

**Datareport:  
Grain size distribution, water content  
and loss on ignition**

Laboratory analysis for Bio/consult A/S

Ingerlise Nørgaard



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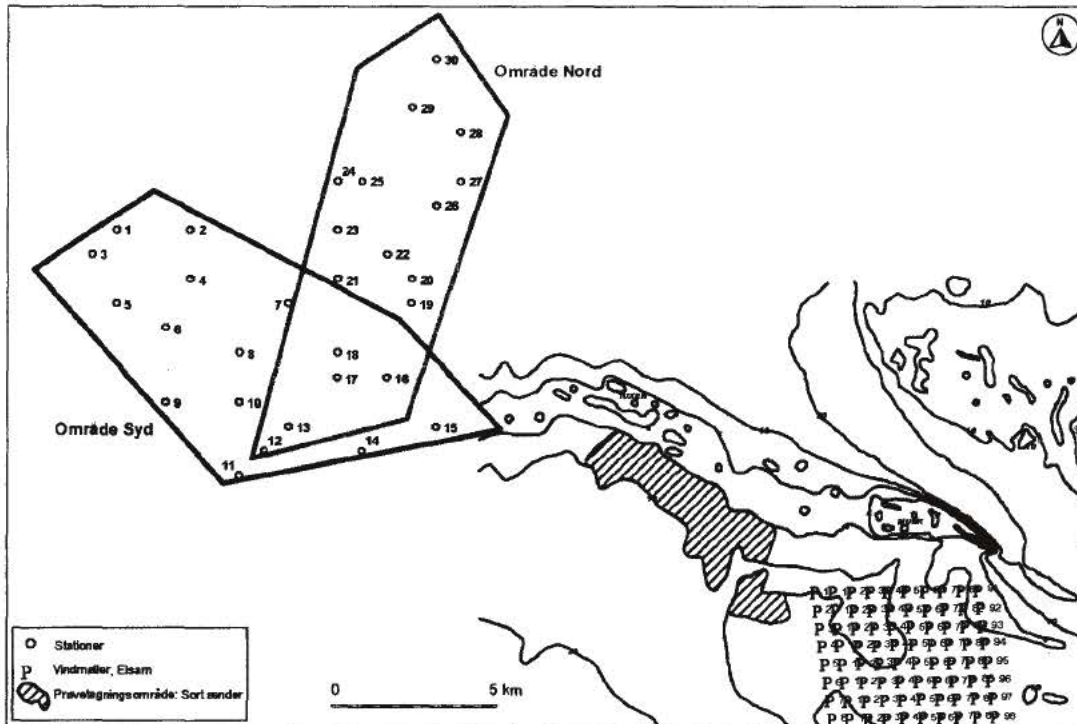
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## **Sample treatment**

GEUS has carried out analyses on 24 sediment samples from Horns\_Rev2 12/12/2005. When received the samples were registered with the following five categories:

- date
- locality
- laboratory number in succession
- client
- analysis requirements

Remaining analysis material is only kept for 14 days after reporting.



### Sampling Positions

Station	Depth (m)	Remarks	Longitude (X)	Latitude (Y)	Size Classes
1	11,5	Haps sample	07°27,292'	55°36,117'	Sand, medium/coarse
2	-	No. Samples	07°29,441'	55°36,117'	
3	11,2	Haps sample	07°26,576'	55°35,712'	Sand, coarse/medium
4	-	No. Samples	07°29,441'	55°35,307'	
5	10,9	Haps sample	07°27,292'	55°34,903'	Sand, medium/coarse
6	-	No. Samples	07°28,725'	55°34,498'	
7	-	No. Samples	07°32,306'	55°34,903'	
8	-	No. Samples	07°30,874'	55°34,093'	
9	12,9	Haps sample	07°28,725'	55°33,284'	Sand, coarse/medium
10	7,9	Haps sample	07°30,874'	55°33,284'	Sand, medium
11	20,2	Organic material in sample	07°30,874'	55°32,070'	Sand, coarse/medium
12	6,7	Haps sample	07°31,590'	55°32,474'	Sand, coarse/medium
13	-	No. Samples	07°32,306'	55°32,879'	
14	4,6	Loose sand, ripples.	07°34,455'	55°32,474'	Sand, coarse/medium
15	6,0	Shell fragments	07°36,603'	55°32,879'	Sand, coarse/medium
16	11,3	Sand, ripples (Large ripples)	07°35,171'	55°33,688'	Sand, medium
17	10,7	Large ripples	07°33,739'	55°33,688'	Sand, medium
18	11,7	Sand, ripples (Large ripples)	07°33,739'	55°34,093'	Sand, medium
19	12,9	Sand, ripples (Large ripples).	07°35,887'	55°34,903'	Sand, medium
20	12,8	Sand, ripples (Large ripples)r	07°35,887'	55°35,307'	Sand, medium
21	12,6	Sand, ripples (Large ripples)	07°33,739'	55°35,307'	Sand,

