Notifikovaná osoba č. 1301

TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE
Studená 3, 821 04 Bratislava, Slovenská republika

Certificate of constancy of performance

1301 – CPR – 2178

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Steel fibres
Group I

Steel fibres HIS65/35, hooked ends
diameter: 0,55 mm, length: 35 mm, tensile strength: 1345 MPa,

Steel fibres HIS80/60, hooked ends
diameter: 0,75 mm, length: 60 mm, tensile strength: 1225 MPa

are designed for construction applications of concrete, mortar and grout.

Placed on the market under the name of

Hebei Haoaixi Steel Fiber Co., Ltd.
Yangjiatao Industrial Park, Yutian County
Tangshan City, Hebei Province
China

and produced in the manufacturing plant

Hebei Haoaixi Steel Fiber Co., Ltd.
Yangjiatao Industrial Park, Yutian County
Tangshan City, Hebei Province
China

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard

EN 14889-1: 2006

under system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

constancy of performance of the construction product.

This certificate was first issued on 17 May 2023 and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Bratislava, 17 May 2023

Technický a skúšobný ústav stavebný, n. o. TSUS - 1 - Notifikovaná osoba 1301

Dipl. Ing. Daša Kozáková
Head of Notified Body 1301

Smart Products Service Co.,Ltd
1622 Deying Mansion, No.118 Middle Jiangdong Rd
Nanjing, Jiangsu Province, China
☎ +86-25-86583475 firetest
✉ info@hksmartps.com 💻 www.hksmartps.com

TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
Notified Body 1301

Applicant: Hebei Haoaixi Steel Fiber Co., Ltd.

Address: Yangjiatao Industrial Park, Yutian County, Tangshan City, Hebei Province, China

Product: Steel fibers **HIS65/35**, hooked ends
Diameter: 0.55mm, Length: 35mm, Tensile Strength: ≥1345 MPa

Applicable Regulation and Standard: CPR 305/2011/EU, EN 14889-1:2006

Certificate Lab: TSUS (Notified Body 1301)

Certificate and report:

Item	Certificate No.	Customer ID code	Date of Issue	Validity
CE Certificate	**1301-CPR-2178**	3455	2023-05-17	Valid
Report of Initial Inspection of factory production control	No.C04/22/0165/20/IB	/	2023-05-11	December 2023
Certificate of test report	No.C04/22/0165/20/CB	/	2023-05-10	Valid
Test Report	No.20-23-0448	/	2023-05-09	Valid

Certificate search:

Option 1: Website
1. Click www.hksmartps.com (English)
2. Select “Inquiry for Certificate”
   a. Fill the Certificate ID code (1301-CPR-2178) and Customer ID code (3455)
   b. Fill the Certificate ID code (1301-CPR-2178)
   and applicant name (Hebei Haoaixi Steel Fiber Co., Ltd.)
3. Submit with confirmation, you may get the search information.

Scan for information
1301-CPR-2178

Option 2: Notified Body 1301 official Website (www.tsus.sk)

1. Click www.tsus.sk, select “English language”
2. Select “Database”
3. Fill the EC certification (1301-CPR-2178) to Číslo dokumentu (Document No.) item
4. Click “submit”

Value-added services:

The EU CPR regulations (305/2011/EU) for construction products have clear requirements for steel fiber used within the EU markets. CE certificate of the steel fibers has become a mandatory requirement in EU market. The harmonized standard for steel fibers with CE certificate is: EN14889-1:2006, according to the intend use of the steel fibers in construction use would be following AVCP system 1.

Nanjing Smart Products Service Company is a foreign office of TSUS (Notified Body 1301) and it has been authorized to perform the initial and continous surveillance inspection in Chinese factories. Moreover, it provids customers with technical documents in the CPR of construction products that meet the needs of the EU market:

1. Test report issued by the EU Notified Body
2. AVCP System 1 certificate would be issued by the EU Notified Body
3. DoP (Declaration of Performance) conformity declaration document
4. CE label
5. Copper made CE certificate for display
6. EN 14889-1:2006 related standards, technology sharing and certificate query:
   a. You can scan the QR code below
   b. You can also search for WeChat ID "firetest"

WeChat Official Accounts

TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
Studená 3, 821 04 Bratislava

Inspection Body of type A
ProductCertification Body
Notified Body1301

SNAS
Reg. No. 004/I-019

Issue No. 1

REPORT
of Initial Inspection of the Manufacturing Plant and of Factory Production Control

