

**Zkusebna kameniva s. r. o.**

Test Laboratory No. 1141 accredited by the Czech Accreditation Institute  
in accordance with CSN EN ISO/IEC 17025

Fügnerova 64, Blatna, postal code 388 01, tel.: +420 383 423 982

**PROTOCOL No. 188/1/08**  
of aggregate testing

**Client:** ZULA s. r. o.  
Voctarova 18  
Prague 8 – Liben, 180 00

**Site:** K O Z A R O V I C E

**Quarry:** V A C H A T O V K A

**Subject of testing:** raw material

**Sample collected by:** client

**Date of sample collection:** 16 December 2008

**Date of testing:** 16 December 2008 to 13 February 2009

**Order date:** 14 January 2009

**Declaration:** *This protocol may not be reproduced in any other way than in its entirety without prior consent of the Test Laboratory.*

**Protocol date:** 13 February 2009

Test protocol approved by:

*Illegible signature*  
**Eva Kaprova, MSc**  
Head of Testing Laboratory

Round stamp of Testing Laboratory No. 1141 accredited by the  
CAI  
Fügnerova 64, Blatna, 388 01

Number of copies: 4  
Copy No: 3  
Number of pages: 2  
Page No.: 1

**1. Tested samples**

Aggregate sample was delivered on 16 December 2008 to the Testing Laboratory. The sample was marked upon reception and registered in the Book of Orders. Upon reception, an aggregate sample reception protocol was given to the client. The sample was crushed prior to testing, using a laboratory jaw crusher.

**2. Extent and specification of tests**

The extent of tests was specified in the order.

The tests complied with the condition of simultaneous assessments and the requirements for the testing environment. The testing instruments and equipment are metrologically compliant with measurement standards in accordance with calibration procedures of the accredited testing laboratory and compliant with the standard CSN EN 932-5: Tests for general properties of aggregates, Part 5: Common equipment and calibration. The measurement uncertainty was assessed with coverage probability of 95 % as per EA 4/02.

**3. Test procedures and test results:**

**Resistance to fragmentation measured with the Los Angeles method** was determined in accordance with CSN EN 1097-2

Tests for mechanical and physical properties of aggregates – Part 2: Methods for the determination of resistance to fragmentation, Chapters 4 and 5.

Los Angeles factor <i>LA</i>	
Fraction 10/14 (sample No. 425)	<i>LA</i> = 25.5

**Water absorption** was determined in accordance with CSN EN 1097-6 Tests for mechanical and physical properties of aggregates. Determination of particle density and water absorption, Chapter 8, pycnometer method for aggregate grains from 4 mm to 31.5 mm.

Water absorption <i>WA</i> <sub>24</sub> (weight %)	
Fraction 8/16 (sample No. 425)	<i>WA</i> <sub>24</sub> = 0.3

The **polished stone value** was determined in accordance with CSN EN 1097-8 Tests for mechanical and physical properties of aggregates - Part 8: Determination of the polished stone value (*PSV*).

Aggregate	Tested	Control
Average aggregate sample value	S = 57.7	C = 51.0
Coarse aggregate polished stone value	<i>PSV</i> = 50	

**Resistance of the aggregate to temperatures and weathering** was determined in accordance with CSN EN 1367-1 Tests for thermal and weathering properties of aggregates, Part 1: Determination of resistance to freezing and thawing, and CSN EN 1367-2 Tests for thermal and weathering properties of aggregates, Part 2: Magnesium sulphate test.

Freezing and thawing (% of weight loss)	
Fraction 8/16 (sample No. 425)	<i>F</i> = 0.1

Magnesium sulphate test value <i>MS</i> (weight %)			
Fraction 8/16 (sample No. 425)	I.	II.	Ø
	1.1	1.0	<i>MS</i> = 1

3. Test performed by: Eva Kaprova, MSc Illegible signature

Zdenek Marsik Illegible signature