



S.C. CARA SRL
STR. FILARET BARBU NR. 2
300193 TIMIȘDARA

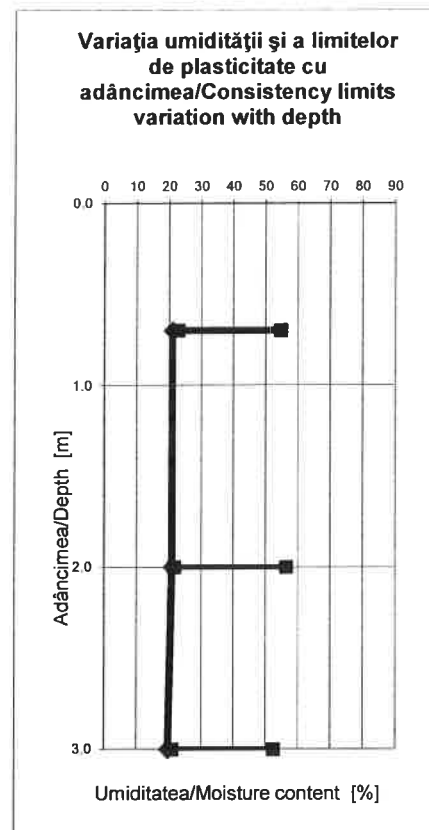
DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 1221 / 27.10.2016

VARIAȚIA UMIDITĂȚII ȘI A LIMITELOR DE PLASTICITATE CU ADÂNCIMEA / MOISTURE CONTENT AND CONSISTENCY LIMITS VARIATION WITH DEPTH
Conform/According to STAS 1913/1 - 82 - Laborator autorizat/Authorized laboratory - Aut. nr./Aut. No.2723/18.04.2013

Adâncimea Depth	m ₁ [g]	m ₂ [g]	m ₃ [g]	w [%]
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0.70 m	171.5	147.7	34.8	21.1
2.00 m	161.7	139.9	35.7	20.9
3.00 m	148.2	129.7	35.7	19.7



Șef profil: Dr. ing. Ioan Petru BOLDUREAN
Șef laborator: Dr. ing. Ion BOGDAN





S.C. CARA SRL
STR. FILARET BARBU NR. 2
300193 TIMIȘOARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -0.70 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 1225 / 27.10.2016

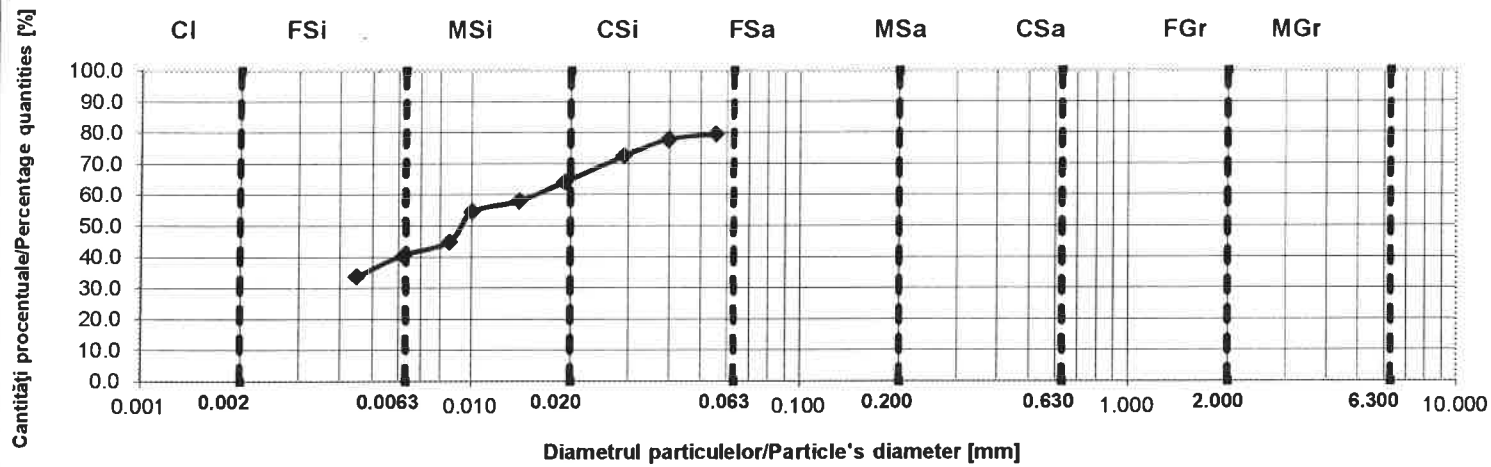
DETERMINAREA GRANULOSITĂȚII PĂMÂNTURILOR PRIN METODA SEDIMENTĂRII / PARTICLE SIZE ANALYSIS FOR SOILS BY SEDIMENTATION

Conform/According to SR EN ISO 14688-2 - Laborator autorizat/Authorized laboratory - Aut. nr/Aut. No.2723/18.04.2013