Pursuant to the Construction Product Regulation (EU) No 305/2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

No. C04/22/0165/20/IB

for certification of constancy of performance of the product

Product:	Steel fibres HIS65/35, hooked ends, diameter: 0,55 mm, length: 35 mm, tensile strength: 1345 MPa, Steel fibres HIS80/60, hooked ends, diameter: 0,75 mm, length: 60 mm, tensile strength: 1225 MPa
Manufacturer:	Hebei Haoaixi Steel Fiber Co., Ltd. Yangjiatao Industrial Park, Yutian County, Tangshan City, Hebei Province, China
Manufacturing plant:	Hebei Haoaixi Steel Fiber Co., Ltd. Yangjiatao Industrial Park, Yutian County, Tangshan City, Hebei Province, China

Technický a skúšobný ústav stavebný, n. o. TSUS -2- Notifikovaná osoba 1301

Date of issue: 11. 05. 2023

Elaborated by: Julius Marko .....

Approved by
Bratislava Branch Director Patrik Sevcik .....

1 Composition of the Inspection team

The inspection was performed by:
Julie Li - inspector
Julius Marko – head inspector

2 Time schedule of the inspection

The inspection was performed on: 20.12.2022.
Number of application for certification of conformity of the factory production control: C04/22/0165/20

3 List of technical specifications, standards and legal provisions related to the product

-EN 14889-1: 2007 Fibres for concrete - Part 1: Steel fibres - Definitions, specifications and conformity
-EN 14845-1: 2007 Test methods for fibres in concrete. Part 1: Reference concretes
-Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC,

4 Intended use of the product in construction work

Steel fibres are intend to be used for construction applications of concrete, mortar or grout (construction application is understood, that the effect of additional fibres is included as contribution to essential carrying capacity of concrete members, fibres are allowed to be used in all types of concretes and mortars include air-placed concrete, flooring and prefabricates).

5 Description of production technology

The steel coil is placed into the production line and consequently cold drawn into a required diameter. After obtained required diameter, the strand is cutting and bending into intended length and shape.

6 Assessment of the performance of the construction product in accordance with technical specifications and legal provisions

The manufacturer has carried out determination of the product type according to technical specifications. The tests were executed by Technický a skúšobný ústav stavebný, n.o., laboratory of Bratislava branch.
According to the determined product type of the construction product corresponding characteristics were assessed with technical specifications and legal provisions: EN 14889-1, EN 14845-1 and Technical data sheet

7 Proceeding of the initial inspection of the manufacturing plant and of factory production control

The proceeding and findings of the initial inspection of production and factory production control are mentioned in the check list No. C04/22/0165/20/IB, which is in the Annex 1.
Manufacturer was represented by:

Mr Snowy Dai – Sales manager
Mr Wang Yang – General manager

List of examined technical documents of factory production control:

The list of Inspected manufacturing facility, technical equipment and test equipment can be seen in the Checklist C04/22/0165/20/IB.

8 Estimated non-conformities

The performance of the initial inspection of the manufacturing plant and factory production control does not reveal any discrepancies to the technical specifications and legal provisions.

9 Overall evaluation of the inspection

The performance of the initial inspection does not reveal any non-conformity.

The applied system of factory production control is in accordance with the technical specifications, legal provisions of EN 14889-1: 2006.

The continuing surveillances will be provided in accordance with the technical specifications related to the construction product and in accordance with the Construction Product Regulation (EU) No 305/2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.

The date of the next continuing surveillance is stated on December 2023.

10 Distribution list

Issue No.	Archiving of the issue, recipient of designation
1	Manufacturer/Applicant
2	TSÚS – archive ÚPZ
3	TSÚS – branch archive

11 List of Annexes

Annex No. 1 Checklist No. C04/22/0165/20/IB

TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
Studená 3, 821 04 Bratislava

ProductCertification Body
Notified Body 1301

SNAS
Reg. No. 004/P-016

Issue No. 1

REPORT
of Certification of constancy of performance
No. C04/22/0165/20/CB

pursuant to the Annex V, cl.1.2 to the Construction Product Regulation (EU) No 305/2011 (CPR) of the European Parliament and of the Council of 9 March 2011 as amended by Commission Delegated Regulation (EU) No 568/2014 of 18 February 2014.

