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EXPERIMENTAL AND THEORETICAL STUDIES OF THE PROCESS OF CUTTING POLYMER MATERIALS

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Annotation
This article refers to the cutting processing and cutting processing of resin materials and the dressing of the shavings. When cutting, the cutting modes are how they are, and the cutting modes are prepared in the direction of the effect on the surface cleanliness.

Keywords: Polymer, shavings, idea-this is, sharpener, metal, mol.

Introduction

It is obtained by molding plastic products, molding (molding under pressure, pressing and head) methods. However, many types of high precision details that are produced on strict demand can be achieved by cutting back on polymer materials. Processing methods depend on the equipment and equipment used. Most often, for metal and woodworking, a cutting tool, a bench, is used. With this, the variety of types of effective processing of cutting plastic, the specific characteristics of the desired processing of plastic, the lack of imagination is determined. For example, the surface of the plastic treated with cutting is often scratched, with cracks and streaks, covered with traces of the cutting tool. As a result of the cutting, burns are observed on the surface of the reagoplasts from the dressing of the overcoat and the folds from melting on the surface of the thermoplasts, as a result of which there is a need to perform additional finishing work on the details.It is also possible to observe the scraping(fracture)of the tool cutting the edge of the material and its ingestion, except for the crossbar. The reason for these difficulties is the lack of good knowledge and inadequacy of rheological (tension, viscosity, elasticity) and thermal properties (specific heat capacity, heat transfer, heat dissipation coefficient)of plastics.

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According to the researchers, the main factors affecting the process of cutting polymer materials are 1.1. listed in the table.
Factors affecting the process of cutting plastics:

Factors	**Axamiyatli ta'sir soxasi**
Structure of cutting tool; Tool geometry: the previous angle is y, the second angle is a, the circle at the top (peak) is r.	Dressing shavings be. The instrument is strained, eaten. The roughness of the treated surface.
Tool material	Eating the tool
Cutting mode: cutting depth of cut, cutting speed, transmission.	Dressing of the shavings be, the idea of the treated surface the idea is identity.
Environmental Protection Performance, Cooling type.	Heat dissociation, the appearance of melting and pouring.

The process of dressing the shavings is influenced by the angle on the front of the cutting tool, the cutting modes (the size of the cutting speed, the longitudinal thrust and the depth of cutting) of the floor. The density of the surface depends on the geometry of the tool and the cutting modes. The speed of the tooling eaten and the productivity of the cutting process are influenced by the material of the tool. Scientific work of many scientists is devoted to the study of the properties of cutting of polymer materials or solid alloys. The cutting properties of solid alloys of the following brands have been studied: VK (VK2, VK3, VK3M, VK4, VK6, VK6M, VK8, VK8M, VK8V) solid alloys of group; TK (T5K10, T14K8, T15K6, T30K4, T60K6) solid alloys of group; TT7K12 solid alloy.
Comparison of WK and TK Group alloys (figure 1.2) shows that the first group has high durability.

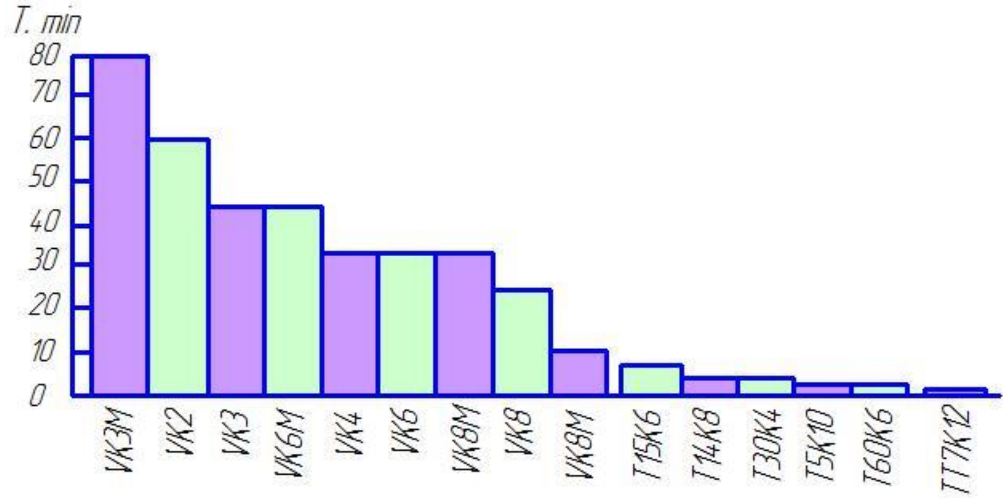

figure 1.2
EFB-P of solid-alloy chisels is a diagram of the durability of glass plastic sharpening (cutting speed-v=90m/min. push, longitudinal-s=0,21 mm / ob., cutting depth-t=1,5 mm)
The reason for the high rate of absorption of TK Group solid alloys in comparison with VK Group solid alloys is the specificity of the material being processed and the difference in the physical and mechanical

