

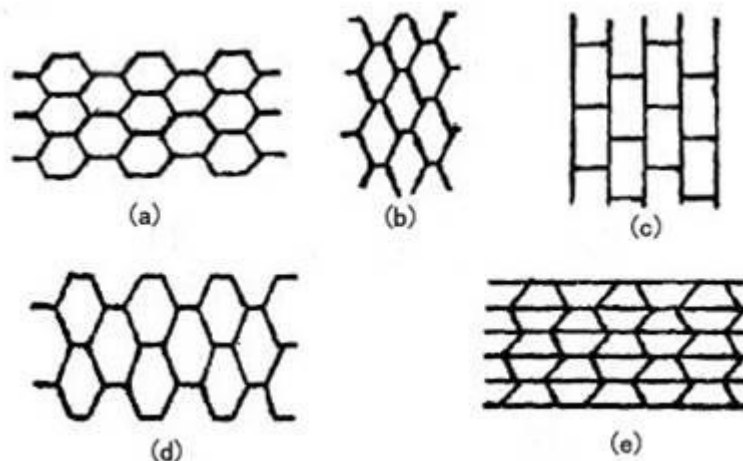
1. The purpose and significance of study 1:

The honeycomb cardboard is a new kind of environmental protection material, it is in saving wood, reduce the white pollution, promising broad removing trade barriers and economic. Honeycomb paperboard has the advantages of light weight, high specific strength and shock absorption, impact resistance and material saving etc..

This article through the analysis of experimental data, the analysis of thickness, environment etc on board flat pressure, lateral pressure and the elastic modulus influence, and discuss the results of the analysis, finally obtains the thickness and the environmental conditions of honeycomb paperboard advantage and optimal performance is based on the theory and experiments.

2. factors affecting the strength properties of honeycomb paperboard:

Many factors affect the performance of honeycomb paperboard, the damage mechanism is very complicated, such as the honeycomb paper core is good or bad, honeycomb thickness, good or bad, on the production process of honeycomb cardboard strength are affected. In addition, the honeycomb hole shape has influence on the intensity (see below). Which have strengthen hexagonal honeycomb belt strength is the highest, followed by the regular hexagonal honeycomb.



(a) - positive six angle; (b) - diamond; (c) - rectangle; (d) - sinusoidal curve; (E) - with a reinforcing band six angle
Different shapes of the honeycomb hole

3 on properties of honeycomb paperboard

(1) the experimental materials and experimental environment

Side pressure and pressure test specimens are 60 x 60 x 10mm, 60 x 60 x 20mm, 60 x 60 x 25mm, wherein, different lateral pressure test specimens with honeycomb hexagon direction istwo, we called the A, the B two kind of types, as shown below. The elastic modulus of the sample were 200 x 60 x 10mm, 200 x 60 x 20mm, 200 x 60 x 25mm.

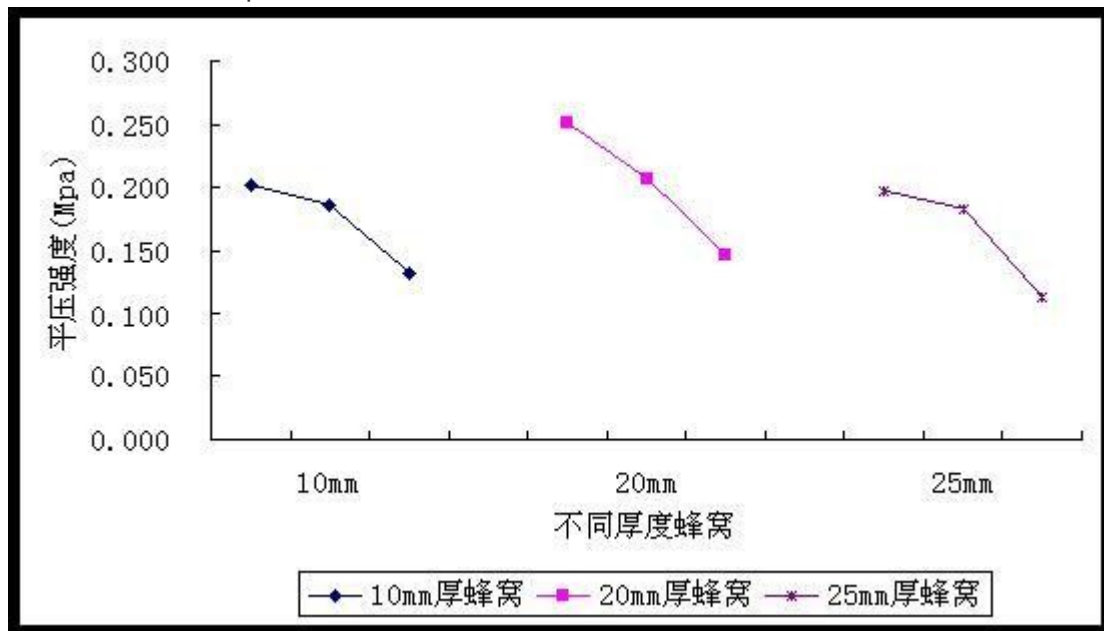
(2) experimental conditions are divided into the following three types:

