HEATING ORDER

Khakimov Nodir Nurilloevich .
Andijan State technical institute
Department of " Materials Science " assistant
khakimovnodir5@gmail.com , +998902031170

Abstract: In some cases, there are situations in production where stamping technological process one or two simple from parts organization finds, but metal blanks high borderline to temperature is heated. Such In some cases, stamping is completed at temperatures much higher than the lower limit, in order to avoid the formation of a coarse-grained structure in the workpiece. A decrease in temperature at the end of deformation can cause the surface of the coating to become rough or crack. Grains shape and size according to harvest was defects thermal processing way with, for example, normalization or soften thermal processing to give can be solved using methods.

Ke**ywords:** The bags shape according to harvest was defect (if defect can be corrected by re-stamping (when the seal is in a separate place). Of course, harvest was defect cracked, crack gone or cleaning in the form of, that is minimum at the level in size small when, such defects There is no possibility of correction, they are re-melted.

Introduction: Question is born: the temperature intermediate to the level compliance to do is it necessary The data from the practice of modern manufacturing enterprises show that recently, processes that do not adhere to a constant temperature range during semi-hot stamping have been introduced into production. If we consider that the development of the stamping process should be carried out in conjunction with heating technology, then reducing the high temperature level will also increase the efficiency of heating and stamping operations, reduce energy consumption reduces, Form a soot defect partially prevent takes and Improved surface quality of the coating and reduced additions

result in reduced metal consumption.When the steel (alloy) composition is the same, the temperature range for forging and stamping can be different. This is because, hammering result hammer with one how many times when hit or

known according to the progress of the press Stamping is performed on a mechanical press or automatic machine, and is usually done in one go.

Hammering and stamped in deformation heat result and heat The cost is different.

The highest heating temperature of the metal for hammering, that is, the highest value of the intermediate temperature, does not correspond to the starting temperature for hammering, every always last from the level high will be. Processing to give for Before the heated metal is removed from the furnace and transported to the hammering device, the surface of the heated metal loses its temperature because the temperature of the surrounding air is not uniform, and convective heat flows also affect it. does. Metal internal in the part temperature, in the oven when heated how The lower intermediate hammering temperature is the surface temperature at the time of the final movement of the press or the hammer strike on the surface of the shell .

The more complex the chemical composition, the narrower the temperature range. For example, the temperature range for grade 20 steel is from 1280 to 700 °C, i.e. 580 °C, while for high-speed steel grade R6M5 it is from 1170 to 900 °C, i.e. only 270 °C. Depending on the chemical composition of the solution, in some cases, to the pokovka relatively short and expanded hammering intermediate temperatures are acceptable. However, the possibility of overheating the cast structural metal is eliminated, deformation level very It is clear. Hammer with hammering The temperature range is shorter than for pressing, meaning less heat is dissipated to the tool and the environment, due to the shorter contact time.

Taking into account the above data, it is necessary to distinguish between the permissible and the specified temperature of the forging range. The

permissible temperature range during pressure processing is a universal characteristic for these metals and alloys. It does not depend on the size and shape of the heated workpiece, the process, the processing, the selected equipment.

Hammering is allowed. intermediate temperature The mechanical properties of the samples obtained during deformation (plasticity, resistance to deformation and hardening), as well as the results of tests on the recrystallization of the metal (primary, throughout the body and secondary) are determined. The specified temperature range is determined based on the results of the production process in the corresponding forging shop (forging - stamping equipment, furnace, distance between the furnace and the machine, tool, etc.) and, if necessary, taking into account the completed heat treatment.

Heating duration is the time required to heat the workpiece in the working area of the furnace to the final temperature. The duration of heating is influenced by several factors: the size and shape of the workpiece being heated, the required heating temperature, the physical properties of the metal, to heat environment and to the heat preparation the oven worker methods of placement in the field.

The duration of the heating process is determined by the allowable heating rate. There are many methods and formulas for estimating the heating time of a metal

K on the position of the workpiece in the furnace is shown in Figure 3.3. Often, special instructions or tables from databases are used to determine the heating time, especially for small and delicate workpieces.