Product:	Steel fibres HIS65/35, hooked ends, diameter: 0,55 mm, length: 35 mm, tensile strength: 1345 MPa, Steel fibres HIS80/60, hooked ends, diameter: 0,75 mm, length: 60 mm, tensile strength: 1225 MPa
Manufacturer:	Hebei Haoaixi Steel Fiber Co., Ltd. Yangjiatao Industrial Park, Yutian County, Tangshan City, Hebei Province, China
Manufacturing plant:	Hebei Haoaixi Steel Fiber Co., Ltd. Yangjiatao Industrial Park, Yutian County, Tangshan City, Hebei Province, China

Product applicability for intended use in construction work

Steel fibres, trade names HIS65/35 and HIS80/60 are designed specifically for the reinforcement of concrete, mortars and other cementitious mixes (construction application is understood, that the effect of additional fibres is included as contribution to essential carrying capacity of concrete members).
Steel fibres HIS65/35 and HIS80/60 are allowed to be used as ground supported slabs, joint less floors and jointed floors, external roads and pavements, manhole covers, residential application and tunnel application.

The application of certification of constancy of performance has been registered under code C04/22/0165/20. The essential characteristics and technical specifications relevant to the assessment of the constancy of performance of the product are listed in the following overview.

In accordance with the basic material used for the production of the fibres (EN 14889-1, Art. 5.1)) steel fibres HIS65/35 and HIS80/60 are classified as Group I.

The representative of the products on which the tests were carried out for assessment of the performance:

Steel fibres HIS65/35

– steel fibers of round cross section, straight shape with hooked ends,
diameter of 0,55 mm, length of 35 mm

Compliance of criteria is presented in Table 1.

Table 1 – Steel fibers HIS65/35

Essential characteristics	Criterion and Technical specification	Obtained value	Evaluation
Dimensions and tolerances of fibres			
Length L	EN 14889-1, Art. 5.2.1 for individual value 35 mm ± 10 % for average value 35 mm ± 5 %	min.: 34,8 mm max.: 35,2 mm average: 34,9 mm	comply
Diameter D	EN 14889-1, Art. 5.2.1 for individual value 0,55 mm ± 10 % for average value 0,55 mm ± 5 %	min.: 0,54 mm max.: 0,56 mm average: 0,55 mm	comply
Length/diameter ratio λ	EN 14889-2, Art. 5.3.2 for individual value 64 ± 15 % for average value 64 ± 7,5 %	min.: 63 max.: 66 average: 64	comply
Mechanical properties of wire			
Tensile strength R_m	EN 14889-1, Art. 5.3 for individual value 1345 MPa ± 15 % for average value 1345 MPa ± 7,5 %	min.: 1364 MPa max.: 1444 MPa average: 1406 MPa	comply
Modulus of elasticity E	EN 14889-1, Art. 5.4 205000 MPa ± 15%	min.: 201589 MPa max.: 217983 MPa average: 207014 MPa	comply
Effect on consistence of concrete, EN 12350-3 (VeBe test)			
Consistence on the reference concrete without fibers	EN 14889-1, Art. 5.7	average 6 s	comply
Identical mix with fibres. Dosage of fibres: 10 kg/m^3	EN 14889-1, Art. 5.7	average 7 s	comply
Effect on strength of concrete			
Residual flexural tensile strength of concrete with fibres of 12 specimens (beams) after 28 days, according to EN 14845-2 Dosage of fibres: 10 kg/m^3	EN 14889-1, Art. 5.8 residual flexural tensile strength > 1,5 MPa at cracking of beam CMOD = 0,5 mm	min.: 1,5 MPa max.: 3,1 MPa average: 2,3 MPa	comply
	EN 14889-1, Art. 5.8 residual flexural tensile strength > 1,0 MPa at cracking of beam CMOD = 3,5 mm	min.: 1,2 MPa max.: 3,0 MPa average: 1,9 MPa	comply

The factory production control complies with the requirements of the CPR and with the technical specifications of EN 14889-1.

List of technical specifications

EN 14889-1: 2006 Fibres for concrete - Part 1: Steel fibres - Definitions, specifications and conformity

Conclusion

The certification of the product steel fibers trade names HIS65/35 and HIS80/60 have been assessed constancy of performances of the product with the declared criteria and related technical specifications of EN 14889-1.

Based on the test results and results of the initial inspection executed on December.2022 we recommended issuing the certificate of constancy of performance.