Condition 1: constant temperature of 60 DEG C conditions: the specimen is put in the dry box storage after 30 hours remove seal and the rapid test, measured at the final moisture content of 2.73% samples;

Condition II: normal temperature conditions: normal temperature (24 DEG to 26 DEG C), the average relative humidity of about 55% samples, the final moisture content is 8.30%;

Condition III: 90% humidity: will sample kept in the incubator temperature and humidity instorage for 30 hours, at the final moisture content of 13.94% samples.

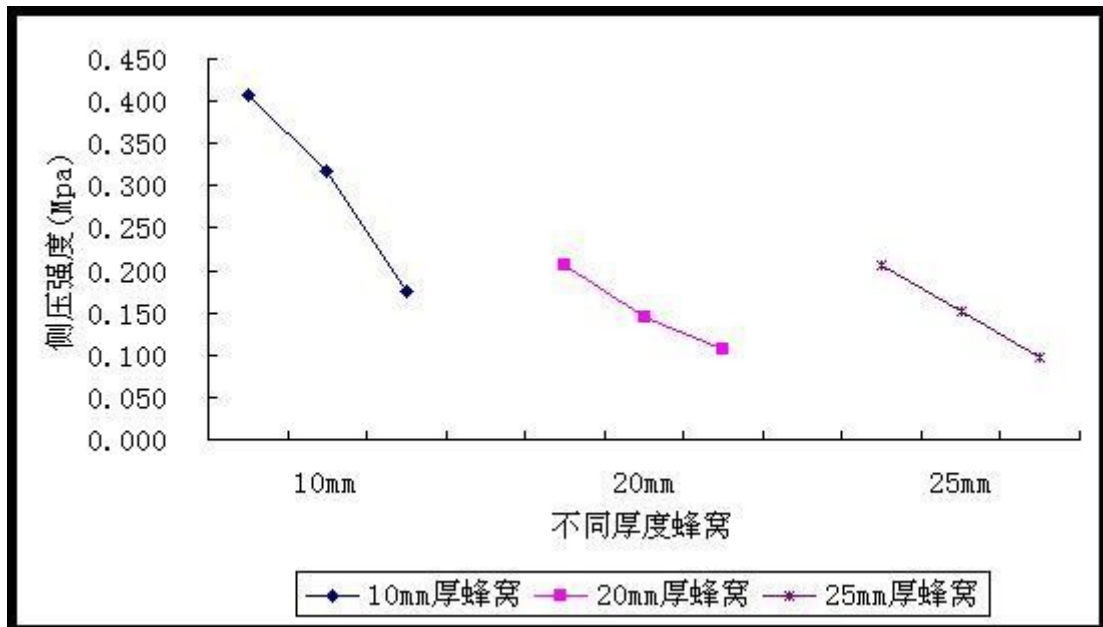
4. The results of experiment :



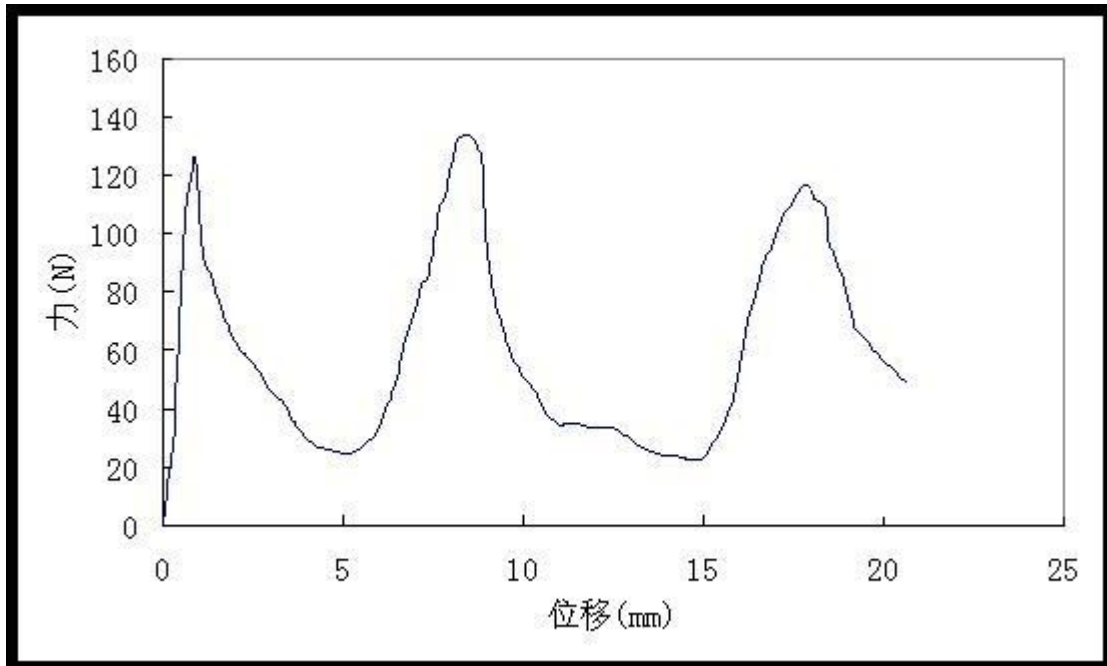
Environmental factors on cellular flat pressure affect the performance comparison chart