T	[sec]	Densitate/Density	R	R'	Ct	R''	10 ² *eta	Hr	dt [mm]	mt [%]
30"	30	1.0240	24	24.5	0.19323	24.6932	0.09826	8.670	0.0557	79.4
1'	60	1.0235	23.5	24.0	0.19323	24.1932	0.09826	8.840	0.0398	77.8
2'	120	1.0218	21.8	22.3	0.19323	22.4932	0.09826	9.418	0.0290	72.4
5'	300	1.0192	19.2	19.7	0.19323	19.8932	0.09826	10.302	0.0192	64.1
10'	600	1.0173	17.3	17.8	0.19323	17.9932	0.09826	10.948	0.0140	58.0
20'	1200	1.0162	16.2	16.7	0.19323	16.8932	0.09826	11.322	0.0101	54.5
30'	1800	1.0132	13.2	13.7	0.19323	13.8932	0.09826	12.342	0.0086	44.9
60'	3600	1.0118	11.8	12.3	0.19323	12.4932	0.09826	12.818	0.0062	40.5
120'	7200	1.0097	9.7	10.2	0.19323	10.3932	0.09826	13.532	0.0045	33.8

DJ 691 km 40+670 STG
 Foraj nr./Boring no.: F 1
 Cota/Depth: -0.70 m

Diagrama distribuției granulometrice / Granulometric curve



CI -	23 %
FSi -	18 %
MSi -	26 %
CSi -	15 %
FSa -	18 %
MSa -	0 %
CSa -	0 %
FGr -	0 %
MGr -	0 %
CGr -	0 %

CI -	23 %
Si -	59 %
Sa -	18 %
Gr -	0 %

Pământuri fine

CI	Argilă
Si	Praf
FSi	Praf fin
MSi	Praf mijlociu
CSi	Praf mare

Pământuri grosiere

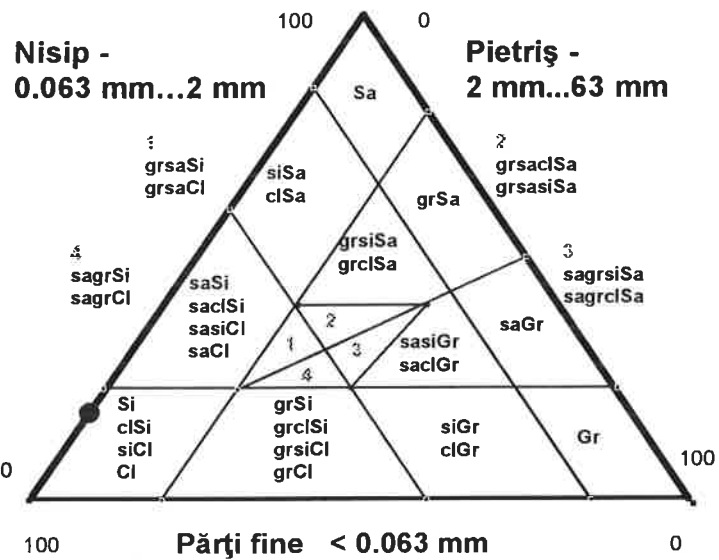
Sa	Nisip
FSa	Nisip fin
MSa	Nisip mijlociu
CSa	Nisip mare
Gr	Pietriș
FGr	Pietriș mic
MGr	Pietriș mijlociu
CGr	Pietriș mare

Pământuri foarte grosiere

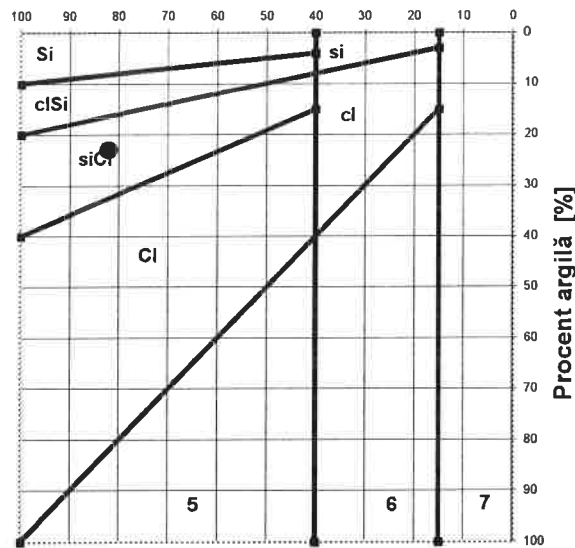
Co	Bolovăniș
Bo	Blocuri
Lbo	Blocuri mari

Total 100 %

**CLASIFICARE PĂMÂNTURI
SR EN ISO 14688-2/2005**



Părți fine d < 0.063 mm [%]



DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -0.70 m

5
Pământuri fine (praf și argilă)

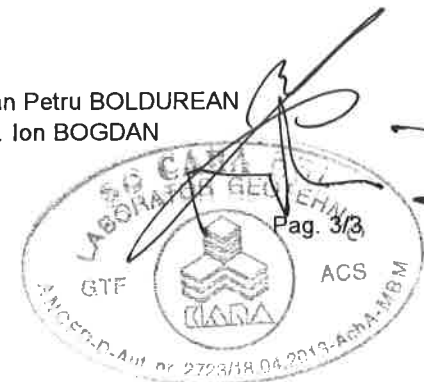
6
**Pământuri mixte (pietriș
argilos sau prăfos și nisip)**

7
**Pământuri granulare (pietriș și
nisip)**

DENUMIRE PAMÂNT / SOIL TYPE
ARGILĂ PRĂFOASĂ / SILTY CLAY - siCl

Șef profil: Dr. ing. Ioan Petru BOLDUREAN
Șef laborator: Dr. ing. Ion BOGDAN

PO-101-01.07/13





S.C. CARA SRL
STR. FILARET BARBU NR. 2
300193 TIMIȘOARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -2.00 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 12226/27.10.2016

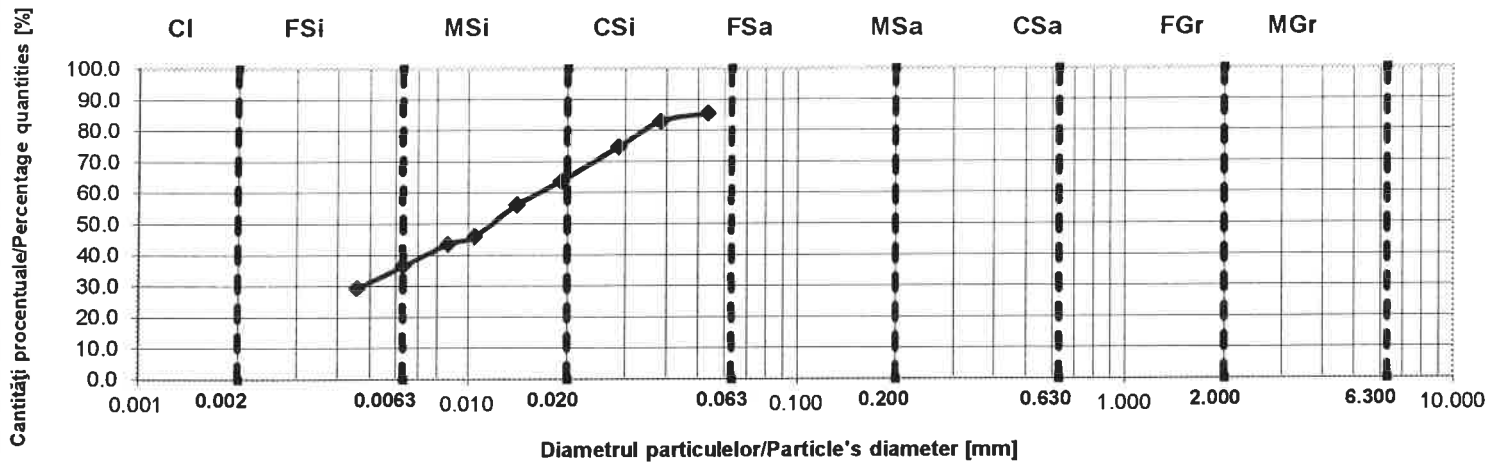
DETERMINAREA GRANULOSITĂȚII PĂMÂNTURILOR PRIN METODA SEDIMENTĂRII / PARTICLE SIZE ANALYSIS FOR SOILS BY SEDIMENTATION

Conform/According to SR EN ISO 14688-2 - Laborator autorizat/Authorized laboratory - Aut. nr/Aut. No.2723/18.04.2013

T	[sec]	Densitate/Density	R	R'	Ct	R''	10 ² *eta	Hr	dt [mm]	mt [%]
30"	30	1.0259	25.9	26.4	0.19323	26.5932	0.09826	8.024	0.0536	85.5
1'	60	1.0251	25.1	25.6	0.19323	25.7932	0.09826	8.296	0.0385	82.9
2'	120	1.0225	22.5	23.0	0.19323	23.1932	0.09826	9.180	0.0287	74.6
5'	300	1.0191	19.1	19.6	0.19323	19.7932	0.09826	10.336	0.0192	63.8
10'	600	1.0167	16.7	17.2	0.19323	17.3932	0.09826	11.152	0.0141	56.1
20'	1200	1.0135	13.5	14.0	0.19323	14.1932	0.09826	12.240	0.0105	45.9
30'	1800	1.0127	12.7	13.2	0.19323	13.3932	0.09826	12.512	0.0086	43.3
60'	3600	1.0105	10.5	11.0	0.19323	11.1932	0.09826	13.260	0.0063	36.3
120'	7200	1.0083	8.3	8.8	0.19323	8.9932	0.09826	14.008	0.0046	29.3