Date of issue: 10. 05. 2023

Duration of validity: without restriction

Technický a skúšobný ústav stavebný, n. o. TSUS -2- Notifikovaná osoba 1301

Elaborated by: Július Marko .....

Approved by
Bratislava Branch Director: Patrik Ševčík .....

Distribution list

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1	Manufacturer/Applicant
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3	TSÚS – branch archive

List of Annexes

1. Report of Initial Inspection C04/22/0165/20/IB, issued by TSÚS, Bratislava branch on 10.05.2023
2. Test report 20-23-0448, issued by TSÚS, Bratislava branch on 09.05.2023
3. Test report 20-23-0449, issued by TSUS, Bratislava branch on 09.05.2023

Notice

TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
Studená 3, 821 04 Bratislava
Skúšobné laboratórium

Laboratory branch Bratislava, Studená 3, 821 04 Bratislava, tel.: +421 2 49228 252, e-mail: lab.ba@tsus.sk

SNAS Reg. No. 004/S-045

TEST REPORT No. 20-23-0448

JOB

No:	20220591
Client:	NANJING SMART TECHNOLOGY CO., LTD 1622/16F Deying Mansion, No 118 Middle Jiangdong Road. 210012 NANJING City, Jiangsu province, China

OBJECT OF TESTING

Product:	steel fibres and steel wires
Manufacturer:	Hebei Haoaixi Steel Fiber Co., Ltd. Yangjiatao Industrial Park, Yutian County, Tangshan City, Hebei Province, China
Manufacturing plant:	at the manufacturer's address
Technical specification:	EN 14889-1: 2006 Fibres for concrete - Part 1: Steel fibres - Definitions, specifications and conformity.

PRODUCT SAMPLE

Description:	- steel fibres HIS65/35 with hooked ends, material Q195 diameter 0,55 mm, length 35 mm - steel wire of diameter of 0,55 mm
Designation by client:	HIS65/35
Production date:	unknown
Place and date of sampling:	unknown
Sampling executed by:	client
Place and date of delivery:	Test laboratory TSÚS, Bratislava branch, 28.02.2023
Designation by lab:	23/0179 (fibres), 23/0180 (wire)

TESTS

Limit of proportionality (LOP) and residual flexural tensile strength - accredited test

Test procedure:	STN EN 14651+A1: 2008 Test method for metallic fibre concrete - Measuring the flexural tensile strength (limit of proportionality (LOP), residual strength). (Cosolidated text)
Description of test specimens:	concrete beams with fibres HIS65/35, dimensions of beams (150 x 150 x 550) mm, average width of notch 4,0 mm at cross section area at middle of span, 12 pcs
Test specimens prepared by:	Jaroslav Vavrovič, notched by Jaroslav Vavrovič
Place of test execution:	TSÚS, n. o. – Laboratory Branch Bratislava
Concrete mixture:	aggregate fr. 0/4 mm 952,0 kg/m^3 aggregate fr. 8/16 mm 952,0 kg/m^3 cement CEM I 42,5 R 320,0 kg/m^3 water 176,0 l/m^3 fibres 10,0 kg/m^3
Date of production of spec.:	20.03.2023, beams notched on 17.04.2023
Placement of specimens:	one day after concrete works the tested specimens were immersed into bowl with water of temperature of (20 ± 2) °C
Test conditions:	temperature of (20 ± 2) °C; relative humidity of (50 ± 5) %; span length of beam 500 mm; average width of notch of 4,0 mm; method of measurement of CMOD – measurement of crack opening
Deviations from the standard:	none
Date of test:	17.04.2023
Test personnel:	Jaroslav Vavrovič

Tensile strength and flexural modulus - accredited test

Test procedure:	STN EN ISO 6892-1: 2022 Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2019) STN EN 14889-1: 2006 Fibres for concrete. Part 1: Steel fibres, definition, specification and conformity.
Description of test specimens:	steel wires for fibres of length of 400 mm; measured wire diameter (used to calculate tensile strength Rm): 0,55 mm
Test specimens prepared by:	Jaroslav Vavrovič
Place of test execution:	Test laboratory TSÚS, Bratislava branch
Test conditions:	Temperature of (20 ± 2) °C, relative humidity of (50 ± 5) %. Testing rate control method: Method A1 (based on strain rate).
Deviations from the standard:	none
Date of test:	29.03.2023
Test personnel:	Jaroslav Vavrovič

