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BASALT ROCKS

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BASALT ROCKS

Volcanic rocks basalts are important for several industry as fluxes. They were created from [illegible] as granite, rhyolite, syenite, trachyte, diorite, [illegible] andesite, alkali syenite, phonolite and similar [illegible]. The group of basalt ejecta comprises a large number of rocks possessing considerably different compositions but all of them contain magnetite and augite.

/Petrik, [illegible]

Petrographic classification of basalts is based on the content of further minerals as olivine, plagioclase, feldspathoids (nepheline and leucite) melilite and [illegible].

Basalts are classified in general also according to:

a) geological age
b) content of olivine
c) content of feldspars

All these sorts are also divided according to silica content in acidic, intermediate and basic basalts.

a) according to geological age basalts are subdivided into two groups:

- Paleovolcanic basalts, i. e. basalts created in Paleozoic Era to Pre-Cambrian,
- Neovolcanic basalts, i. e. Tertiary and Late Tertiary basalts

b) [illegible]

- [illegible]
- [illegible]

c) [illegible]

- [illegible] ([illegible], [illegible] leucites, [illegible])
- [illegible] (olivine [illegible], olivine [illegible])
- [illegible] ([illegible], [illegible], [illegible] with [illegible])

[illegible] c) [illegible]

[illegible] [illegible] in early [illegible] they are consequently [illegible] volcanic [illegible] subsequent volcanic [illegible]. [illegible] of occurrences are [illegible] beds, however, [illegible] dykes and stocks.

[illegible]

Paleovolcanic [illegible] may be divided [illegible] the other basalts [illegible]

- acid basalts with SiO_2 content abo[illegible] 46%
- intermediate basalts with SiO_2 con[illegible] 46 - [illegible]
- basic basalts with SiO_2 content [illegible] 46%

Acidic and intermediate paleovol[illegible] are applied practically only for the [illegible] crushed aggregate as possessing favo[illegible] properties for this purpose and bein[illegible].

Basic paleovolcanic basalts are [illegible] spilites, diabases and melaphyres. [illegible] for crushed aggregate as well. The [illegible] won at Kotorov near Plaň should be [illegible] the note at the end of the study).

Neovolcanic basalts

These are the basalts proper. [illegible] content (Mg, Fe) SiO_4 they are subdivided [illegible] large groups:

1) Neovolcanic basalts with olivine
represented by the following minerals:

- olivine melilitite
- olivine nephelinite
- melilitite
- limburgite
- nepheline basanite

- [illegible]
- olivine [illegible]
- olivine [illegible]

/[illegible]

2) [illegible]

represented by three points:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

[illegible]

[illegible]

	[illegible]	[illegible]	[illegible]
SiO_2	44.6%	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Al_2O_3	15.5%	[illegible]	[illegible]
Na_2O	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
K_2O	[illegible]	[illegible]	[illegible]
P_2O_5	0.5%	[illegible]	[illegible]

[illegible] total from 161 samples.

[illegible] of [illegible]

ČSSR: [illegible]: [illegible]
Kamenec near [illegible], [illegible], [illegible]

[illegible]. [illegible]
[illegible] nad [illegible].

[illegible]: [illegible]
[illegible] ([illegible]), [illegible]
[illegible] tephrite), [illegible] ([illegible])

[illegible]: [illegible]
[illegible]ov, [illegible], [illegible]
[illegible]ov, [illegible]

[illegible]: [illegible]
[illegible], [illegible]
[illegible]ov, [illegible] of [illegible]

Developing countries ([illegible]).

[illegible]
[illegible]
[illegible]
[illegible] ([illegible])
Egypt ([illegible])
[illegible] ([illegible])

Capitalistic countries:

[illegible]

Socialist countries:

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] [illegible]

The application of natural basalt is [illegible] cases where precise shapes of stone are [illegible] if the stone is worked very carefully, pieces of [illegible] are broken off leaving shell shaped cavities.

The new method of shaping by casting [illegible] made it possible to produce relatively fine-grained [illegible] similar to cast iron products. Practical [illegible] of the basalt casting method took a long [illegible] difficulties connected with the right [illegible] recrystallisation and cooling had to be [illegible]

/- [illegible] -/

It was necessary to investigate the [illegible] basalt for the casting process. It has been [illegible] from the petrographic point of view the olivine [illegible] and basanites are the most [illegible]. It is [illegible] may fluctuate within these limits:

	%		%
SiO_2	43.5	-	47.0
TiO_2	2.0	-	3.5
Al_2O_3	11.0	-	13.0
Fe_2O_3	4.0	-	7.0
FeO	5.0	-	8.0
MnO	0.2	-	0.3
MgO	6.0	-	12.0
CaO	10.0	-	12.0
Na_2O	2.0	-	3.5
K_2O	1.0	-	2.0

/Especially, Vo[illegible], /

The raw material must fulfil the [illegible]

1. It must be homogeneous, [illegible] must be uniform in the whole [illegible]. It must not contain components of other [illegible] as more basic or acidic differentiation [illegible] magnetic segregates. Very detrimental are [illegible] allogene enclosures, especially grains [illegible] which cannot be fused during melting [illegible]

2. The raw material must not be coarse-grained [illegible] since of crystals lengthen the melting time and deteriorate the homogenization.

3. Especially dangerous is the contamination [illegible] overburden, the mining cannot be carried out by chamber blasting.

The fused basalt can be successfully applied where it is exposed to friction, abrasion and [illegible] by hard and sharp particles of various materials. Basalt products have long life time, they are [illegible] to humidity and even the strongest acids can [illegible] do not attack them. They possess the following properties:

1. Compressive strength: 4000 - 5000 kg/sq.cm.
2. Hardness: 6 - 9 [illegible] by Mohs
3. Tensile strength: 250 - 300 kg/sq.cm.
4. Bending strength: 400 - 500 kg/sq.cm.
5. Resistance to abrasion: 0.06 - 0.09 cu.cm/ [illegible]

/Especially, Vo [illegible]

The following products are currently [illegible] basalt: wall tiles, tubes, troughs, [illegible] cable fittings, castings of hydrocyclones, [illegible] bodies of pumps, basalt spinners, very high [illegible] insulators, etc.

/Publish, Tr - 2.

[illegible] new material [illegible]

The substitution of cheap and well accessible new materials to expensive ones in glass manufacture has been an important economic contribution. [illegible] all effusive rocks contain always considerable [illegible] of alumina and fluctuating quantity of iron, [illegible] application in glass industry is limited to [illegible] the content of Al_2O_3 and colouring oxides [illegible] where it is not detrimental or where it is [illegible] as in the manufacture of green or brown glass [illegible]

[illegible] new material [illegible] of basalt wool [illegible]

The manufacture of basalt wool brings [illegible] insulation against high temperatures than [illegible] by glass wool. In this way the [illegible] long fibrous asbestos were partly replaced. [illegible] sorts of basalts are suitable for the manufacture [illegible]