TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Technical and Test Institute for Construction Prague

Akreditovaná zkušební laboratoř, Autorizovaná osoba, Certifikační orgán, Notifikovaná osoba, Inspekční orgán
Accredited Testing Laboratory, Authorized Body, Certification Body, Notified Body, Inspection Body

Authorized Body 204
empowered by the Decision of COSMT No. 05/2017
Branch 0900 – Technical Engineering Services

issues

pursuant to Act No. 22/1997 Coll. on technical requirements on products and on the change and amendment of some laws, as amended, and Sections 2 and 3 of the Government Decree No. 163/2002 Coll., as amended by Government Decree No. 312/2005 Coll. and by the Government Decree No. 215/2016 Coll.

NATIONAL TECHNICAL APPROVAL

No. 090-043103

for product:

ANP-SHS Micropile

type / variant: steel bar H 0420-38, H 0500-38,
H 0630-51, H 0800-51,
H 1000-64, H 1200-64,
H 1400-76, H 1600-76; H 1800-76 and H 2400-108

for manufacturer:

ANP – Systems GmbH

Address:	Christophorusstraße 12, A-5061 Elsbethen, Austria
Manufacturer:	ANP – Systems GmbH
Address:	Christophorusstraße 12, A-5061 Elsbethen, Austria
Production plant:	ANP – Systems GmbH
Address:	Christophorusstraße 12, A-5061 Elsbethen, Austria
Order:	Z090180497

Authorized Body 204 hereby certifies the product's technical properties, their standard and the procedures of their determination in relation to the fundamental requirements set forth in Annex 1 of Government Decree No. 163/2002 Coll., as amended by Government Decree No. 312/2005 Coll. and by the Government Decree No. 215/2016 Coll.

This Approval is a technical specification intended to assess compliance of the product concerned.

Number of pages of the National Technical Approval, incl. title page: 5

National Technical Approval prepared by:

Ing. Jitka Kadlecová
Head Assessor

Approval valid until: 31 January 2022

Person responsible for the correctness of this National Technical Approval:

Stamp of Authorized Body 204

Prague, 14 January 2019

Martin Pešek
Deputy Manager of the Authorized Body 204

Note: This National Technical Approval shall not be reproduced other than in whole without the written consent of the Director of Authorized Body 204.

1. Information about the product and its intended use:

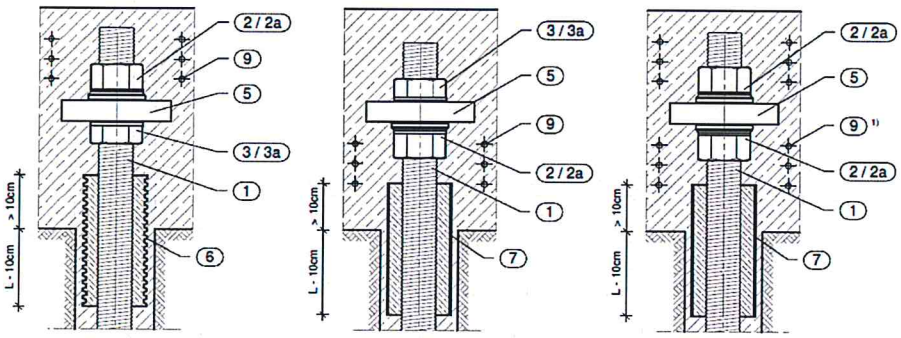
- **ANP – SHS Micropile** is foundational element that transmits the axial load (compression load and tension load) from the building loads to deeper layers of ground.