					medium/coarse
22	12,9	Fine-grained sand	07°35,171'	55°35,712'	Sand, medium
23	13,3	Large ripples Length a. 70 cm.	07°33,739'	55°36,117'	Sand, medium/coarse
24	14,8	Large ripples Length a. 70 cm.	07°33,739'	55°36,926'	Sand, medium/coarse
25	15,1	Large ripples Length a. 70 cm.	07°34,455'	55°36,926'	Sand, medium/coarse
26	13,3	Large ripples Length a. 70 cm.	07°36,603'	55°36,521'	Sand, medium/coarse
27	12,7	Large ripples Length a. 70 cm..	07°37,320'	55°36,926'	Sand, medium/coarse
28	14,3	Large ripples Length a. 70 cm..	07°37,320'	55°37,735'	Sand, medium/coarse
29	15,6	Large ripples Length a. 70 cm.	07°35,887'	55°38,140'	Sand, medium/coarse
30	14,8	Large ripples Length a. 70 cm.	07°36,603'	55°38,949'	Sand, medium/coarse

## **Analysis methods**

### **Water content determination**

The water content is determined in percentage of natural condition sample weight . The samples are dried at 105° C to constant weight.

The analyses are carried out according to DS 405.11 in part and DS 204 in part in Water and Environment.

### **Loss on ignition determination**

The organic content and the content of chemically-bonded water are determined with the loss on ignition analysis. The loss on ignition is determined in weight % of material dried at 105° C.

The analyses are carried out according to DS 405 in part and DS 204 in part.

### **Grain size distribution**

The analysis is carried out in two phases:

#### **Sieve analysis:**

The total sample is dried and washed through an 0,063 mm sieve. The resulting sediment is sieved through a sieve column from 16 mm to 0,063 mm with  $\frac{1}{2}$  phi intervals, which corresponds to 15 sieves. The method is adapted in relation to DS/EN 933-1, as there are more sieves than described in this standard.

DS /EN 933-1 is used as starting point for the particle size distribution analysis, as there are more sieves than described in this standard.

The sediment finer than 0,063 mm is analysed on the sedigraph.

#### **Sedigraph analysis:**

The particle size distribution of fractions smaller than 0.063 mm is determined with a Sedigraph 5100

The samples <0.063mm are washed to remove salt ,and subsequently suspended in a 0,005 mol solution of  $\text{Na}_4\text{P}_2\text{O}_7 \cdot 10 \text{H}_2\text{O}$  by shaking for 12 hours.

Grain size distribution: The total particle size distribution is obtained by combining the sedigraph analysis with the sieve analysis.

DS /EN 933-1 is used as the basis for the particle size analysis together with the specifications for the Sedigraph 5100.

## **Results**

In table 1, the water content and loss on ignition are listed. The percentage of water is also shown. In attachment 1, the grain size distribution for the sediment samples is shown. The grain size distribution shows the distribution of sand, silt and clay in the samples. If the samples do not comply with the DS/EN 933-1DS requirement that the size of the sediment samples is at least 200 gr., this is noted under Total Weight.

## **References**

Standarder for Vand & Miljø. DS Håndbogen 21.2. Dansk Standardiseringsråd, 1991.

Dansk Standard DS 204. Tørstof og gløderest. Dansk Standardiseringsråd, Kbh.1980.

SS/EN 933-1. Kornstørrelsesfordeling bestemt ved sigteanalyse. Dansk Standard. 2004.

Dansk Standard DS 405.11. Vandindhold. Dansk Standardiseringsråd, Kbh.1978.

