

Metals Extension Using Local Raw Materials With Liquid Surkov Composite

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Abstract

This article presents the IR spectra of a new cast composite obtained from local raw materials and an analysis of the elongation and deformation oscillations between the bonds of the resulting composite at a frequency of 400 cm⁻¹. In addition, the increase in surface tension with organic substances on the surface of steel wires and metal ion bonds passing through them is given. The article proves the amount of substances by SEM-EDS scanner analysis as a result of stretching metals. The percentages of elements are as follows; C-67.02%, O-28.42%, Na-3.40%, Mg-0.21%, Al-0.19%, Si-0.26%, S-0.16%, Cl 0.14%, Ca-0.18%.

Keywords: SEM-EDS scanner, calcium stearate, sodium stearate, flea and talc, carbon, pH, dry powder composite.

Introduction. Meeting the growing needs of the construction industry in the world and providing the construction industry with new, high-quality products is one of the main tasks. In this regard, the availability of construction products in a ready-made state from cheap and natural resources is one of the main factors[1]. It is necessary to give different sizes to metals, which are the main part of construction materials, as well as to study in more depth the composition of steel wires and the mechanical effects on their surfaces. Therefore, the use of dry-rolled composites (DRC) in the stretching and processing of metals is of great importance. In this direction, the development of a technology for creating dry-rolled composites for stretching metals and developing its production from local raw materials is one of the urgent tasks.[2,3]

A number of scientific studies are being conducted in the world to obtain and create a technology for producing dry-rolled composites used for metal processing. In particular, special attention is paid to optimizing the composition of calcium

stearate and sodium stearate salts in the composition of the composite in the production of dry-cast composites, increasing the variety of filler products, testing the resistance of the composite to high temperatures, obtaining composites that allow it to work in various conditions, and studying the physicochemical properties of dry-cast composites for stretching steel wires and obtaining various products (wire, nails, screws) from them, as well as testing them in the metallurgical industry.[4,5]

The main part. The dry powder composite used for stretching metals was analyzed using scanning devices to determine the composition of the substances and the presence of a bond between them, and based on the results of the analysis, it was aimed to determine whether the content of organic salts is small or large and whether additional substances were added. [6,7] Based on this scanning analysis, the Chinese imported product was first analyzed. Second, samples obtained using the previous technology were analyzed.

After the analysis, a composite analysis was performed using the new technology. According to the results of the analysis, it was determined that the Chinese imported product contained a high content of organic salts, sodium and potassium stearate, and there were no additional substances (Figure 1).

SEM-EDS scanner analysis allows us to find out the amount of substances.

The first point indicates a high carbon content. For example, calcium stearate contains 22%, sodium stearate contains 10%, and talc contains 14% carbon, which is known to be more than 60% of the organic salts imported. Carbon is the most abundant element in the composite.[8,9]

The second peak is related to oxygen, and almost all substances contain oxygen. The third peak contains small peaks of silicon and aluminum. Of interest in the fourth peak is that of the three visible elements (Al, Si, Ca), Ca is the most abundant. This point confirms the different nature of the two previously analyzed points[10,11]. C and O are the most abundant elements in the third point, because the particle is smaller than the other two points, so it can be seen that part of the signal comes from the area around the particle or from the composite matrix.

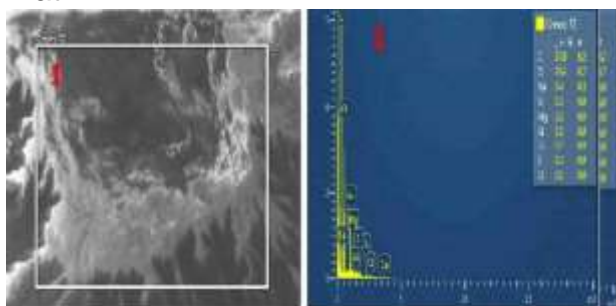


Figure 1. SEM-EDS scanning analysis of a Chinese import product.