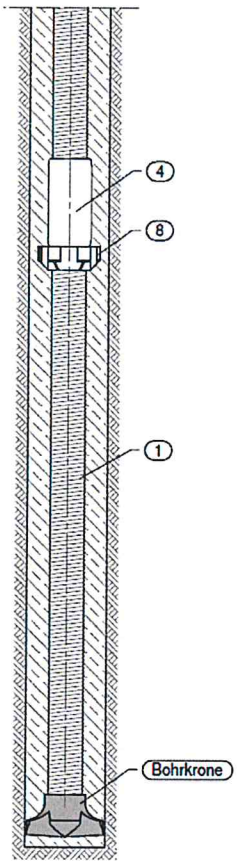
Micropiles are used especially in these cases:

- foundation of buildings
- reinforcement / reinforcement of existing structures
- fabrication of support walls with micropiles
- micropiles against groundwater pressure

Micropile is composed of three main parts – pile head, steel bar and root

The load-bearing element of this product is a hollow threaded steel bar with a cold-rolled left-hand thread of the R-type or a right-hand thread RR-type for special applications in geotechnics.





1	Hollow bar
2	Hexagonal nut
3	Counter nut
4	Sleeve
5	Anchor plate
6	Plastic pipe
7	Steel tube
8	Spacer
9	Additional reinforcement

TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Autorizovaná osoba
TZÚS
204

The micropile head consists of a square anchor plate that is locked by a hexagonal nut and counter-nut.
Coupling of micropile is possible with cylindrical coupler, which is tightened using a drilling device.

The micropile is applicated with using a lost drill bit and hammer drilling. The drilling device ensures the flush of the bar with water, air or cement suspension.
The filling of the outer space of the micropile is through the bar and drilling bit. This filling is possible at the same time as drilling using grouting – drill adapter or after drilling.

- **Steel threaded bar ANP-SHS**

System ANP – SHS Micropile compose following type of threaded bar:

- H 0420-38, H 0500-38
- H 0630-51, H 0800-51
- H 1000-64, H 1200-64
- H 1400-76, H 1600-76, H 1800-76
- H 2400-108

designation:

H – (Hohlstab) hollow bar with a cold rolled thread
420 till 2400 – nominal value of ultimate load in kN
38, 51, 64, 76 a 108 – nominal diameter in mm

Reinforcing element type R (H0420-38 till H0800-51) is the steel bar longitudinally welded made of 28Mn6 according to EN 10083-2. The longitudinally welded bar is in accordance with the standard EN 10210-1 and fulfilled criteria of standard EN 14199.

Reinforcing element type RR (H1000-64 till H2400-108) is the seamless bar made of 36Mn5. Seamless bar is in accordance with the standard EN 10210-1 and fulfilled criteria of standard EN 10297-1 and standard EN 14199.

Self-drilling bar SHS type R with diameter 38 and 51 mm have a cold-rolled left-hand circular thread along the whole length of the bar.

Self-drilling bar SHS type RR with diameter 64, 76 and 108 mm have the cold-rolled right-hand thread.

Service life of micropile systems:

- Micropiles for temporary use (service life max. 2 years)
- Permanent micropiles (service life up to 50 years) depending on the degree of corrosion.

Table No. 1 Nominal dimensions and mass, rib geometry

Type of the bar	Nominal diameter **Da, jm [mm]**	Outer diameter **Da [mm]**	Nominal cross section **S_o [mm²]**	Nominal mass per meter **m [kg/m]**	Thread height **a [mm]**
H 0420-38	38	37,99	640	5,0	1,5
H 0500-38	38	37,99	740	5,8	1,5
H 0630-51	51	49,99	930	7,3	1,7
H 0800-51	51	49,99	1145	9,0	1,7
H 1000-64	64	63,80	1470	11,5	2,1
H 1200-64	64	63,80	1720	13,5	2,1
H 1400-76	76	76,90	2020	15,8	2,2
H 1600-76	76	76,90	2270	17,8	2,2
H 1800-76	76	76,90	2510	19,7	2,2
H 2400-108	108	108,1	3550	27,8	2,2

TECHNICKÝ ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p. Autorizovaná osoba TZÚS 204

