

METHODS FOR STUDYING THE STRUCTURE AND COMPOSITION OF WELDED AND COATED PARTS

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Annotation: this article provides information about the machines used to study the internal structure of parts.

Keywords: structure, wear, abrasion, technology, repair, analysis.

Annotatsiya: Ushbu maqolada detallarni ichki strukturasini o'rganish uchun ishlatiladigan dastgohlar haqida ma'lumotlar keltirilgan.

Kalit so'zlar: Struktura, yeyilish, ishqalanish, mikroskop, texnologiya, ta'mirlash, tahlil.

Аннотация: В статье представлена информация о машинах, используемых для исследования внутренней структуры деталей.

Ключевые слова: структура, износ, истирание, микроскоп, технология, ремонт, анализ.

The structure is the internal structure of the metal under study, which is determined with the naked eye, using a magnifying glass, under a microscope or using X-rays. The structure of metals visible through magnifying glasses or with the naked eye is called the macrostructure, the structure visible through X-rays is called the X-ray structure, and the structure visible through a microscope is called the microstructure. When determining the macrostructure of a metal, the surface of the sample is exposed to a weak acid (reactive solution), since the reactive solution affects certain components of the metal differently, a macrorelief is formed on the surface of the sample, and such a sample surface is called a macrosection. The structure of the macrostructure of cast metals is in the form of dendrites, and when this cast metal is processed under pressure, it forms fibers due to the elongation of the dendrites. In this case, depending on the macrostructure of the metal under study, it is also possible to determine the direction of the fibers and the degree of deformation. Using special etching (i.e., reactive solution casting) methods, it is possible to determine the internal defects (cracks, inclusions, pores, etc.) and homogeneity of the metal. The method of studying and examining the macrostructure is used in scientific research and industry. The microstructure of metals is that all technical metals are composed of small crystals of irregular shape, that is, grains. These crystals can only be seen using an electron microscope or an optical microscope. To determine the microstructure of a metal, a sample is first cut from this metal and one side is polished to a mirror; a reactive solution, that is, a weak solution, is applied to it. As a result, a microrelief (microsection) is formed on the surface of the sample. If this microsection is observed through a microscope, the microstructure is clearly visible. The study of the microstructure is one of the main methods for knowing and assessing the quality of metals.

[1]

Based on the above information, I first polished the sample I prepared by polishing it until it became a mirror-like state. Let's talk about the polishing machine:

First, a part of the samples prepared for the experiment was welded and coated with a certain brand of hard alloy-forming powder composite materials. The working surfaces of the samples taken from the auto-assembly parts welded and coated with powder composite materials are

polished and polished on the polishing machine until they become a mirror-like state. The reason for this is that it is necessary to see and check the structure of the part. The structure and composition of the part that is not polished are not visible well. The following figure 1 shows the MY1224 polishing machine [2]:



Figure 1. MY1224 grinding machine for mechanical processing of welded flat-surface parts

This grinding machine is of great importance, mainly when conducting experimental experiments, it is necessary to determine the structure and composition of the parts. It is impossible to directly check the composition or structure of the finished sample. The main reason for this is that the top lines and various cracks of the finished sample make it impossible to see the main composition. Table 1 below shows the technical parameters of the MY1224 grinding machine:

Table 1
Technical parameters of MY1224 polishing machine

Qismlari	Texnik ko'rsatkichlari	MY1224
Ishchi stol	Ishlov beriladigan detalning maksimal o'lchamlari	600 x 300 mm
	Stolning maksimal yurish yo'li	640 x 320 mm
	Ishlov berish yuzasi	640 x 320 mm

	T-simon o'yiqlar soni	1 x 14 mm
Jilvirlash kallagi	Stol yuzasidan shpindel markazigacha bo'lgan masofa	490 mm
	Jilvir toshining o'lchamlari	250 x 25,4 x 76,2
	Shpindelning tezligi	1440 ayl/min

After the sample prepared for the experiment is polished to a mirror-like state, a weak reactive solution is poured onto the surface of this sample and its structure is studied using an A13.0201-



B2 metallographic microscope (Figure1.2).

Figure 1.2. Metallographic microscope A13.0201-B2

This A13.0201-B2 metallographic microscope is designed to view and photograph the microstructure of metals and alloys by reflecting light at an angle and in a straight-line illuminated field. [3]

Table 1.2

Technical specifications of the metallographic microscope A13.0201-B2

Parametrlarning nomlanishi	
Okulyarning kattalashtirish darajasi, marta	WF10x/18 mm
Obyektivning kattalashtirish darajasi, marta	10x/0,25; 20x/0,40; 40x/0,60; 100x/ 1,25

Filtrlanishi	4 хил
Yaqinlashtirish darajasi	0,002 мм
Mikroskopning revolver kallagi	4
Ishlash bosqichi	180x150 мм
Nur manbai	6V20W

Machine for studying the composition of samples. After processing the surfaces of the samples on a polishing machine, they are cleaned of various dust and oils and additionally polished with sandpaper. To study the composition, they are installed in an optical emission spectrometer (Figure 1.3) and, according to the standard GOST 18895-97 “steel method of photoelectric spectral analysis”, the spectrum of light emitted from the heated metal is examined and the chemical composition of the alloys is determined. [4]



Figure 1.3. Spectrometer Spectrolab device

The following table 1.3 lists the technical specifications of the Spectrometer Spectrolab device:
Table 1.3

Technical specifications of the Spectrometer Spectrolab device

Parametrlarning nomlanishi	
Uzunligi	1674mm
Eni	771mm
Balandligi	1409mm
Og'irligi	520mm

Texnik ko'rsatgichlari	
Taminlash manbasi	230/115 B ± 10/15 % 50/60 Гц
Chaqnash vaqtidagi maksimal quvvati	1000 vatt
Ishlash sharoiti diapazoni	+10°C +30°C
Namlik	20-80 %

Used literature

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