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properties of solid alloys. According to the results of the research, the following general requirements for the materials used in the processing of plastics have been identified:

1) The front corner should not be Y floor and should not exceed the amount of y=10+15°, in some cases, this amount can be close to 0, which is mainly determined by the conditions of dressing the shavings.
2) It is necessary to enlarge the size of the rear corner a as much as possible, this will lead to an increase in the resistance of the tool, the smaller the area of the adjacent on the surface of the tool ord, ϕ in the plan under the tight conditions of cutting, it will be necessary to increase the amount of auxiliary angle.
3) The tool must be sharpened, with a fine-grained circle of the cutting edge, the tool is not allowed to eat much.
4) The durability of the plastic processing tool can be significantly reduced than the durability of this type of metalworking tool, which is insulated with a much (several dozen times) lower than the strength of the winding for cutting.
5) The shavings of the instrument should be carefully treated (polished); their volume should be folded; this is necessary to prevent the adhesion of polymer curtains to the surface of the instrument, as well as to place a large amount of dressing shavings.

From experiments it is known that the use of fastener steels in the group TK in plastic processing is not advisable, since the durability of the tool is very low in this case.

The roughness of the treated surface depends on:

-to the characteristics of the material being processed;

- cutting mode;

-geometric indicators of the cutting tool;

-to the eating of the cutting tool;

- type of processing;

-to the shake at the time of cutting and so on.

It is difficult to take into account the influence of all the factors listed. However, if the optimal geometry tool treatment is taken into account for a particular material, the idea is that it is possible to reduce the amount of factors that determine the degree of uniformity (cutting speed, transmission and cutting depth) to the lowest.

When sharpening polymeric materials, cutting profiles are required to ensure a high level of resistance of the cutters and the productivity of the workpiece, while meeting the requirements of detalga compliant with practical recommendations. Significantly affects the wear and resistance of cutters, the cutting speed, then the thrust and the depth of cutting affect the minimum durability. Therefore, first the cutting depth is selected, then the shear and at the top end the cutting speed is selected . Setting the cutting modes begins with the determination of the reduction to the processing and the depth of cutting. They usually determine the cutting depth based on technological conditions, the hardness of the detail, the type of sharpening, the accuracy of the recommended dimensions of the detail. 1.2 table shows the

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recommended amounts of cutting depth for specific classes of surface treatment due to the variety of tool and recycled material brands .

It is possible to calculate the optimal (optimal) speed of cutting (according to the durability of the tool) by empirical strokes with a period of endurance, cutting depth and push, depending on the material of the tool. This determines the degree of impact of different factors of the cutting process on the cutting speed. For example, the cutting speed v(m/min) when cutting chetinax with a sharpener made of hard alloy VK8

$V=\frac{5640}{T^{08}S^{055}t^{055}}$ (1.1.)

you can cheat with a formula.

Cutting speed with high-speed steel cutters

$V=\frac{1500}{T^{082}S^{055}t^{055}}$ (1.2.)

with the nozzle can be considered bunda: t-Tool durability, min; S-longitudinal thrust, mm/ob; t-cutting depth, mm.

bond analysis (1.1.) and (1.2.) shows the following:

1) the permissible speed of cutting with fasteners is 2,5-3 times less than the permissible speed when working with a hard alloy tool;

2) cutting speed is reduced by 4 times when you increase the push, for example 2 times;

3) increase the cutting depth by 4-fold, reduce the cutting speed by 2 times;

4) increase the cutting speed by 2 times (for example from 60 to 120 min) to 90% or decrease by almost 2 times

1.2.Table. Recommended regimens for bathing thermoplastic plastics.

The degree of cleanliness of the surface.	Tool material and cutting depth.							
	P18, t=1mm		VK6M, t=0,25÷0,5mm		Rubin, t=0,25÷0,5mm		Almaz t=0,25÷0,5mm	
	v,m/min	S,mm/ob	v,m/min	S,mm/ob	v,m/min	S,mm/ob	v,m/min	S,mm/ob
Organic glass								
8	25	0,03	50	0,01	300	0,03	300	0,03
7	200	0,03	350	0,03	300	0,074	300	0,074
6	300	0,078	150	0,195	300	0,15	300	0,11
5	300	0,11	300	0,195	300	0,195	-	-
Polietilen								
7	150	0,03	200	0,05	200	0,074	200	0,074
6	300	0,11	350	0,11	300	0,15	300	0,15
Ftoroplast-4								
7	150	0,03	200	0,03	250	0,03	250	0,03
6	300	0,073	250	0,11	300	0,11	300	0,11

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Conclusion

Analyzing the results of experiments on mechanical processing of polymer materials, one can draw such conclusions: the thrust on the inertia of the processed surface has the highest impact. Almost all plastics will have the lowest inertia when pushing 0,2-0,35 mm / ob. When processing all plastics, there is a sudden tearing of the height of the unevenness in the sliding range of 0,3-0,35 mm/o, the reason may be that such transfers were recommended in black coughing .

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