

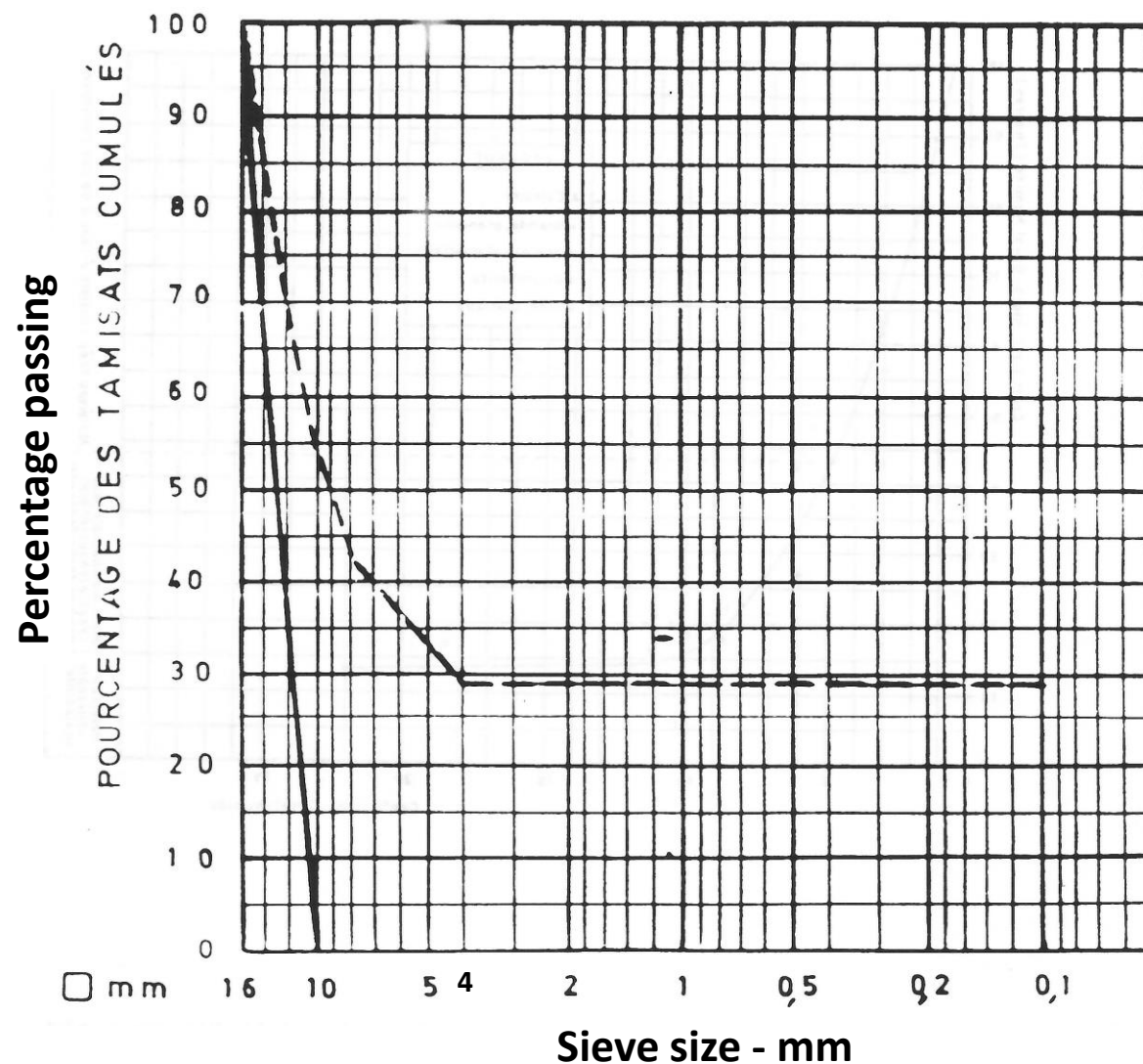
Identifiering av möjligt glimmerinnehåll med kulkvarnsmetoder