The honeycomb cardboard flat compression deformation of specimen

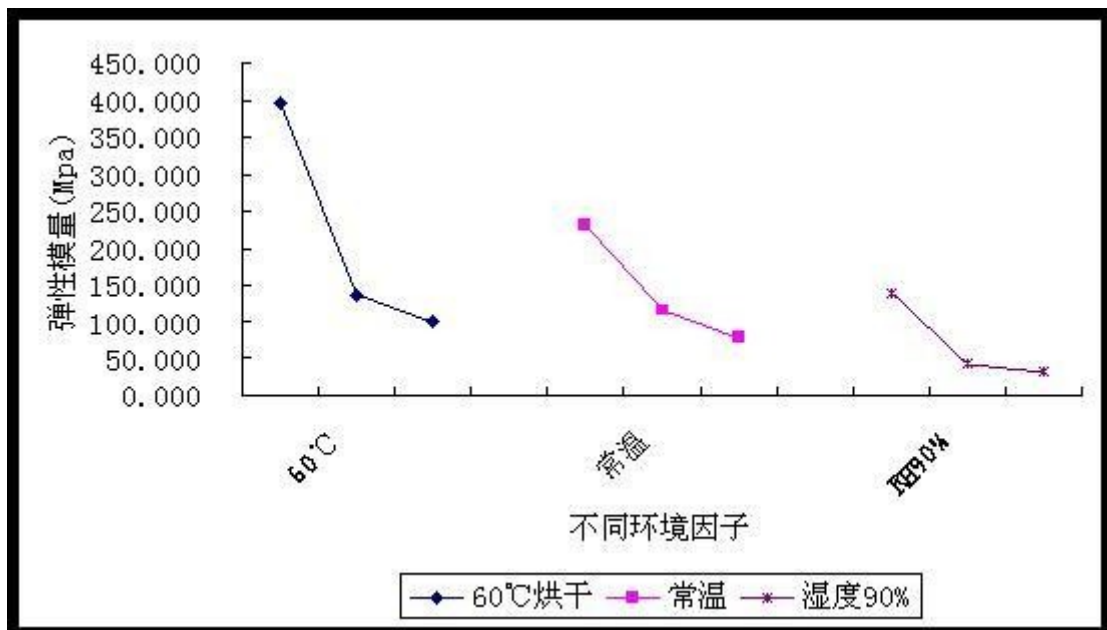


Effect of lateral comparison diagram of experimental environmental factors on cellular side A



The lateral load - displacement curves of honeycomb paperboard

In the pressure in the process of experiment, we found the honeycomb cardboard as the lateral material showed a significant advantage to the left below is a typical honeycomb paperboard side pressure displacement curve, right below is a through the honeycomb cardboard side pressure after the experiment.



The same environmental factors on different kinds of honeycomb paperboard elastic modulus map

5 experimental analysis summary:

(1) the same thickness of honeycomb paperboard compression, lateral pressure and elastic modulus size increased with the humidity increases, i.e., drying conditions, were the biggest strength.

(2) in the same environmental conditions, the 20mm thickness of honeycomb paperboard flat compression strength is maximum, another 10mm is equivalent to 25mm. Flat compression strength is not with the increase of the thickness and the simple increase or decrease.

(3) in the same environmental conditions, the elastic modulus increased with the increase of the honeycomb cardboard thickness reduction, namely the honeycomb thickness increases, the elastic modulus decreased.

(4) in the same environmental conditions, the 10mm of honeycomb paperboard side was significantly higher than that of 20mm and 25mm value of honeycomb paperboard in the same environment, the same thickness, lateral A direction along the B direction is less than the pressure value. That is, lateral direction along the cellular B greater intensity.