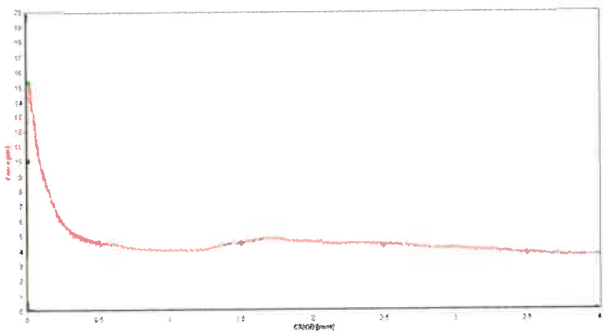
Consistency of concrete - accredited test

Test procedure:	STN EN 12350-3: 2020 Testing of fresh concrete. Part 3: VeBe test
Description of test specimens:	fresh concrete with fibres and fresh concrete without fibres
Test specimens prepared by:	Jaroslav Vavrovič
Place of test execution:	Test laboratory TSÚS, Bratislava branch
Concrete mixture:	aggregate fr. 0/4 mm 952,0 kg/m^3 aggregate fr. 8/16 mm 952,0 kg/m^3 cement 320,0 kg/m^3 water 176,0 l/m^3 fibres 10,0 kg/m^3
Test conditions:	temperature of (20 ± 2) °C, relative humidity of (50 ± 5) %
Deviations from the standard:	none
Date of test:	20.03.2023
Test personnel:	Jaroslav Vavrovič

TEST RESULTS

Table 1 - Limit of proportionality (LOP) and residual flexural tensile strength

Identification of beam	Average dimensions of the cross section area (mm)		Residual flexural tensile strength (N/mm^2) at CMOD:				LOP (N/mm^2)
			0,50 mm	1,50 mm	2,50 mm	3,50 mm	
23/0179-1	125,2	149,4	1,5	1,4	1,4	1,2	4,6
23/0179-2	126,0	150,8	2,8	3,0	2,6	2,1	4,9
23/0179-3	124,9	151,0	2,4	2,6	2,1	1,9	5,0
23/0179-4	126,2	149,5	1,8	2,2	2,0	1,8	4,8
23/0179-5	126,0	150,8	2,4	2,6	2,3	1,9	4,8
23/0179-6	126,0	151,0	2,5	3,0	2,8	2,0	4,5
23/0179-7	126,2	150,7	2,4	2,9	2,6	2,1	4,9
23/0179-8	125,8	150,7	2,5	3,1	2,7	2,2	4,8
23/0179-9	126,0	148,9	1,6	1,5	1,5	1,4	4,4
23/0179-10	126,0	149,8	2,6	2,6	2,5	3,0	4,2
23/0179-11	125,9	151,0	3,1	2,5	2,0	1,5	4,7
23/0179-12	126,1	150,9	1,9	1,8	1,9	1,9	4,0
		Average	2,3	2,4	2,2	1,9	4,6
		Minimum	1,5	1,4	1,4	1,2	4,0
		Maximum	3,1	3,1	2,8	3,0	5,0