Ballastutskottsmöte den 2 juni 2021

Henrik Broms

Grading curve after rolling in the micro-Deval drum

Tourenq, LCPC 1971



Conditions of the micro-Deval testing

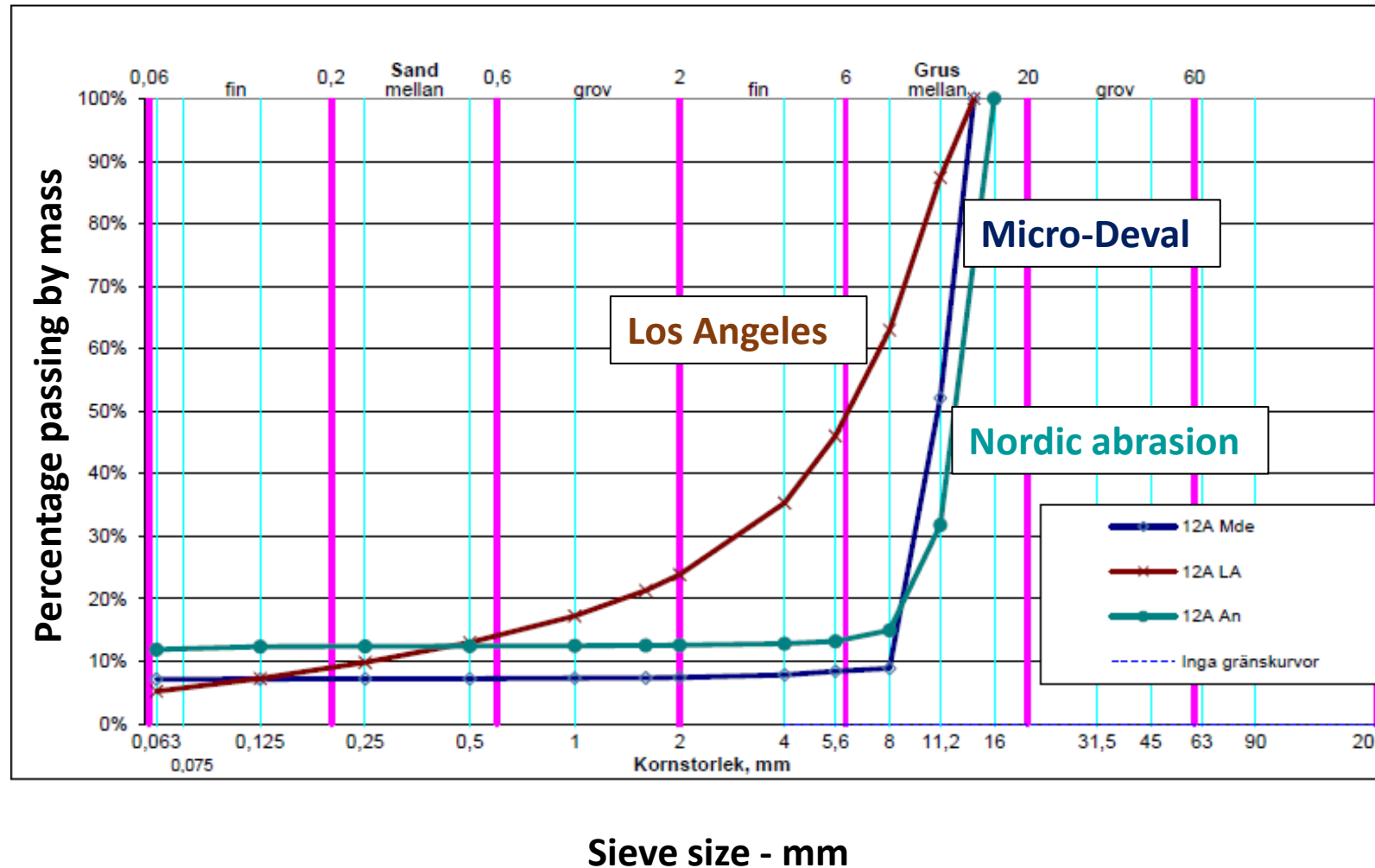
Item	Total mass (g)	Size (mm)	Number of particles or steel balls (approx.)
Test specimen	500	10/14	180
Steel balls	5 000	10	1 200
Water	1 000	-	-

Grading curve between 4 mm and 0,1 mm test sieves is horizontal.

M_{DE} = percentage passing the 1,6 mm sieve.

