

Colour flints of Ukraine

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Flints are specific concretionary sedimentary solids, composed by authigenic aggregates of amorphous and crystalline silica. In the territory of Ukraine they are located in Volyn-Podillia, Donbas and the Crimea. Flint is the stone used by humans. First mentions on flints use are found in the Stone Age (Paleolithic). At that time it was used for making the first tools and hunting instruments, fire lighting, household keeping. In the Middle Ages flint was widely used in medicine. From historic sources it is known that in the 9th to 10th centuries in many countries of Europe flint was used for wall lining in premises, where meat was kept. For getting high-quality bakery flour flint grindstones were used at the mills. In German villages the pieces of crumbled flint were put into the tableware with milk for better keeping and prevention of early acescence. And up to nowadays flint is widely used as an efficient natural filter and water activator. Besides its curative phenomenon flint has rather peculiar physical-and-chemical properties (abrasivity, solidity, stability), due to this it is well handled - cut, ground, polished. Relative hardness at the Mohs Scale is 6.5-7. The hardness of flint is influenced by the presence of particles of organic substance or carbonate in it and also by the degree of devitrification of silica.

Our research concerns the study of flints from the point of view of their use in stone saw art. The main criteria for that is high ornamentality subject to texture and colour. Such forms allow producing different decorative goods from flints. Besides that it is necessary also to study technological aspects and conduct marketing research. We have carried out field studies of main forms of flints, considered the peculiarities of stratigraphic and regional extension, mode of occurrence and the morphology of flinty concretions. We have sampled a reference collection to determine the particularities of mineral composition, decorative and technological features and we have carried out in experiments.

The main concentrations of the stone are dedicated to deposits of the Upper Chalk, namely to the Cenomanian and Turonian. In these geological units they have almost regional extension. Flint manifestations are shown in the marine epicontinental facies, mostly composed of chalk, chalk whitestones and marls. Other facies types have sharply subordination sense. In the productive horizons the flints are present in the form of scattered-and-isolated concretions, sometimes they merge into coalescent flinty horizons, fixed on certain facies levels and they have regional distribution

The morphology of flinty concretions is rather variegated. The most popular ones are fanciful (bizarre), rarely they are roundish and isometric. Flints joined into the horizons as a rule have a plate-like flattened shape. The sizes of the concretions vary from several mm to 80 cm in diameter, the weight is ranging from several grams to 30 kg. The surface of the flints is irregularly humpy with numerous hollowness and salience. The contact of flints with the enclosing rock is always clear, on the top the flints are covered with white crust.

Mineral composition of concretion silicstones among studied manifestations is rather homogeneous. They are mostly (90-95%) composed of cryptocrystalline chalcedony and small amounts (5-10%) of quartz, opal, sulphides, oxides and hydroxides of iron, calcites, coaly material and organic remains.

Flints are very different in colour - black, grey, dark grey, blue-and grey, red, brown, light brown, yellow-and-brown, yellow ones. The nature of flint colours is allochromatic. Colours from yellow to brown is caused by the presence of oxidized forms of iron, blue-and-grey colours - by iron oxides, and dark grey and black - by presence of coaly and organic material. By their texture the flints can be one-colour, concentric-and-zonal, patterned and spotted.

We have technologically developed decorative goods and jewellery from material of selected reference collection of flints (taking into consideration their features): a jewel case, buttons, a tieclasp, a penholder, a pendent and others (Fig. 1.).



Fig. 1.: Decorative goods and jewellery made of Ukrainian flint. Flint wares have not only aesthetic look but they are ecologically safe.

As a conclusion we can say that the flint can be effectively used in different spheres as abrasive and jewel-and-productive material. The most part of colour flints on manifestations can be gathered from the surface that is economically sound.