SediGraph 5100. Particle Size Analysis System. Operator's Manual v3.07, micromeritics 1994.



# **TABLE 1**

# Horns\_Rev2 12/12/2005

## Loss on ignition      Water content

DS 204

Sample no.	LOI In %	Rest sample in %	Water content in %	Dry material in %
1	0,22	99,78	16,27	83,73
3	0,24	99,76	13,38	86,62
5	0,20	99,80	12,74	87,26
9	0,22	99,78	11,16	88,84
10	0,28	99,72	13,96	86,04
11	0,35	99,65	13,33	86,67
12	0,31	99,69	14,26	85,74
14	0,24	99,76	17,43	82,57
15	0,35	99,65	14,50	85,50
16	0,37	99,63	18,26	81,74
17	0,20	99,80	17,78	82,22
18	0,25	99,75	19,67	80,33
19	0,30	99,70	16,20	83,80
20	0,36	99,64	20,10	79,90
21	0,33	99,67	17,33	82,67
22	0,37	99,63	18,17	81,83
23	0,24	99,76	13,61	86,39
24	0,23	99,77	12,75	87,25
25	0,13	99,87	16,58	83,42
26	0,22	99,78	14,75	85,25
27	0,17	99,83	14,62	85,38
28	0,17	99,83	14,56	85,44
29	0,15	99,85	16,81	83,19
30	0,14	99,86	14,24	85,76

Samples was not frozen at arrival.

feb.06

# Grain Size Distribution

Geotechnical

**Sample Id:** 1  
**Lab. Id:** 060363  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 118,55 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,12	0,10	99,90
2,00	-1,00	0,07	0,06	99,84
1,40	-0,49	1,21	1,02	98,82
1,00	0,00	10,96	9,25	89,57
0,710	0,49	23,01	19,41	70,16
0,500	1,00	31,79	26,82	43,35
0,355	1,49	39,92	33,67	9,68
0,250	2,00	9,05	7,63	2,04
0,180	2,47	1,07	0,90	1,14
0,125	3,00	0,21	0,18	0,96
0,090	3,47	0,12	0,10	0,86
0,063	3,99	0,08	0,07	0,79
0,0442	4,50	0,94	0,79	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	0,79
Sand, fine (0,063 mm - 0,200 mm)	0,60
Sand, medium (0,2 mm - 0,6 mm)	54,72
Sand, coarse (0,6 mm - 2 mm)	43,72
Gravel (> 2 mm)	0,16
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	1,23	-0,30
16%	84%	0,92	0,13
25%	75%	0,78	0,35
40%	60%	0,63	0,67
50%	50%	0,55	0,86
75%	25%	0,42	1,25
84%	16%	0,38	1,39
90%	10%	0,36	1,49
95%	5%	0,29	1,78