DJ 691 km 40+670 STG
 Foraj nr./Boring no.: F 1
 Cota/Depth: -2.00 m

Diagrama distribuției granulometrice / Granulometric curve



CI -	14 %
FSi -	25 %
MSi -	28 %
CSi -	24 %
FSa -	9 %
MSa -	0 %
CSa -	0 %
FGr -	0 %
MGr -	0 %
CGr -	0 %
CI -	14 %
Si -	77 %
Sa -	9 %
Gr -	0 %

Pământuri
fine

CI	Argilă
Si	Praf
FSi	Praf fin
MSi	Praf mijlociu
CSi	Praf mare

Pământuri
grosiere

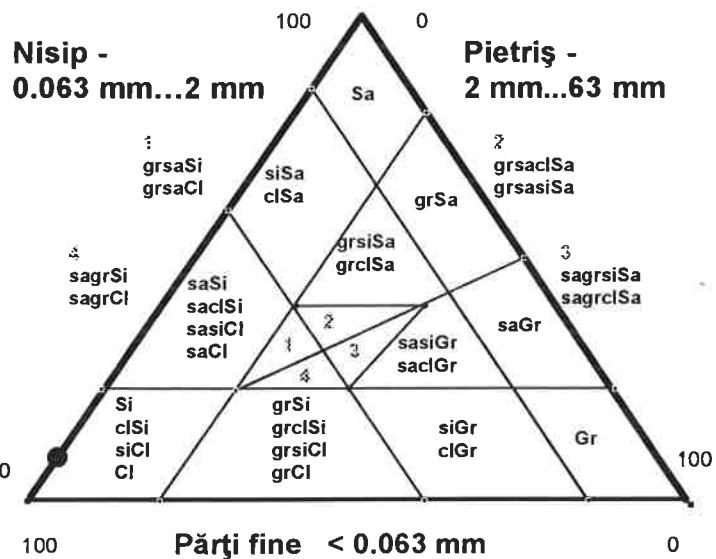
Sa	Nisip
FSa	Nisip fin
MSa	Nisip mijlociu
CSa	Nisip mare
Gr	Pietriș
FGr	Pietriș mic
MGr	Pietriș mijlociu
CGr	Pietriș mare

Pământuri
foarte
grosiere

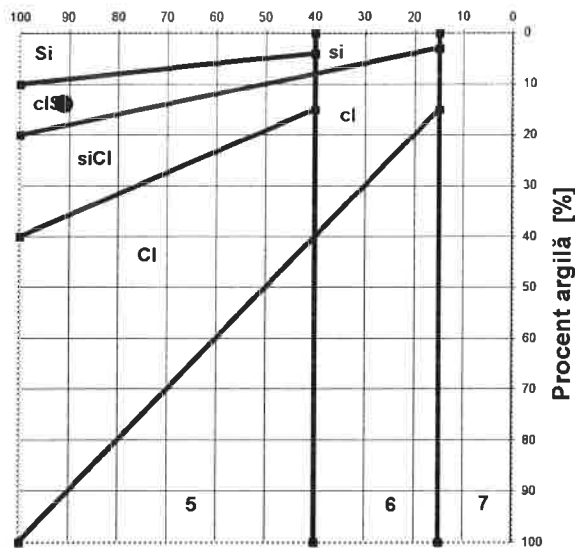
Co	Bolovăniș
Bo	Blocuri
Lbo	Blocuri mari

Total 100 %

**CLASIFICARE PĂMÂNTURI
SR EN ISO 14688-2/2005**



Părți fine d < 0.063 mm [%]



DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -2.00 m

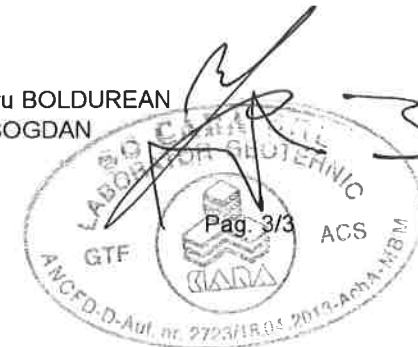
5
Pământuri fine (praf și argilă)

6
**Pământuri mixte (pietriș
argilos sau prăfos și nisip)**

7
**Pământuri granulare (pietriș și
nisip)**

DENUMIRE PAMANT / SOIL TYPE
PRAF ARGILOS / CLAYEY SILT - clSi

Șef profil: Dr. ing. Ioan Petru BOLDUREAN
Șef laborator: Dr. ing. Ion BOGDAN





S.C. CARA SRL
STR. FILARET BARBU NR. 2
300193 TIMIȘOARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -3.00 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 1227, 27.10.2016

