eas leading to increase of its resistance to crystal lattice rearrangement. Thus being annealed austenite remains in microstructure at 500-700 °C transforming later into hard martensite at room temperature. That causes high hardness of high-Cr-Mn (Ni) cast irons after softening annealing.

ABRASIVE WEAR RESISTANCE OF V-Cr-Mn-Ni CAST IRONS

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Nine white cast V-Cr-Mn-Ni irons were studied. Alloys contained 3 % C, 4 % Mn, 1.5 % Ni, 5…10 % V, 0.0…9 % Cr, all of them were treated by rear-earth metals in purpose to get spheroidal VC carbides. Alloys were investigated in as-cast condition. Microstructure, hardness and abrasive wear resistance were studied. Wear test were undertaken by SUGA-method with SiC abrasive paper. The results are presented in Fig. 1, 2.

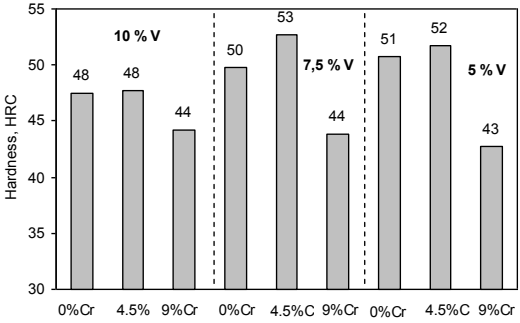

Fig. 1 Hardness of alloys tested

Microstructure of alloys' metallic matrix varied from "pearlite-martensite" to "austenite" according to their chemical composition. Spheroidal VC carbides and carbide eutectics (γ-Fe+M_3C) and (γ-Fe+M_7C_3) were found as well. The hardness of alloys was in range of 43…53 HRC (Fig. 1). The Cr content increasing was followed by hardness decrease. The highest hardness was noted for alloy 7.5 % V-4.5 % Cr.

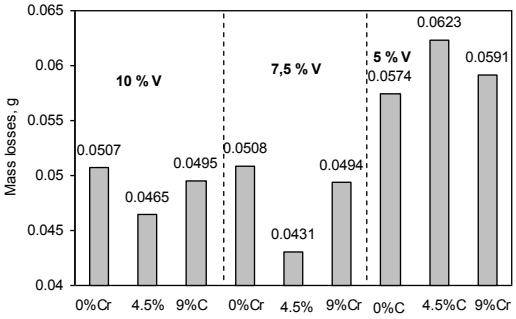

Fig. 2 Mass losses values of alloys tested

Fig. 2 shows mass losses values after wear test. It can be seen that alloys bearing 10 % V and 7.5 % V demonstrate near the same wear resistance. When V content decreased the mass losses were found to be increased considerably. The lowest mass loss is attributed to alloy 7.5 % V-4.5 % Cr (0.0431 g). Its microstructure consists of 39 % austenite, 36 % fine pearlite, 9 % VC, 16 % of (M_7C_3 + M_3C). It proves that 2.5 % of V can be partly replaced by chromium that causes production cost lowing while the wear resistance is growing up. It was found no correlation between the hardness and wear resistance of alloys studied.

СТАТИСТИЧЕСКИЙ АНАЛИЗ КАЧЕСТВА МЕТАЛЛОПРОКАТА ИЗ СТАЛЕЙ 06ГБ, 06Г2Б, 06ГБД

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На основании массива данных поплавочного химического анализа сталей 06ГБ,06Г2Б и 06ГБД толщиной от 6 до 50 мм в различных состояниях в среде Excel были рассчитаны статистические характеристики механических свойств: среднее арифметическое, мода, медиана, размах вариации, дисперсия, стандартное отклонение, асимметрия и эксцесс. Уровень надежности числовых характеристик соответствует P=95%. Объем выборок для каждой марки стали составил ~200-300 плавок.

Средние значения прочностных характеристик стали 06ГБ составили: $\sigma_{0,2}$ =433 МПа и σ_B =521 МПа. Для σ_B и $\sigma_{0,2}$ выполняется примерное равенство $x_{ср.} \approx Me \approx Mo$. Минимальное значение для $\sigma_{0,2}$ составило 382 МПа, что удовлетворяет требованиям стандарта, если класс проч-