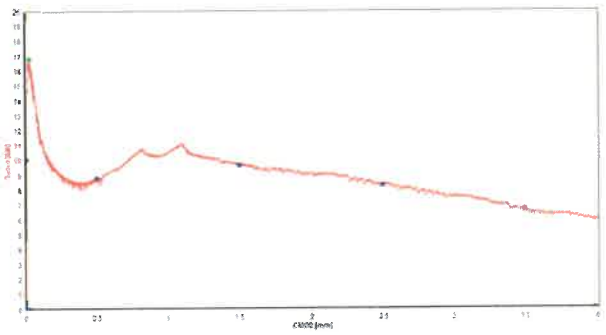


Figure 1 - Load/CMOD curve, 23/0179-1

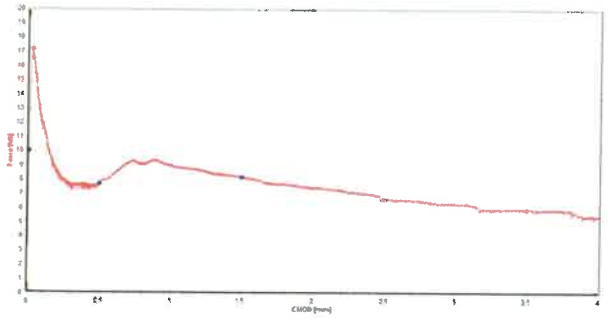


Figure 2 - Load/CMOD curve, 23/0179-2

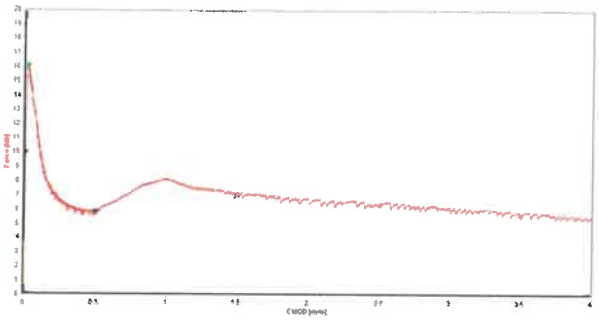


Figure 3 - Load/CMOD curve, 23/0179-3

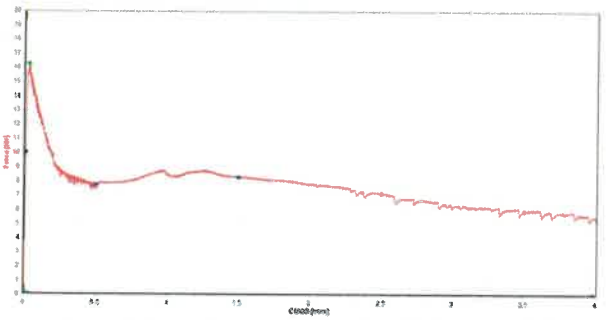


Figure 4 - Load/CMOD curve, 23/0179-4

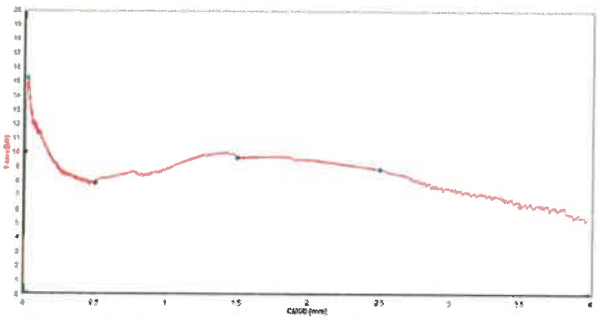


Figure 5 - Load/CMOD curve, 23/0179-5

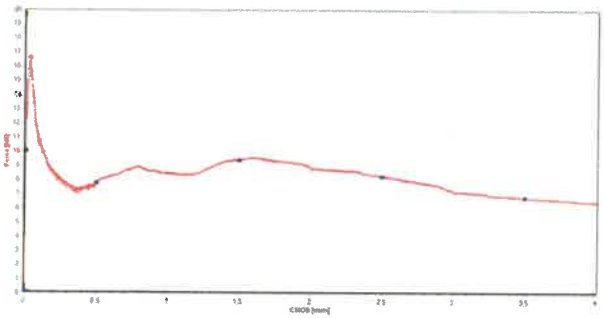


Figure 6 - Load/CMOD curve, 23/0179-6

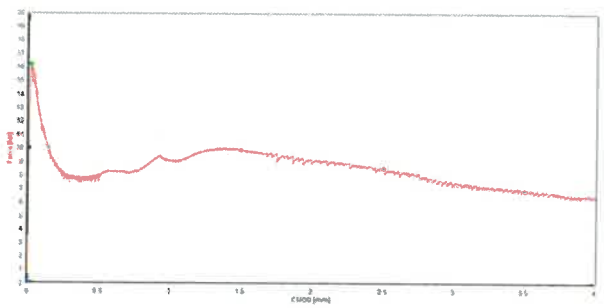


Figure 7 - Load/CMOD curve, 23/0179-7

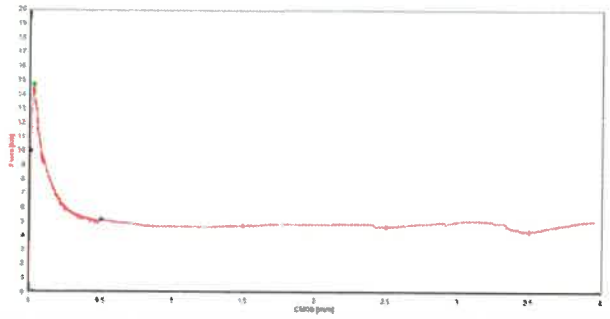


Figure 8 - Load/CMOD curve, 23/0179-8

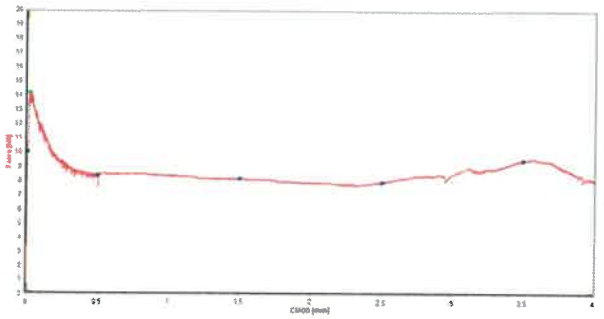


Figure 9 - Load/CMOD curve, 23/0179-9

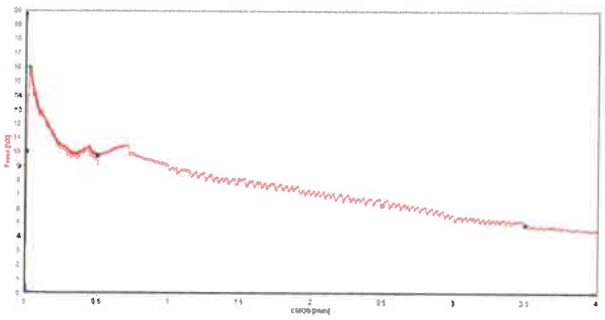


Figure 10 - Load/CMOD curve, 23/0179-10

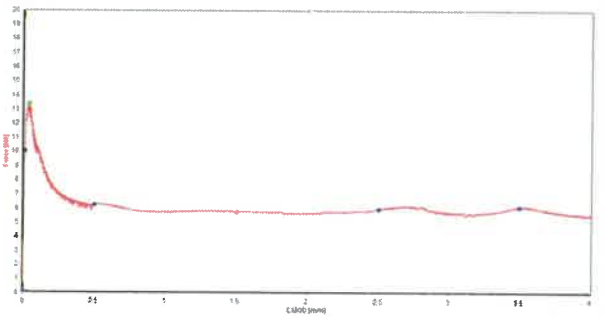


Figure 11 - Load/CMOD curve, 23/0179-11

Figure 12 - Load/CMOD curve, 23/0179-12

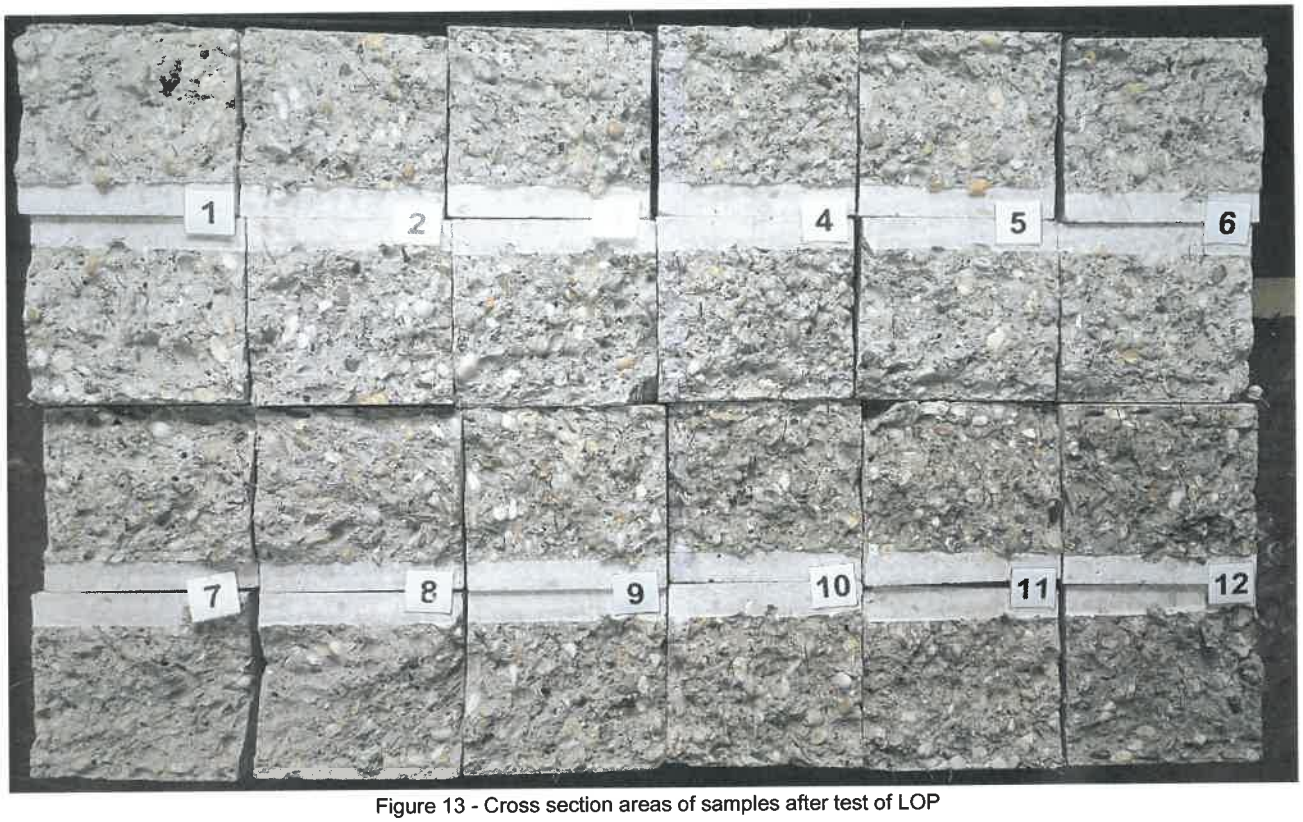


Figure 13 - Cross section areas of samples after test of LOP

Table 2 - Tensile strength and flexural modulus