Figure 3.3. The value of the coefficient K corresponding to the size of the workpiece is Large in size blanks, from it outside small to plasticity has

was high alloyed steels to heat step - stage in order (can be carried out in several stages). One-stage stage – used only for small-sized workpieces. Two-

stage stage – performed in two parts, that is low (650 ÷ 850 C) and high at temperatures to heat (lesson heating to the final temperature at the highest speed technically possible without fear of overheating).

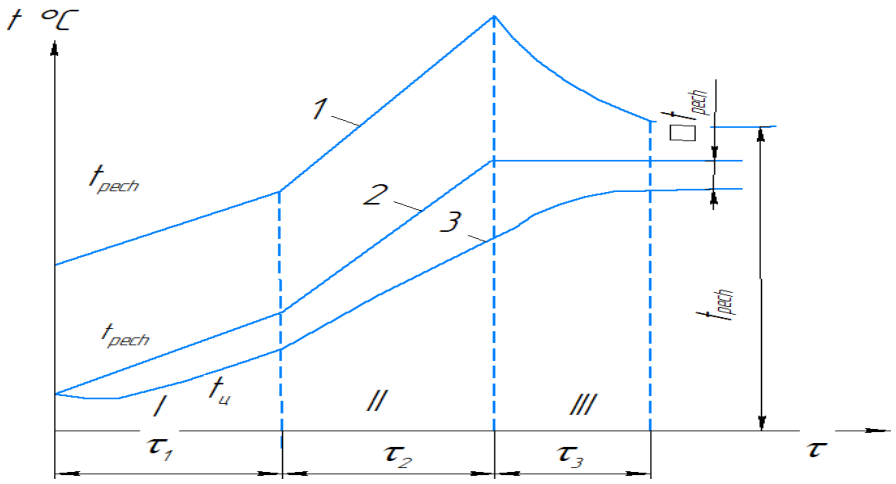
Three-stage procedure – consists of three parts, i.e., at the same time at low temperature to heat, high to temperature heating adaptation and preparation

Maintain the finished high temperature to ensure uniform temperature throughout the body. The heating in the first and second stages accounts for ≈80% of the total heating.

The heating rate is limited by the temperature gradient, i.e., the temperature changes depending on the absorption of the metal into the body. Figure 3.4 shows a diagram of such a heating procedure.

Figure 3.4. The bags three in the bush to heat order: I – in the oven temperature, II – temperature at the surface of the body; III – temperature at the center of the body

Permission done temperature range 100 0 C temperature between to be



necessary.

Bi and Fur criteria to know middle part for O 2 value second nomogram through is determined (Figure 3.5, b). From here after t $o'rta$ tallow was

t

second equality solution possible.

If t t determined in value the temperature change 100 0 C around if, It must maintain the metal at the specified temperature.

In the practice of modern manufacturing enterprises, several methods of heating and cooling blanks are adopted. The blank is initially assumed to be at the same temperature ($t = t$ 0) : Permanent temperature t c environment when (t $c > t$ 0 - to heat, t 0 < t 0 - cooling)

REFERENCES

1. Gusovsky V.L., Lifshits A.E. Methods and calculation of heating and thermal furnaces: study guide. Publ . Moscow: Teplotekhnik , 2004. -400 p.
2. Rustem S.L. Equipment And design thermal workshops: textbook for mechanical engineering universities and faculties. Moscow: Mashgiz , 1989. -588 p.
3. Telegina A.S. Thermal engineering calculations metallurgical furnaces. M.: Metallurgy , 1992. -380 p.
4. Sokolov K.N. Mechanization And automation V thermal ovens. M.: Sverdlovsk. M.: Mashgiz , 1986. -295 p.
5. Jophee HMM. , Brewers F.I., Prokhorenko A.P., His A.M., His I.M.
6. Heating metal. M.:Metallurgy , 1981. -280 p.
7. Logachev M.V. Calculations of heating devices: a teaching aid for students of specialties 1-36 01 05 "Machines and technology of metal processing by pressure" - Minsk: BNTU, 2008. -75 p.