

## Optical spectroscopy of the interelectrode gap in the electrospark machining of steel with tungsten and tin bronze

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*Optical atomic emission spectroscopy was used to study the region of the interelectrode gap in the electrospark treatment of 35KhGSL steel using anodes made of tungsten WP and tin bronze ERCuSn-C. When treated with a WP tungsten anode, the spark discharge plasma temperature is 4000 K. The emission spectrum consists of the spectral lines of atomic iron (Fe I). The low temperatures of the spark plasma hinder the formation of the vapor phase of refractory tungsten. When using the anode material of bronze ERCuSn-C, the temperature in the discharge region takes values of the order of 10000 K. In the emission spectrum, there are spectral lines of atomic (Cu I) and singly ionized (Cu II) copper. The formation of ions is associated with the occurrence of thermal and impact ionization of copper atoms. The absence of spectral lines from the cathode element (iron) is due to the formation, at the initial stage of the development of an electric spark discharge, of a liquid layer of the anode material (bronze) on the cathode surface.*

*Keywords:* atomic emission spectroscopy, tungsten, tin bronze, interelectrode gap, temperature.

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