Adhesive Tape

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1 Introduction

The subject of my research is adhesive tape. I focused on determining the minimum force necessary to unstuck a piece of tape, I investigated according to temperature, pressure forces, surface type and angle peel..

2 Adhesion and cohesion

Adhesion and cohesion is the intermolecular interactions. Adhesion is the force that is between two different physical bodies, as well as between their surface layers,
While stick the tape we have the structure of solid (PVC tape) - liquid (glue) - solid (surface).
Adhesion is between the tape and glue, and also between the glue and the surface. The measure of adhesion, is the work per unit area, which needs to be done to hang the body in contact.

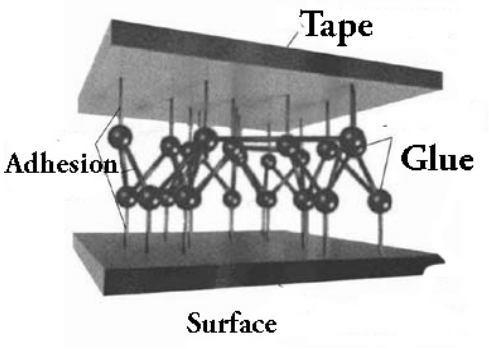

Fig.1 Scheme

3 Measuring system

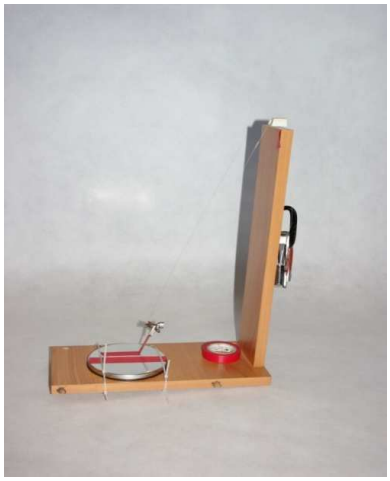

Fig.2 Measuring device

On the right side hangs weight, this is connected to the tape using the line. By use this solutions, I didn`t have to peel the tape manual, which could affect on the measurement accuracy.

4 Experiments - Temperature

Adhesion of a very large extent depends on the temperature, the relationship between the coefficient of viscosity and temperature, shows equation (1)

$$\eta = A \cdot e^{B/T} \quad (1)$$

T- Temperature [K]

Measurements were at 7, 26 and 42 degrees centigrade. In the latter case, the belt is unstuck from the heating plate at this measurement the glue made structure in the form of threads (Fig1). From measurements can conclude that the adhesion decreasing with increasing temperature.

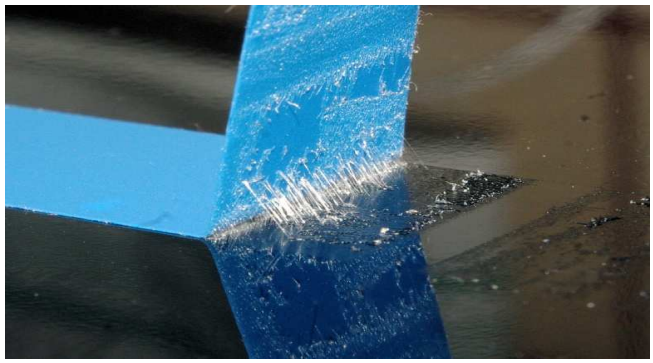

Fig.3 Structure of glue

5 Conclusion

I calculated the percentage impact on parameters for force. Temperature 41%, unstuck angle 26%, feed force 17% and surface type 16%.