unless you violate the rules and regulations. You can also learn from previous experiences to build a strong bridge.

Materials and tools

At first you should prepare four following materials and tools..

1. Toothpicks

Three packs (about 300 toothpicks in one pack) of toothpicks. It takes approximately 500-600 toothpicks to make a bridge..

2. Glue

One bottle of white glue for woodwork.

3. Cutter

For cutting toothpicks with a 2-mm diameter. A big blade type of cutter is easy to use.

4. Cutting mat

To protect desk from damage.



Planning

Planning and strategy are very important. Here are some important ideas.

1. Shape and structure

Even if it uses the same materials, the strength depends on shape and structure. Because there is a limitation (within 100 grams) in the total weight, the parts which can be used are limited.

Using an arched truss is mainstream now.

2. Way of manufacturing

Even if the concept is good, you cannot make a strong bridge with poor handicraft. It is necessary to have some manufacturing devices.

- To ensure adequate strength
- To prevent initial distortion

c. For drying

3. Role sharing

It is important to do role sharing appropriately.

4. Process management

Adhesion strength can't be secured even if you work all the previous night. The strength of the lumber which contains water instead will fall down. To secure strength, process management is also important.

Manufacturing

Procedure of manufacturing is generally as follows.

1. Material processing

a. Cutting

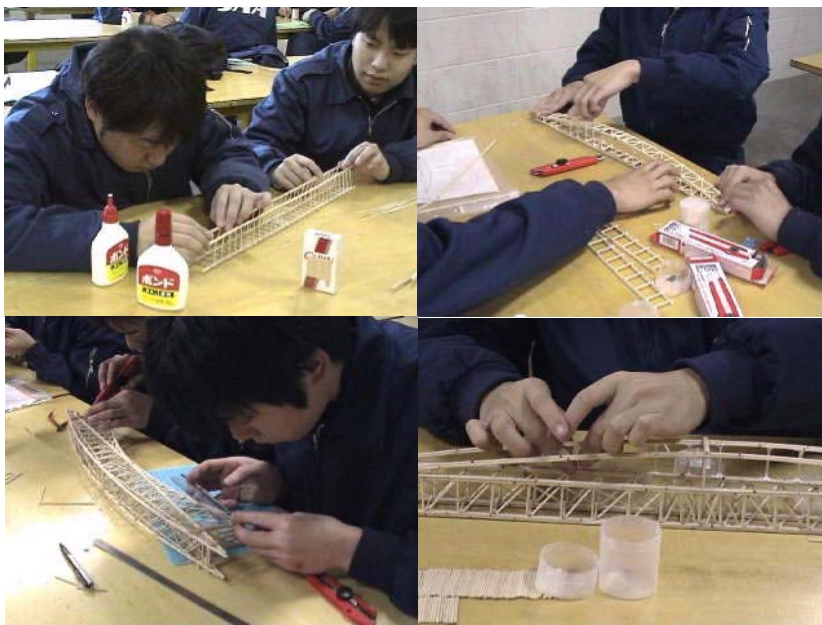
It is cut because neither of the ends of the toothpick can be used. The cutting section becomes a gluing surface.

b. Making sticks

Cut toothpicks are glued, and a stick is made. Even a slight warp influences strength greatly.

2. Assembling.

Those sticks should be assembled according to the design. The procedure from where it is assembled is important.



3. Drying

Strength develops by drying it, because the glue contains water. Though air-drying is better, you can dry it with a drier too. But, attention is necessary because distortion due to dryness may occur in case of drying with the drier.



4. Measurement

When the weight exceeds 100g, you forfeit the right to participate in the contest. You should weigh it sometimes during manufacturing.



5. Reinforcement

Usually the bridge is reinforced after building it within 80-90g of the weight limit. Then necessary reinforcement should be made.

It takes a very keen sense of measurement to find the strengths and weaknesses of the bridge to make an appropriate reinforcement.



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