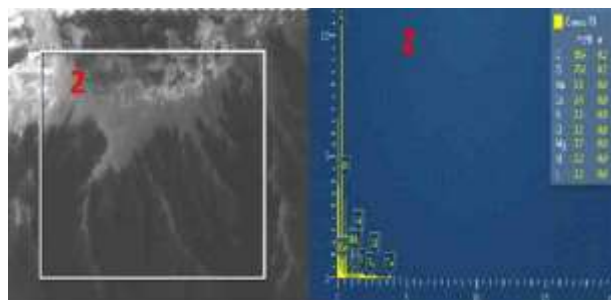
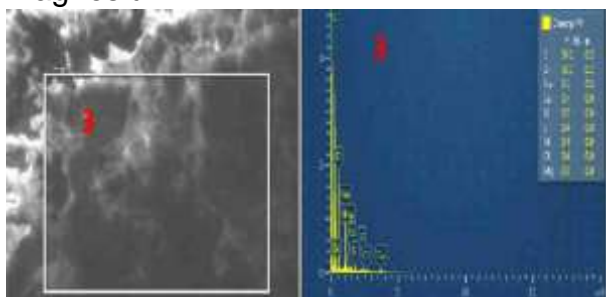


Figure 2. The first sample is a composite scanned by SEM-EDS.

We can see that the Chinese imported product contains a large amount of Ca and C, although the lubricating properties of sample 1 are low, but the adhesive properties of the surkov composite are higher than the rest of the samples.

The imported product contains 57% carbon and 3.4% sodium, which shows that the amount of organic matter is high, and samples with such a composition are not resistant to high temperatures. It was also found that the reuse coefficient is high. This type of sample is used in the practice of high-speed drawing of steel wires. The composition of the surkov composite contains 0.3% silicon and 0.2% magnesium. In sample 1, point 1 can be identified as silicon. In point 2, there are small peaks of silicon and aluminum. Point 3 shows that out of the three elements (Al, Si, Ca), Si is the most abundant, which confirms the different properties from the two points analyzed earlier. The fact that the amount of Ca stearate in the composition is higher than in sample 1, both improves the adhesion of the surkov composite to the steel wire surface and, together with the kaolin and talc added to the composite, increases the resistance of the composite to high temperatures. We can see that the Chinese imported product contains a large amount of Ca and C, although the lubricating properties of sample 1 are low, but the adhesive properties of the surkov composite are higher than those of the other samples. The imported product contains 55.4% carbon and 5.1% sodium, which

shows that the amount of organic matter is higher than that of the imported product, and samples with such a composition are not resistant to high temperatures (Figure 2). However, it was also found that the reuse coefficient is higher. This type of sample is used in the practice of high-speed stretching of steel wires. The composition of the Surkov composite includes 0.5% silicon, 0.4% chlorine, 0.4% sulfur, and 0.3% magnesium.



EDS spectrum analysis revealed that the composition of sample 2 contains 5.9% Na. Therefore, the slurry prepared in this ratio is considered to be strong in terms of its lubricating properties. Dry slurry composites with high lubricating properties can be used for drawing steel wires with a higher carbon content or special properties. Sample 8 can be used for drawing wires at high speeds, and the secondary residue is also relatively small. The main and filler raw materials included in the composition of the dry slurry composite should be evenly distributed throughout the entire volume of the composite composition. This is shown by EDS analysis.

Conclusion. The results of infrared spectroscopy analysis, differential scanning calorimetric analysis, X-ray structural analysis and SEM-EDS scanner analysis of imported and new composites from China show that the mass fraction of organic compounds and organic salts in the imported product is more than 50%. Through infrared spectroscopy analysis and differential scanning calorimetric analysis, it is possible to see whether there is an intermolecular bond between the

components of the component diagrams obtained without heating. The reason for the low waste generation of the composite obtained using the new technology was determined. In this case, due to the large amount of organic salts and the absence of intermolecular bonds in the composition of the samples, that is, the composite obtained without heating and the product imported from China, it was observed that up to 20% of secondary (unwanted) products were formed during the passage of the wires through the die.