Mechanical testing - Grading curves after rolling in the drum

Håkan Arvidsson, VTI 2020



Conditions of the micro-Deval test

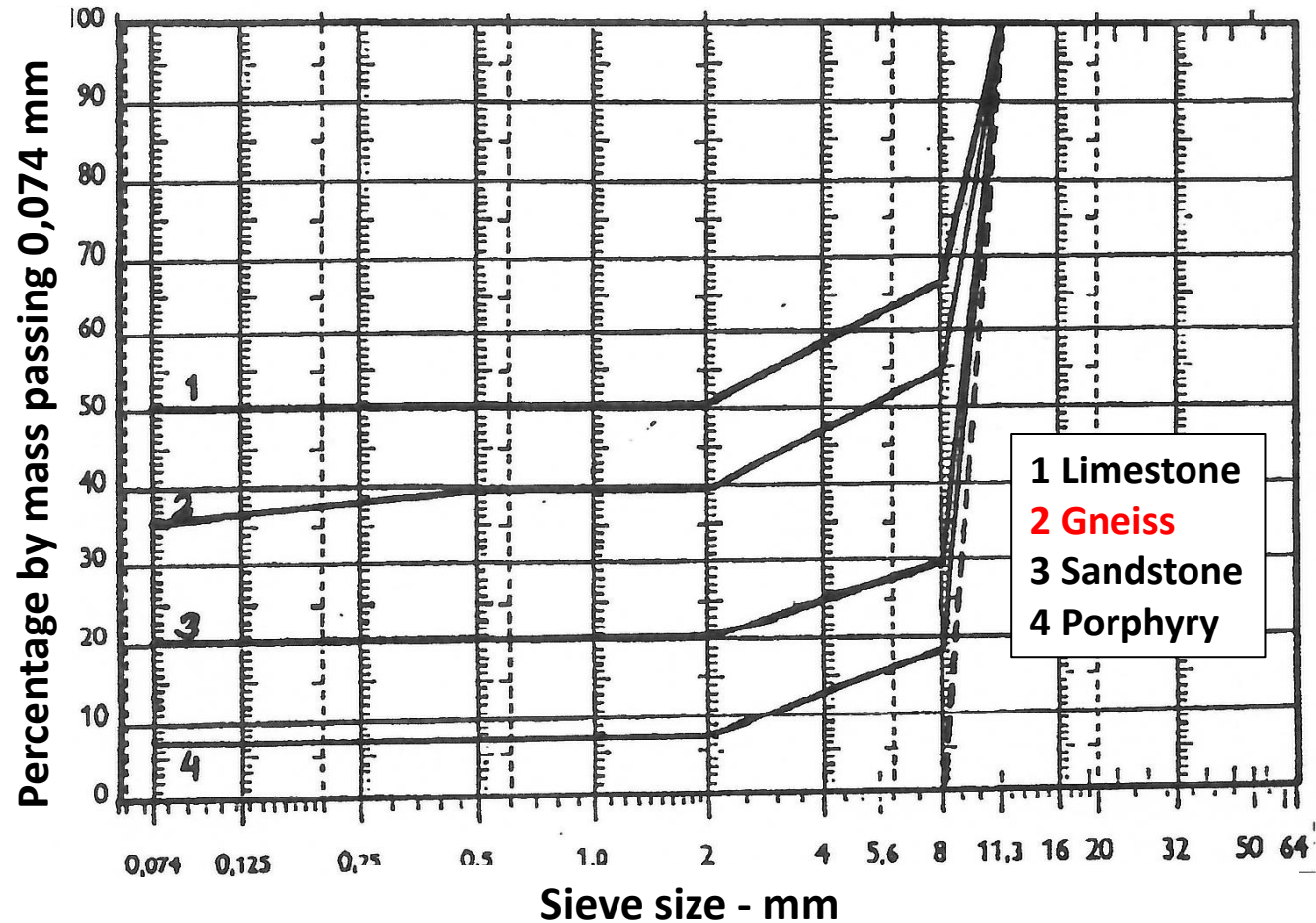
Item	Total mass (g)	Size (mm)	Number of particles or steel balls (approx.)
Test specimen	500	10/14	180
Steel balls	5 000	10	1200
Water	1 000	-	-

Conditions of the Nordic abrasion test

Item	Total mass (g)	Size (mm)	Number of particles or steel balls (approx.)
Test specimen	1 000	11,2/16	260
Steel balls	7 000	15	520
Water	1 000	-	-