Sample No.	Maximum force F_m (N)	Tensile strength R_m (N/mm^2)	Modulus of elasticity E (N/mm^2)	Percentage total extension at max. force A_{gt} (%)
23/0180-1	334	1406	213857	0,8
23/0180-2	341	1435	203353	0,8
23/0180-3	342	1440	204433	0,8
23/0180-4	336	1414	203880	0,8
23/0180-5	324	1364	201589	0,8
23/0180-6	338	1423	202083	0,8
23/0180-7	334	1406	212008	0,9
23/0180-8	333	1401	202360	0,9
23/0180-9	330	1389	212293	0,9
23/0180-10	335	1410	217983	0,8
23/0180-11	335	1410	209134	0,8
23/0180-12	337	1418	211498	0,8
23/0180-13	329	1384	215051	0,7
23/0180-14	329	1385	206583	0,8
23/0180-15	342	1440	207026	0,8
23/0180-16	327	1376	202432	0,8
23/0180-17	336	1414	209742	0,9
23/0180-18	343	1444	204953	0,7
23/0180-19	336	1414	204438	0,8
23/0180-20	331	1393	202853	0,8
23/0180-21	338	1423	201853	0,8
23/0180-22	326	1372	202071	0,8
23/0180-23	330	1389	205348	0,8
23/0180-24	331	1393	212567	0,8
23/0180-25	335	1410	203473	0,8
23/0180-26	330	1389	211557	0,8
23/0180-27	333	1401	203716	0,7
23/0180-28	334	1406	205364	0,8
23/0180-29	338	1423	209652	0,8
23/0180-30	337	1420	207257	0,9
Average	334	1406	207014	0,8
Min	324	1364	201589	0,7
Max	343	1444	217983	0,9

Table 3 - Consistency of concrete

Number of the test	Concrete	Type of concrete slump	Height of slump (mm)	Time VeBe (s)
I-1	Without fibres	true	40	5
I-2	Without fibres	true	30	6
I-3	Without fibres	true	30	6
II-1	With fibres	true	30	6
II-2	With fibres	true	30	7
II-3	With fibres	true	30	7

Date of report: 09.05.2023
Prepared by: Jaroslav Vavrovič

Authorized by: .....
Ing. Daniel Pethő
Head of Laboratory branch

Technický a skúšobný ústav stavebný, n. o., Bratislava
skúšobné laboratórium
TSUS
Pracovisko Bratislava

Poznámky:

- Unless the testing laboratory makes the sampling, data on the manufacturer, its manufacturing plant and about the sampling are presented according to information provided by the client. If any data provided by the customer may affect the validity of the results, the testing laboratory shall reject the responsibility for the validity of these results.
- The tests were executed in accordance with the stated test methods.
- Presented results are relevant to the product sample only.
- This report shall not be reproduced except in full without written approval of the testing laboratory.

---------- **End of test report** ----------