The difference between the sample obtained using the original technology and the sample obtained using the new technology is that during the heating process, organic salts are first dissolved and then inorganic salts are mixed. The organic salts in this sample reach the melting and decomposition temperature, which leads to the formation of a hard monolith and low intermolecular bonding. Based on the new technology, that is, by heating inorganic salts and then gradually adding organic salts, the internal energy of the salts first increases, and then the addition of organic substances and intermolecular bonding are observed.

In conclusion, it can be said that the sample obtained using the new technology has a higher efficiency of 18-35% than the samples obtained using imported and original technologies.

LIST OF REFERENCES USED

- Z.Khamrakulov, G. Doliyev, S. Mamazhanov, O. Abdullaev, A. Isakov // The Electrical Components Are Made from Local Raw Materials. Solid State Technology Volume: 63 Issue: 6 Publication Year: 2020 pp 9709-9716
- Z.Khamrakulov, G. Doliyev, A. Abdulhaev, S. Mamazhanov, O. Abdullaev, G. Ishaqova // The Use of Lubricant Compositions Made on the Basis of Local Raw Materials in The

- Processing of Electrode Wire. International Journal of Advanced Research in Science, Engineering and Technology Vol. 7, Issue 10, October 2020 pp 1526-1529
- Z.Khamrakulov, G. Doliyev, S. Mamazhanov, O. Abdullaev // Localization of Welding Electrode Components. NamDU "Ilmiy axborotnomasi" jurnali Namangan 2020 yil 10 son 66-71 b.
- G.Doliyev, A.Abdulhaev, J.Umaraliev, O. Abdullaev, S. Mamajonov, B. Sultonov // Technology Obtaining Composites for Processing of Metals on the Base of Local Raw Materials. Current Journal of Applied Science and Technology 40(27):, 2021; Article no.CJAST.74276 ISSN: 2457-1024 (Past name: British Journal of Applied Science & Technology, Past ISSN: 2231-0843. rr 48-53
- Z.Khamrakulov, G.Doliyev, A. Abdukhaev, S.Mamazhanov, O.Abdullaev // Production of components for welding electrodes based on Local raw materials. Scientific and technical journal Of namangan institute of engineering and Technologyscientific and technical journal of NamIET ISSN 2181-8622
- G.Doliyev, A.Abdukhaev, S. Mamazhanov, O.Abdullaev // The electrical components are made from local raw Materials. Academic research in educational sciences: 5.723 Directory Indexing of International Research Journals-CiteFactor.volume 2 issue 8 2021 ISSN: 2181-1385
- G'. Doliyev, A. Abduxayev S. Mamajanov, O.Abdullayev, T.Sarimsakov // Grease composite extraction technology for stretching steel wire from local ra
- Nodirov, A. A., Sultonov, B. E., Abdullajanov, O. A., & Kholmatov, D. S. (2021). The clinker method of extracting phosphoric acid from Central Kyzylkum phosphorites. Scientific Bulletin of NamSU, 7, 69-75.
- Sultonov B. E., Nodirov A. A., Xolmatov D. S. Research of the Composition of Phosphogypsum Produced During the Extracting of Phosphoric Acid from Ordinary Phosphorite Powder by the Clinker Method //Chemical Science International Journal. – 2023. – T. 32. – №. 2. – C. 51-58.
- Avazovich Nodirov Alisher, Sultonov Bohodir Elbekovich, and Holmatov Dilshod Sattorjonovich. "The main chemical composition of phosphogypsum. Formed at the obtaining of extraction phosphoric acid by clinker method." International scientific review LXXXIX (2023): 6-8.
- A.Abdulxayev, S.Mamajonov, Maxmudova, A.Nodirov Surkov kompozit mahsulotlarini ishlab chiqarishning texnologik usullari. Innovations in technology and science education ISSN 2181-371X 132-137 bet