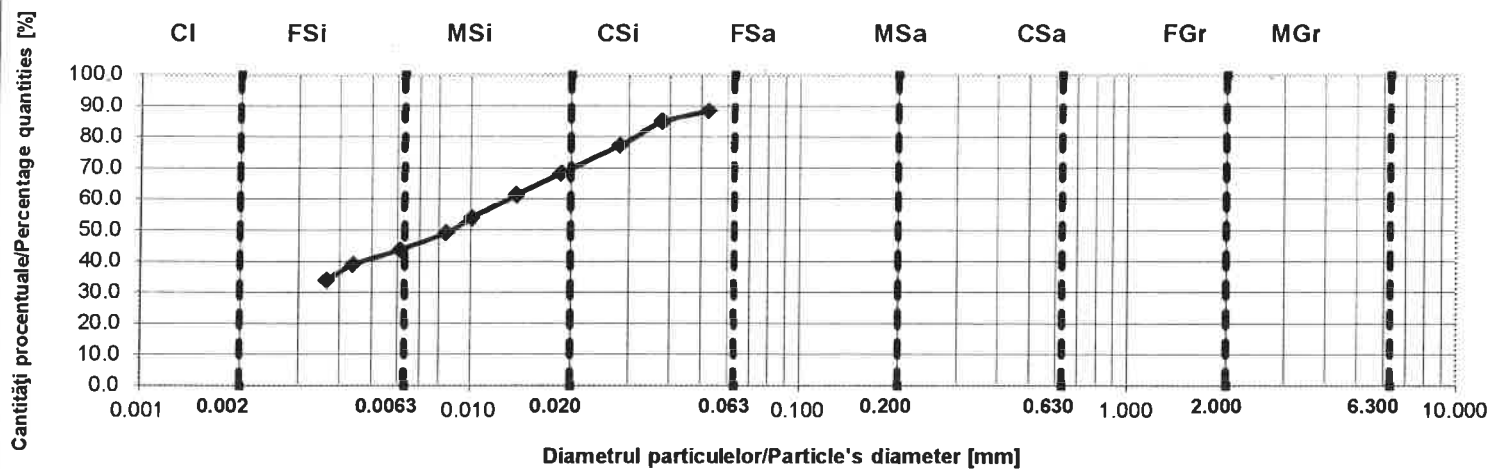
DETERMINAREA GRANULUZITĂȚII PĂMÂNTURILOR PRIN METODA SEDIMENTĂRII / PARTICLE SIZE ANALYSIS FOR SOILS BY SEDIMENTATION

Conform/According to SR EN ISO 14688-2 - Laborator autorizat/Authorized laboratory - Aut. nr/Aut. No.2723/18.04.2013

T	[sec]	Densitate/Density	R	R'	Ct	R''	10 ² *eta	Hr	dt [mm]	mt [%]
30"	30	1.0268	26.8	27.3	0.19323	27.4932	0.09826	7.718	0.0525	88.3
1'	60	1.0257	25.7	26.2	0.19323	26.3932	0.09826	8.092	0.0380	84.8
2'	120	1.0233	23.3	23.8	0.19323	23.9932	0.09826	8.908	0.0282	77.2
5'	300	1.0205	20.5	21.0	0.19323	21.1932	0.09826	9.860	0.0188	68.2
10'	600	1.0183	18.3	18.8	0.19323	18.9932	0.09826	10.608	0.0138	61.2
20'	1200	1.0160	16.0	16.5	0.19323	16.6932	0.09826	11.390	0.0101	53.9
30'	1800	1.0145	14.5	15.0	0.19323	15.1932	0.09826	11.900	0.0084	49.1
60'	3600	1.0128	12.8	13.3	0.19323	13.4932	0.09826	12.478	0.0061	43.7
120'	7200	1.0113	11.3	11.8	0.19323	11.9932	0.09826	12.988	0.0044	38.9
180'	10800	1.0097	9.7	10.2	0.19323	10.3932	0.09826	13.532	0.0037	33.8

DJ 691 km 40+670 STG
 Foraj nr./Boring no.: F 1
 Cota/Depth: -3.00 m

Diagrama distribuției granulometrice / Granulometric curve



CI - 25 %
 FSi - 20 %
 MSi - 26 %
 CSi - 22 %
 FSa - 7 %
 MSa - 0 %
 CSa - 0 %
 FGr - 0 %
 MGr - 0 %
 CGr - 0 %

