

Patent claims

1. The method of separating grains of valuable minerals, precious metals, rare-earth metals, precious and semi-precious stones from natural ores in the aquatic environment by means of the phenomenon of adhesion, consecutively covering known stages such as:
 - initial separation consisting in sieving fractions up to 5000 μm from alluvial (rubble) ore or crushing primary (rock) ore to a fraction causing the separation of valuable minerals from gangue and where appropriate separating ferromagnetics from ores by means of a known method;
 - forming the suspension by mixing the initially separated fraction of ore with liquid;
 - adsorption of valuable minerals from the suspension on the adhesive coating and also recovering water from the process;
 - desorption of particles of valuable minerals from the adhesive coating;**is characterized in that** lanolin or its mixtures with additives are used to form the adhesive coating in the separator, whereby, the content of lanolin in the mixture is not less than 80%.
2. The method according to claim 1 is characterized in that adhesive materials akin to grains of valuable minerals such as wax or natural oil are applied as additives.
3. The method according to claim 1 is characterized in that at least one substance improving the parameters of the process is used as an additive.
4. The method according to claim 1 is characterized in that the adhesive coating containing 100% of lanolin is applied to the surface of the separator after previously heating lanolin to the temperature from 36°C to 170°C and then after removing the excess of lanolin the separator is cooled down until the adhesive coating solidifies on the working surfaces of the separator.
5. The method according to claim 1 or 2 or 3 is characterized in that the adhesive coating with the use of lanolin as a component of the mixture with added adhesive material akin to grains of valuable minerals or improving the process parameters is applied to the working surfaces of the separator after previously heating up the mixture to a temperature ensuring the melting of its components and then after removing the excess of the liquid mixture the separator is cooled down until the adhesive coating solidifies on the working surfaces of the separator.
6. The method according to claim 4 or 5 is characterized in that the heated lanolin or its mixture is applied to the working surfaces of the separator by the flow of liquid lanolin or its mixture through the separator or by spraying working surfaces of the separator or by immersing the surface of the separator in liquid lanolin or its mixtures.
7. The method according to claim 1 is characterized in that the adsorption process of valuable

minerals from suspension is conducted in a continuous manner by the flow of the suspension through the separator.

8. The method according to claim 1 or 7 is characterized in that the suspension is saturated.
9. The method according to claim 1 is characterized in that desorption is carried out at a temperature equal to or higher than the melting point of lanolin or its mixtures.
10. The method according to claim 1 and 9 is characterized in that desorption is carried out with heated water.
11. The method according to claim 1 and 9 is characterized in that desorption is carried out using another heated solvent selected to the composition of the mixture, causing dissolution and outflow of the adhesive coating from the separator together with valuable minerals.
12. The method according to claim 1 and 9 is characterized in that desorption is carried out using a gaseous medium heated to a temperature causing the adhesive surface to melt.
13. The method according to claim 1 and any of the claims from 9 to 12 is characterized in that desorption is carried out in a separator equipped with its own heating system.
14. The method according to claim 1 is characterized in that during the desorption process valuable minerals from the dissolved adhesive coating are separated in the sedimentation tank in the presence of liquid with a specific gravity higher than the specific gravity of lanolin or its mixtures.
15. The method according to claim 1 is characterized in that lanolin or its mixtures recovered in the separation process is directed for reuse in the process.
16. The method according to claim 1 is characterized in that the liquid used in desorption recovered in the process is directed for reuse in the process.