Grading curves after rolling in the micro-Deval drum

Höbeda & Chytla 1985



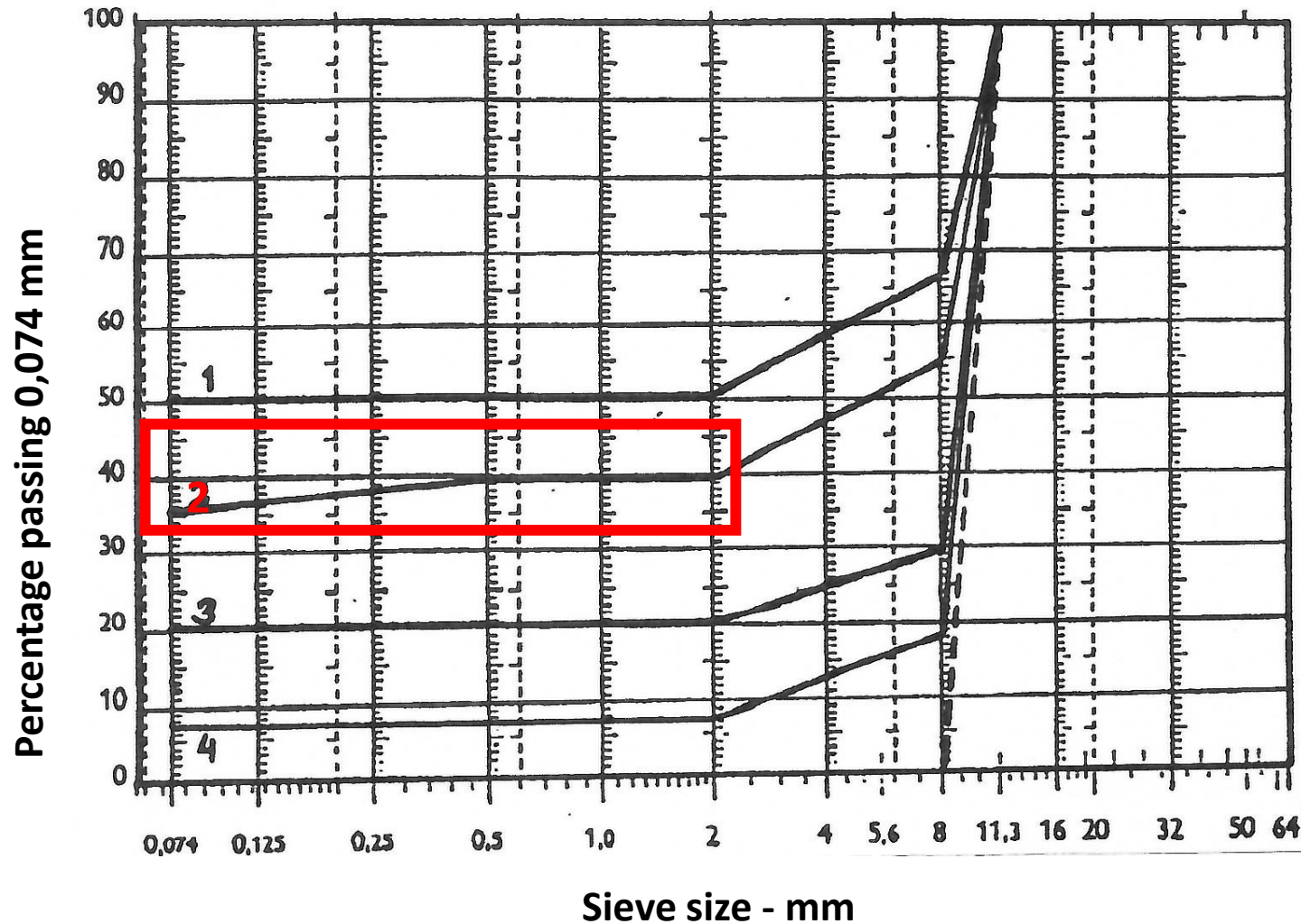
Conditions of the micro-Deval testing

Item	Total mass (g)	Size (mm)	Number of particles or steel balls (approx.)
Test specimen	500	8/11,2	330
Steel balls	5 000	15	360
Water	1 000	-	-

