

Deposits and occurrences of bentonite in the Slovak Socialist Republic

Deposits of bentonite clay in Slovakia occur in young volcanic mountain ranges or in the volcanogenous to sedimentary suites in basin fillings of Neogene age. Such accumulations are present in Central Slovakia within small intramountain basins and also in the East Slovakian basin.

Geological structure

The geological framework of bentonite occurrences in Central Slovakia is best explained by the situation on the Stará Kremnička—Jelšový potok deposit located on the SW margin of the Kremnické vrchy Mts. (fig. 2). A review of all bentonite occurrences in Slovakia is given by Tab. 1.

Bentonite in the East Slovakian basin originated as the alteration product of volcanoclastic rocks of rhyodacite to rhyolite composition from the Eggenburgian till to Pannonian time. The complete review of bentonite deposits and occurrences in Eastern Slovakia is given by Tab. 2.

Mineral composition and trace element distribution

Four mineral assemblages produced by alteration are outlined on the SW margin of the Kremnické vrchy Mts.:

- 1) montmorillonite $\pm$ kaolinite and cristobalite,
- 2) kaolinite $\pm$ montmorillonite, halloysite and cristobalite,
- 3) illite/montmorillonite mixed layer mineral $\pm$ kaolinite,
- 4) zeolites (mordenite and clinoptilolite) $\pm$ kaolinite, montmorillonite and cristobalite.

The bentonite clay originated in the Central Slovakian neovolcanic area by alteration of volcanites of andesite or rhyolite composition and contains only small amounts of boron (33–50 g $\cdot$ t⁻¹). Bentonite developing after andesite and rhyolite tuff is characterized by various average contents of V, Cr, Ba and Sr.

There are no recent data from East Slovakian bentonites on their mineralogy. In the East Slovakian basin, bentonite originated by the alteration of volcanic glass in hypersaline environment and hence it contains high amounts of boron, systematically between 300 and 400 g $\cdot$ t⁻¹.

Genesis and age

Bentonite occurrences along the SW margin of the Kremnické vrchy Mts. and in the East Slovakian basin are assumed to represent volcanogenous to sedimentary products. Bentonitization on the SW margin of the Kremnické vrchy Mts. occurred in the time of limnoquartzite deposition at the Sarmatian/Pannonian boundary. To the contrary of the former, bentonitization in the East Slovakian basin is of more regional extent affecting all known volcanites of rhyolite to rhyodacite composition from the Eggenburgian to the Pannonian.

Technological properties and use

Monomineral bentonite from the Stará Kremnička—Jelšový potok deposit is used in the production of bleaching earth and in foundry industry. It is also appropriate for ore agglomeration, for use in construction industry, pharmacy and viticulture. The suitability for the production of organobentonite has been tested in 1987.

The East Slovakian bentonites have partly appropriate rheological properties (plasticity, swelling, binding and tixotropy). Such quality displays the bentonite raw from Lastovce, Kuzmice and Nižný Žipov. The other East Slovakian bentonite varieties have in turn more appropriate sorption capacities and high ion exchange properties with simultaneously lower binding capacities. Type of such bentonite is represented by the raw from Fintice.

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nižšia kryštalinita illitu a tento fakt možno využiť ako jedno z kritérií na jeho priestorové vymedzenie.

V borinskej sukcesii mezozoického tatrika Malých Karpát stúpa metamorfóza zo SV na JV v teplotnom rozmedzí 240–330 °C. Severná časť v okolí Perneku bola ponorená v hĺbke okolo 6 km a južná v okolí Marianky okolo 7 km, pričom v tejto časti metamorfóza dosiahla fácie zelených bridlíc. Výzdvih južnej časti borinskej sukcesie bol asi o 1 km vyšší ako výzdvih severnej časti.

P. Kováč: Určenie konečnej deformácie použitím niektorých grafických numerických metód štruktúrnej geológie

Metódy umožňujú určiť konečnú deformáciu hornín, opierajúc sa o dvojrozmernú analýzu, využívajúcu horninové rozmiestnenie horninových elementov pred a po deformácii. Každá z týchto metód využíva pomer dlhej a krátkej

osi deformovaných zŕn a uhol medzi dlhou osou zrna a referenčnou líniou (plocha foliácie, vrstvitosti, ...). Jedná sa o R_t/ϕ metódu a jej modifikácie, Fryovu metódu, Robinovu metódu, metódu priemerov, sklonovú metódu, ... Jednou z aplikácií zmiených metód bol príklad použitia Fryovej metódy pri deformačnej analýze spodnotriasových kremencov obalovej série v blízkosti poklesových zlomov v pohorí Žiar.

J. Michalko: Niekoľko príkladov použitia izotopovej geológie pre štruktúrnogeologické uzávery

Na niekoľkých príkladoch z domácej i zahraničnej literatúry autor poukázal na možnosti použitia oboch hlavných častí izotopovej geológie (stabilné i nestabilné izotopy) pre štruktúrnogeologické uzávery na príkladoch metód v súčasnosti u nás prístupných. Vysvetlil použitie K-Ar metódy na