Table No. 2 Properties and requirements

Type of the bar	Nominal diameter **Da, jm [mm]**	Yield strength **$F_{p0,2}$ [kN]**	Tensile strength **F_{pk} [kN]**	**R = $F_{p0,2}$/1,15 [kN]**
H 0420-38	38	350	420	304
H 0500-38	38	400	500	348
H 0630-51	51	530	630	461
H 0800-51	51	630	800	548
H 1000-64	64	800	1000	696
H 1200-64	64	950	1200	826
H 1400-76	76	1080	1400	939
H 1600-76	76	1200	1600	1043
H 1800-76	76	1400	1800	1217
H 2400-108	108	1780	2400	1548

R - design resistance value of micropile

The details description of the micropile components, material, dimensions and corrosion protection are described in „Zulassung BMVIT-327.120/0012-IV/IVVS2/2016“, which is in Annex of the “Report of the check on product conformity No. 090-043104.

2. Specification of the product characteristic and method of their assessment:

Table No. 3:

No.	Product characteristic	Test method	No. samples		Declared (D)
			C	D	
1	Tolerance of dimensions and shapes	according to the producer's declaration	3	0	D: Zulassung BMVIT-327.120/0012-IV/IVVS2/2016
2	Static load capacity - Ultimate load capacity of the hollow bar	by translation: ČSN EN 1991-1-1 ČSN EN 1992-1-1 ČSN EN 1994-1-1 ČSN EN 1997-1 prEN 10138-4 or type testing: TKP 29 MD	1	0	D: Table No.2 (F_{pk} [kN]) Zulassung BMVIT-327.120/0012-IV/IVVS2/2016
3	Corrosion protection corrosion protection materials are assessed ČSN EN 447 (73 2410)	ČSN EN 12501-1 ČSN EN 445 (73 2408) ČSN EN 1537: Annex A ČSN 73 2401 Or according to the producer's declaration TKP 29MD	0	0	D: Zulassung BMVIT-327.120/0012-IV/IVVS2/2016

Note: C – product conformity checking article 7

3. Factory Production Control ensurance

General requirements for Factory Production Control at the manufacturer are noticed in the Annex 3 of the Government Decree No. 163/2002 Coll., as amended.

TECHNICKÁ ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p. Autorizovaná osoba 204

4. List of documentation submitted by the manufacturer:

- Zulassung BMVIT-327.120/0012-IV/IVVS2/2016, issued on 5 December 2016.
- Declaration of Performance "ANP – SHS Micropile/Soil nail system, issued ANP–Systems GmbH on 7.3. 2018.
- Tensile tests of steel threaded bars

5. List of technical regulations, technical standards and other documents used:

- ČSN EN 14490 - Execution of special geotechnical works – Soil nailing
- ČSN EN 12501-1 – Protection of metallic materials against corrosion – Corrosion likehood in soil – Part 1: General
- ČSN EN 1537 - Execution of special geotechnical works – Ground anchors
- prEN 10138-4 – Prestressing steels – Part 4: Bars
- ČSN EN 1991-1-1 – Actions on structure – Part 1-1: General Actions
- ČSN EN 1992-1-1 - Design of concrete structures - Part 1-1: General rules and rules for buildings
- ČSN EN 1994-1-1 – Design of composite steel and concrete structures – Part 1-1: General rules and rules for buildings
- ČSN EN 1997-1 - Geotechnical design – Part 1: General rules
- ČSN EN 445 - Grout for prestressing tendons – Test methods
- ČSN EN 447 – Grout for prestressing tendons – Basic requirements
- ČSN EN ISO 15630-1 - Steel for the reinforcement and prestressing of concrete - Test methods -Part 1: Reinforcing bars, wire rod and wire
- TN 09_18_02 Rock and soil stabilization products not elsewhere specified

6. Verifications tests:

Not performed.

7. Detailed requirements for conformity assessment:

The product is included under Annex 2, group 09_18 of the Government Decree No. 163/2002 Coll., as amended by Government Decree No. 312/2005 Coll. and by the Government Decree No. 215/2016 Coll. The prescribed method of conformity assessment corresponds to Article 7 of the Regulation. The manufacturer ensures the Factory Production control in accordance with the requirements of point (c), paragraph 1, Article 7 of that Regulation.