Grading curves 1, 3 and 4 are horizontal between 0,074 mm and 2 mm test sieves. Thus, percentage passing 0,074 mm = M_{DE}

Grading curves after rolling in the micro-Deval drum

Höbeda & Chytla 1985

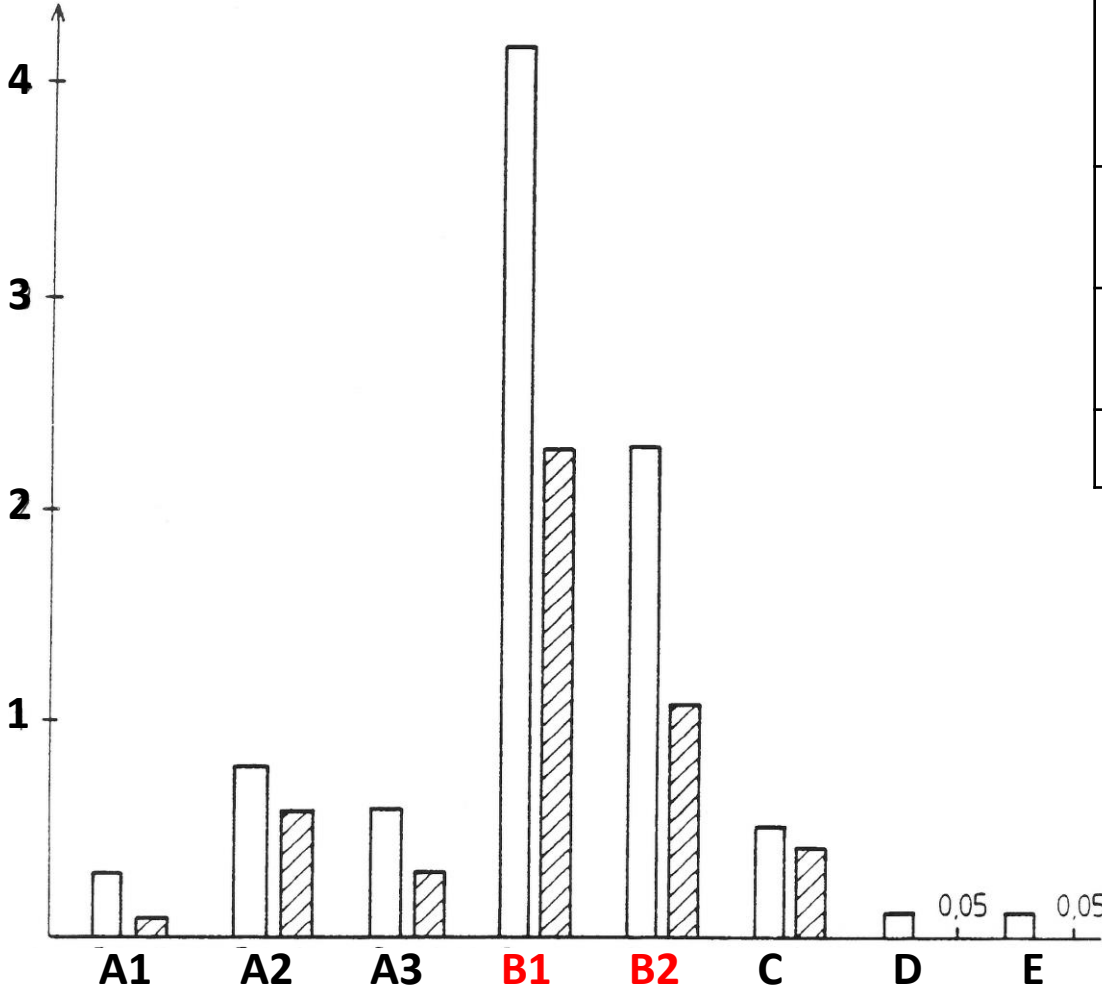


Free mica grains are elastic, scale-like and difficult to mill down. They were collected in size fraction 0,074/0,5 mm.