CI - 25 %
 Si - 68 %
 Sa - 7 %
 Gr - 0 %

Pământuri fine

CI Argilă
 Si Praf
 FSi Praf fin
 MSi Praf mijlociu
 CSi Praf mare

Pământuri grosiere

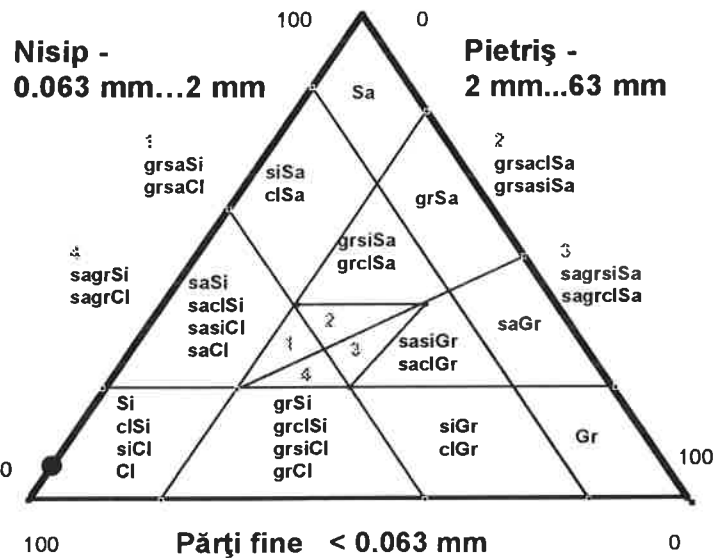
Sa Nisip
 FSa Nisip fin
 MSa Nisip mijlociu
 CSa Nisip mare
 Gr Pietriș
 FGr Pietriș mic
 MGr Pietriș mijlociu
 CGr Pietriș mare

Pământuri foarte grosiere

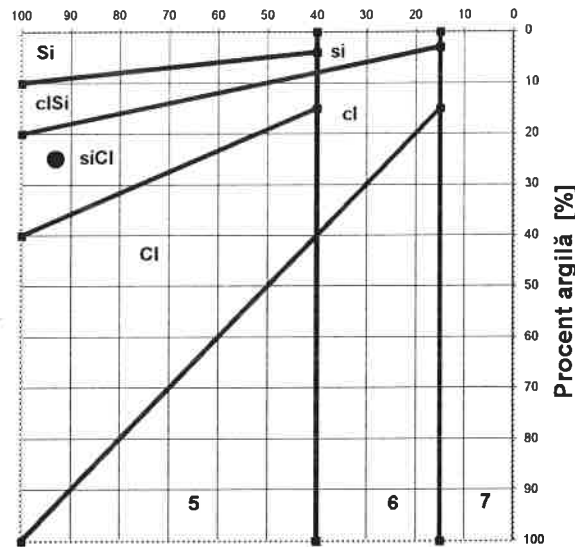
Co Bolovăniș
 Bo Blocuri
 Lbo Blocuri mari

Total 100 %

**CLASIFICARE PĂMÂNTURI
SR EN ISO 14688-2/2005**



Părți fine d < 0.063 mm [%]



5
Pământuri fine (praf și argilă)

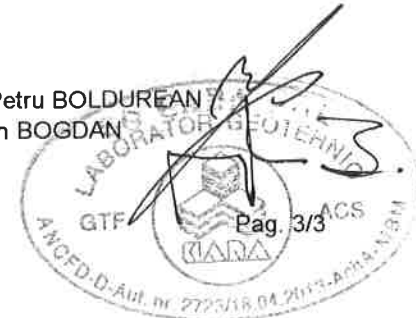
6
Pământuri mixte (pietriș argilos sau prăfos și nisip)

7
Pământuri granulare (pietriș și nisip)

DENUMIRE PĂMÂNT / SOIL TYPE

ARGILĂ PRĂFOASĂ / SILTY CLAY - siCl

Șef profil: Dr. ing. Ioan Petru BOLDUREAN
Șef laborator: Dr. ing. Ion BOGDAN





S.C. CARA SRL
STR. FILARET BARBU NR. 2
300193 TIMIȘOARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -0.70 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. *PKB/27.10.2016*

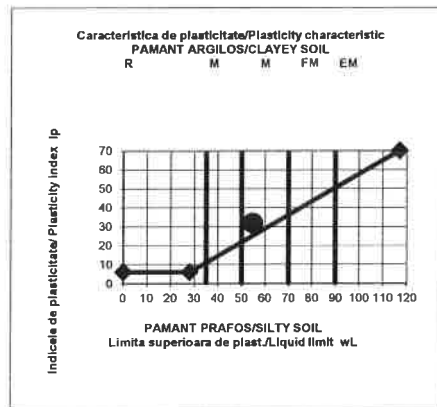
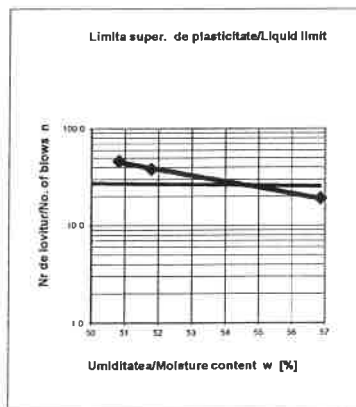
DETERMINAREA LIMITELOR DE PLASTICITATE / CONSISTENCY LIMITS TESTS

Conform/According to STAS 1913/4 - 86 - Laborator autorizat/Authorized laboratory - Aut. nr./Aut. No.624/ISC-30.11.2004

