

## Complementary information about Swedish Kolmården marble

With the permission from Borghams Stenförädling we have been authorized to provide detailed information about technical properties of the Kolmården marble.

Kolmården marble exists in many varieties and have been tested on several occasions. Information about technical properties of Kolmården OX and OXL is available (in Swedish) on the website of the Swedish Stone Industry's and its stone archive:

<http://www.sten.se/stenkartoteket/kalksten-och-marmor/>

The data is translated in this PM.

Subsequent to the testing displayed on the website RISE CBI has also tested the Kolmården marble in more recent years and that data is also provided here.

**Table 1.** Kolmården OX and OXL: Average values from 2003

Property/Test	Standard/Method	Unit	Value
Compressive strength	EN1926	MPa	168
Flexural strength (3-point load)	EN12372	MPa	17,9
Abrasion resistance (Böhme)	EN14157	mm <sup>3</sup>	21635
Abrasion resistance (Böhme)	DIN52108	cm <sup>3</sup> /50cm <sup>3</sup>	21,4
Water absorption	EN13755	Wt%	0,1
Apparent density	EN1936	Kg/m <sup>3</sup>	2720
Breaking load at dowel holes	EN13364	N	3000
Slip resistance (honed surface) – Dry	EN14231	SRV	45
Slip resistance (honed surface) - Wet	EN14231	SRV	11

### RISE Research Institutes of Sweden AB

Postal address	Office location	Phone / Fax / E-mail
Box 857	Brinellgatan 4	+46 10 516 50 00
SE-501 15 BORÅS	SE-504 62 BORÅS	+46 33 13 55 02
Sweden		info@ri.se

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**Table 2.** Kolmården OX: Average values from 2014

Property/Test	Standard/Method	Unit	Value
Flexural strength (3-point load)	EN12372	MPa	16,1
Frost resistance	EN12371	MPa	16,1
Resistance to ageing by thermal shock (flexural strength after ageing test)	EN14066	MPa	13,6

**Table 3.** Kolmården : Average values from 2016

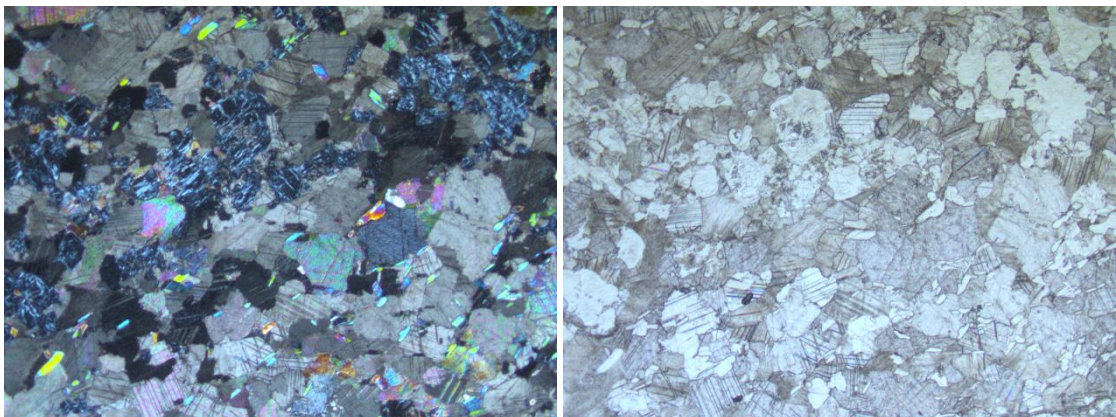
Property/Test	Standard/Method	Unit	Value
Flexural strength (3-point load)	EN12372	MPa	17,2
Water absorption	EN13755	Wt%	0,3
Apparent density	EN1936	Kg/m <sup>3</sup>	2770
Rupture energy	EN 14158	J	5

**Petrographical examination 2016. Excerpt from test report; 4P00594-5C****Table 1** Mineralogical composition determined 2016. Point counting on thin section

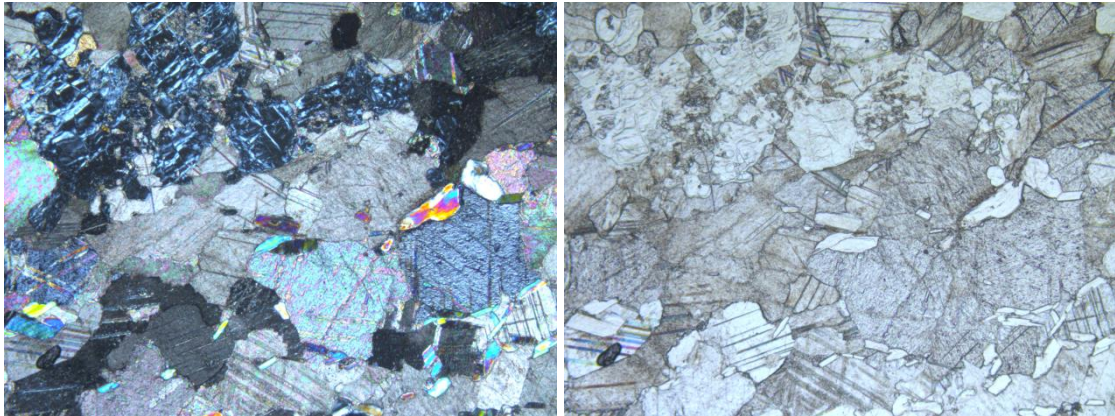
No. point	Vol. %	Uncertainty of measurement (± %)	Component
230	43	4,2	Calcite
163	31	3,9	Dolomite
98	19	3,3	Serpentine
30	6	2,0	Phlogopite
6	1,1	0,9	Pyroxene/olivine
3	0,6	0,6	Quartz



**Figure 1.** Photo of one of the Kolmården samples submitted to testing in 2016



**Figure 2.** Thin section of the analysed sample. 25x (i.e. photo corresponds to 5,4 x 4,2 mm). Crossed polars to the left and parallel light on the right image



**Figur 3.** Thin section of the analysed sample. 25x ( i.e. photo corresponds to 52,8 x 2,1 mm). Crossed polars to the left and parallell light on the right image

**RISE Research Institutes of Sweden AB**  
**RISE CBI Swedish Cement and Concrete Research Institute**

Performed by

Björn Schouenborg