- 1 Limestone
- 2 Gneiss
- 3 Sandstone
- 4 Porphyry

Enrichment of size fraction 0,074/0,5 mm after rolling in the micro-Deval drum

Percentage of
size fraction
0,074/0,5 mm in
the test specimen

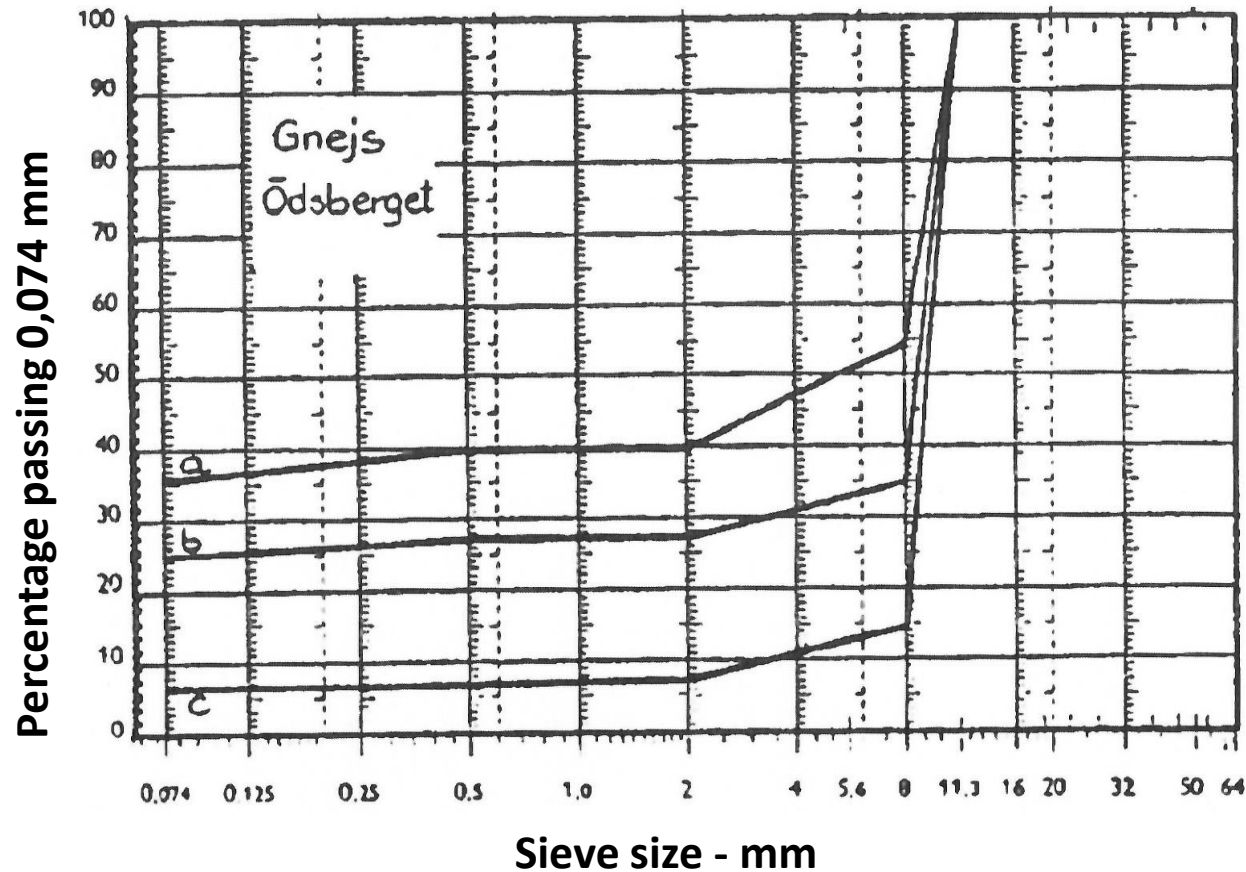


Item	Total mass (g)	Size (mm)	Number of particles or steel balls (approx.)
Test specimen	500	8/11,2	330
Steel balls	5 000	15	360
Water	1 000	-	-

Aggregate type	
A	Granite
B	Gneiss
C	Amphibolite
D	Quartzite
E	Diabase

Grading curves of **gneiss** samples after rolling in the micro-Deval drum

Höbeda & Chytla 1985



Conditions of the micro-Deval testing

Grading curve	Steel balls		Test specimen 8/11,2 mm
	Size (mm)	Number	
a	15	360	Normal
b	15	360	Bar sieved
c	5	10 000	Normal