	U.M.	1	2	3
m 1	g	22.2	18.3	24.6
m 2	g	19.1	15.4	21.7
m 3	g	13.0	9.8	16.6
w	%	50.8	51.8	56.9
Nr de lovituri/No. of blows	-	46.0	38.0	19.0

	U.M.	1
m 1	g	29.7
m 2	g	26.9
m 3	g	14.6
w _P	%	22.8

w_P = 22.8 %

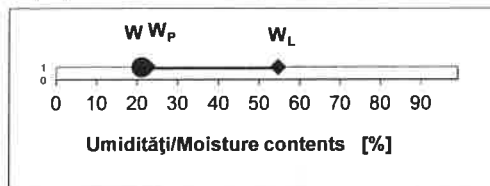


	U.M.	1
m 1	g	171.5
m 2	g	147.7
m 3	g	34.8
w	%	21.1

w = 21.1 %

lc = 1.05
lp = 31.9 %

w_L = 54.7 %



Șef profil: Dr. ing. Ioan Petru BOLDUREAN
Șef laborator: Dr. ing. Ion BOGDAN





S.C. CARA SRL
STR. FILARET BARBU NR. 2
300193 TIMIȘOARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -2.00 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 1229 / 27.10.2016

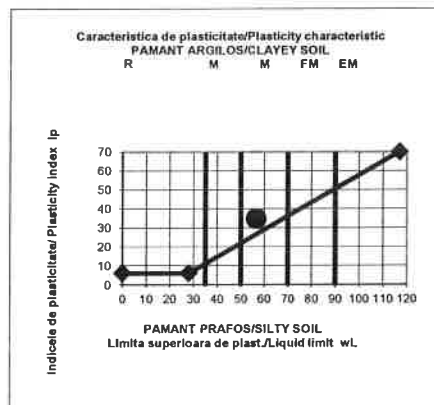
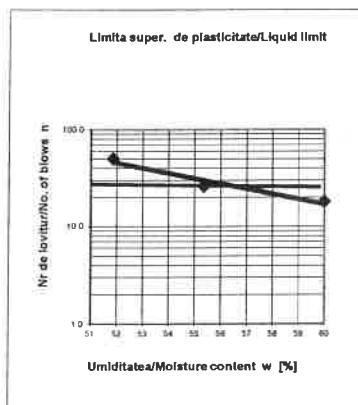
DETERMINAREA LIMITELOR DE PLASTICITATE / CONSISTENCY LIMITS TESTS

Conform/According to STAS 1913/4 - 86 - Laborator autorizat/Authorized laboratory - Aut. nr./Aut. No.624/ISC-30.11.2004

	U.M.	1	2	3
m 1	g	26.8	23.2	26.8
m 2	g	22.6	20.1	22.3
m 3	g	14.5	14.5	14.8
w	%	51.9	55.4	60.0
Nr de lovituri/No. of blows	-	50.0	26.0	18.0

	U.M.	1
m 1	g	27.6
m 2	g	25.3
m 3	g	14.7
w _P	%	21.7

w_P = 21.7 %

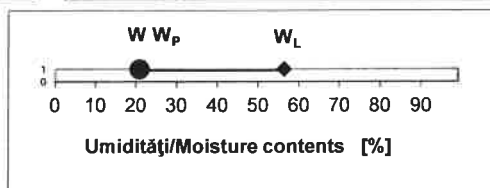


	U.M.	1
m 1	g	161.7
m 2	g	139.9
m 3	g	35.7
w	%	20.9

w = 20.9 %

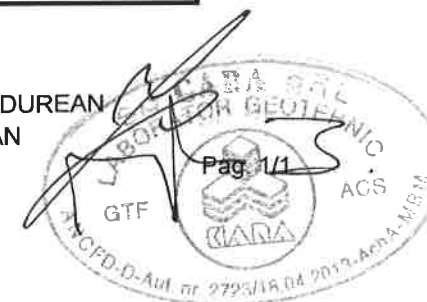
lc = 1.02
lp = 34.7 %

w_L = 56.4 %



Șef profil: Dr. ing. Ioan Petru BOLDUREAN
Șef laborator: Dr. ing. Ion BOGDAN

PO-101-01.06/8/10



Pag. 1/1



S.C. CARA SRL
 STR. FILARET BARBU NR. 2
 300193 TIMIȘOARA

DJ 691 km 40+670 STG
 Foraj nr./Boring no.: F 1
 Cota/Depth: -3.00 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 12.30 / 27.10.2016

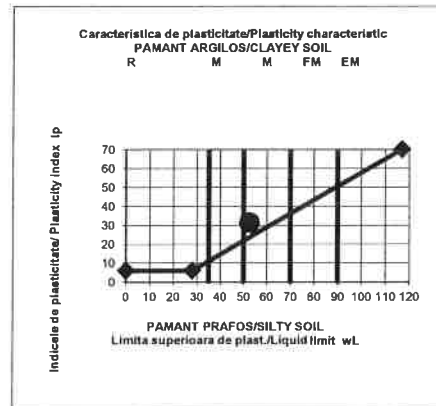
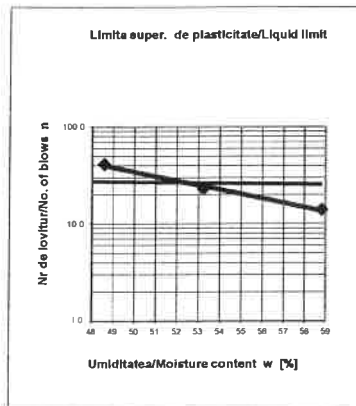
DETERMINAREA LIMITELOR DE PLASTICITATE / CONSISTENCY LIMITS TESTS

Conform/According to STAS 1913/4 - 86 - Laborator autorizat/Authorized laboratory - Aut. nr./Aut. No.624/ISC-30.11.2004

	U.M.	1	2	3
m 1	g	25.4	26.4	25.3
m 2	g	22.0	22.3	21.3
m 3	g	15.0	14.6	14.5
w	%	48.6	53.2	58.8
Nr de lovituri/No. of blows	-	41.0	23.0	14.0

	U.M.	1
m 1	g	29.3
m 2	g	26.7
m 3	g	14.3
w _P	%	21.0

w_P = 21.0 %

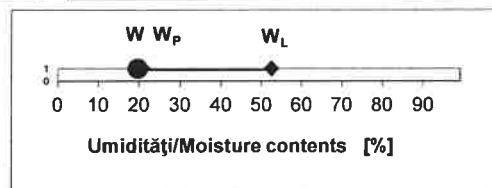


	U.M.	1
m 1	g	148.2
m 2	g	129.7
m 3	g	35.7
w	%	19.7

w = 19.7 %

lc = 1.04
lp = 31.5 %

w_L = 52.5 %



Șef profil: Dr. ing. Ioan Petru BOLDUREAN
 Șef laborator: Dr. ing. Ion BOGDAN





S.C. CARA S.R.L.
STR. FILARET BARBU NR. 2
300193 TIMIȘDARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -0.70 m

BULETIN DE ANALIZĂ nr. / ANALYSIS REPORT no. 12231/27.10.2016

DETERMINAREA CARACTERISTICILOR PĂMÂNTURILOR CONTRACTILE PUCM / DETERMINATION OF THE EXPANSIVE SOILS CHARACTERISTICS

Conform/According to STAS 1913/12 - 88 - Laborator autorizat/Authorized laboratory - Aut. nr./Aut. No.2723/18.04.2013

- | | |
|--|-------------------|
| Conținutul de particule fine / Percentages of | |
| 1. fine particles (d < 0,002 mm) | $A_2 = 23 \%$ |
| 2. Indicele de activitate / Activity Index | $I_A = 1.39 -$ |
| 3. Criteriul de plasticitate / Plasticity Criteria | $C_P = 25.33 \%$ |
| 4. Contractia volumică / Volumic Contraction | $C_V = 64.65 \%$ |
| 5. Umflare liberă / Swelling | $U_L = 95.00 \%$ |
| 6. Limita de contractie / Contraction Limit | $w_s = 17.50 \%$ |
| 7. Indicele de contractie-umflare / Contraction-Swelling Index | $I_{cu} = 0.17 -$ |
| 8. Indicele de plasticitate/Plasticity index | $I_p = 31.94 \%$ |

$$I_A = \frac{I_P}{A_2}$$

$$w_s = w_L - \frac{V_i - V_f}{m_s} * \rho_w * 100$$

$$U_L = 10 * (V_f - 10)$$

$$C_V = \frac{V_i - V_f}{V_f} * 100$$

$$C_P = 0,73 * (w_L - 20)$$

$$I_{cu} = \frac{w_{sat} - w}{w_{sat} - w_s}$$

CATEGORIA PĂMÂNTULUI / SOIL CATEGORY	FOARTE ACTIVE / VERY ACTIVE	ACTIVE/ACTIVE	PUȚIN ACTIVE / LESS ACTIVE
A ₂	> 30%	18...35%	15...25%
I _p	> 35%	25...35%	20...30%
I _A	>1,25	1,00...1,25	0,75...1,0
C _p	I _p > C _p	I _p > C _p	I _p > C _p
C _v	> 100%	75...100%	55...75%
U _L	> 140%	100...140%	55...100%
w _s	< 10%	14...10%	16...14%

Șef profil: Dr. ing. Ioan Petru BOLDUREAN

Șef laborator: Dr. ing. Ion BOGDAN

PO-101-01.09/16/17





S.C. CARA S.R.L.
STR. FILARET BARBU NR. 2
300193 TIMIȘOARA

DJ 691 km 40+670 STG
Foraj nr./Boring no.: F 1
Cota/Depth: -0.70 m

DETERMINAREA CARACTERISTICILOR DE CONTRACTILITATE - PUCM