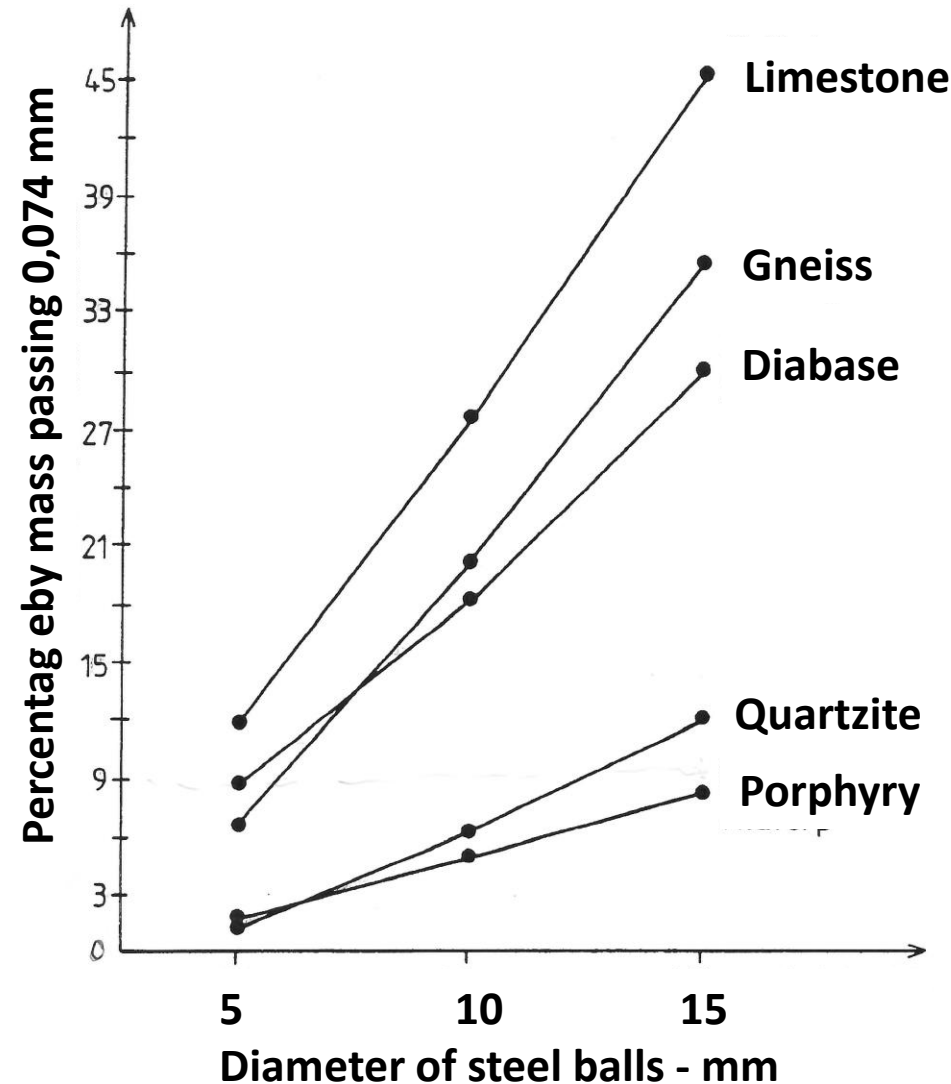
- The enrichment of size fraction 0,074/0,5 mm
- decreased, when the test specimen 8/11,2 mm had been bar sieved on the 8 mm bar sieve;
 - ceased, when steel balls of size 5 mm were used.

Adjustment of abrasion test conditions for identifying possible mica content of natural aggregates

Item		Micro-Deval drum	Nordic drum
Test specimen	Size fraction (mm)	8/11,2	8/11,2
	Mass (g)	500	1 000
	Approx. number of particles	<u>360</u>	<u>720</u>
Steel balls	Diameter (mm)	15	15
	Total mass (g)	5 000	<u>10 000?</u> (7 000)
	Approx. number of balls	<u>360</u>	<u>720?</u> (520)

Effect of steel ball size on percentage passing test sieve 0,074 mm

Höbeda & Chytla, VTI 1985



Conditions of the micro-Deval testing

Item	Total mass (g)	Size (mm)	Number of particles or steel balls (approx.)
Test specimen	500	8/11,2	360
Steel balls	5 000	5	10 000
		10	1 200
		15	360
Water	1 000	-	-