## Moments Statistics

Mean	0,79
Sorting	0,63
Skewness	-0,14
Kurtosis	0,96
Uniformity Coefficient	1,77

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

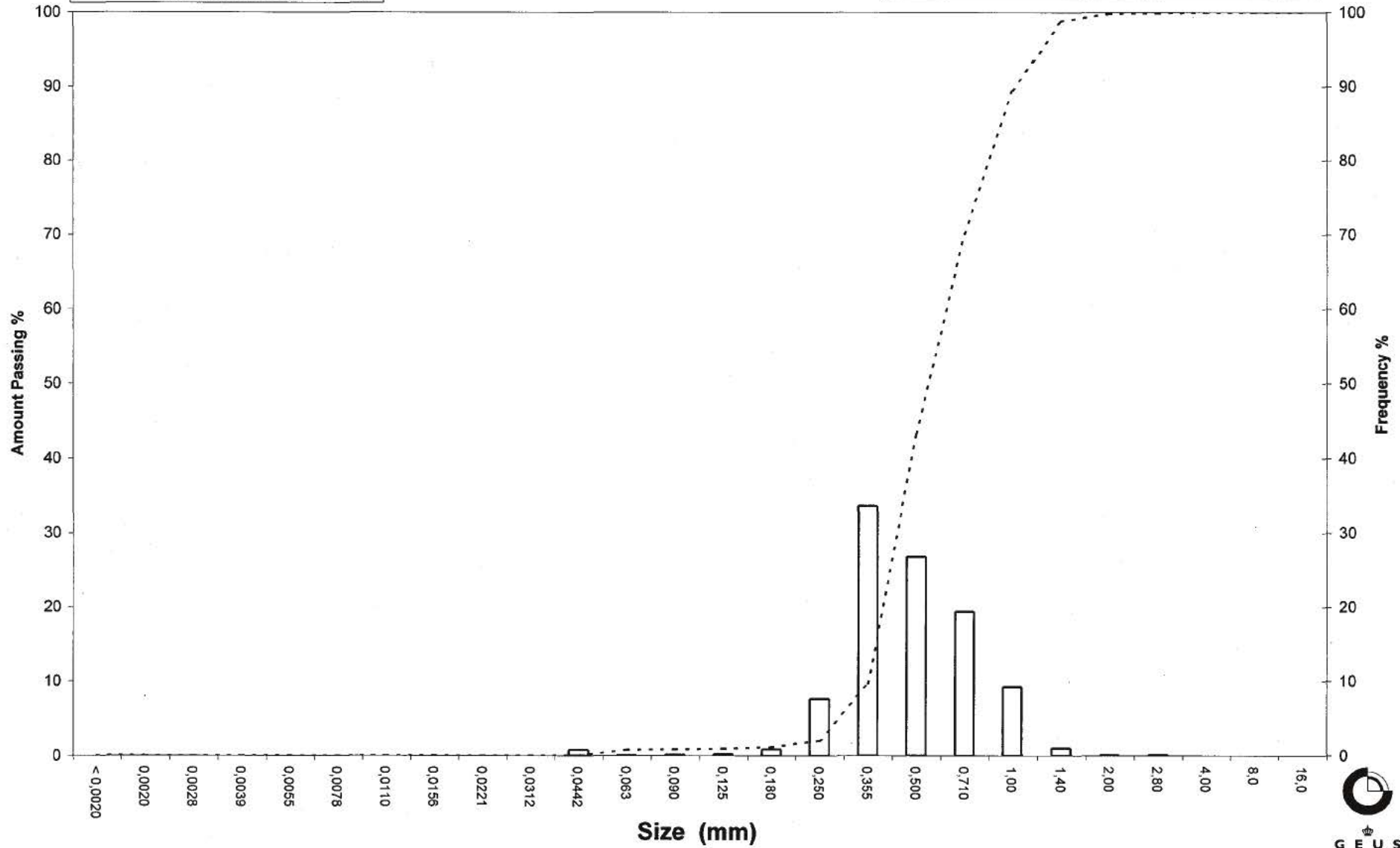
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 1

Frequency Percent  
Cumulated Amount Passing



# Grain Size Distribution

Geotechnical

**Sample Id:** 3  
**Lab. Id:** 060364  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**Total Weight** 135,41 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,54	0,40	99,60
1,40	-0,49	5,56	4,11	95,50
1,00	0,00	21,65	15,99	79,51
0,710	0,49	26,66	19,69	59,82
0,500	1,00	39,82	29,41	30,41
0,355	1,49	33,51	24,75	5,66
0,250	2,00	5,53	4,08	1,58
0,180	2,47	0,95	0,70	0,88
0,125	3,00	0,18	0,13	0,75
0,090	3,47	0,06	0,04	0,70
0,063	3,99	0,08	0,06	0,64
0,0442	4,50	0,87	0,64	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

**Sieve Analysis**  
 Gravel  
 Sand  
 Silt  
 Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,64
Sand, fine (0,063 mm - 0,200 mm):	0,44
Sand, medium (0,2 mm - 0,6 mm):	43,34
Sand, coarse (0,6 mm - 2 mm):	55,19
Gravel (> 2 mm):	0,40
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	1,39	-0,47
16%	84%	1,11	-0,15
25%	75%	0,93	0,10
40%	60%	0,71	0,49
50%	50%	0,64	0,64
75%	25%	0,47	1,09
84%	16%	0,42	1,27
90%	10%	0,38	1,39
95%	5%	0,34	1,57

## Moments Statistics

Mean	0,59
Sorting	0,66
Skewness	-0,11
Kurtosis	0,84
Uniformity Coefficient	1,87

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

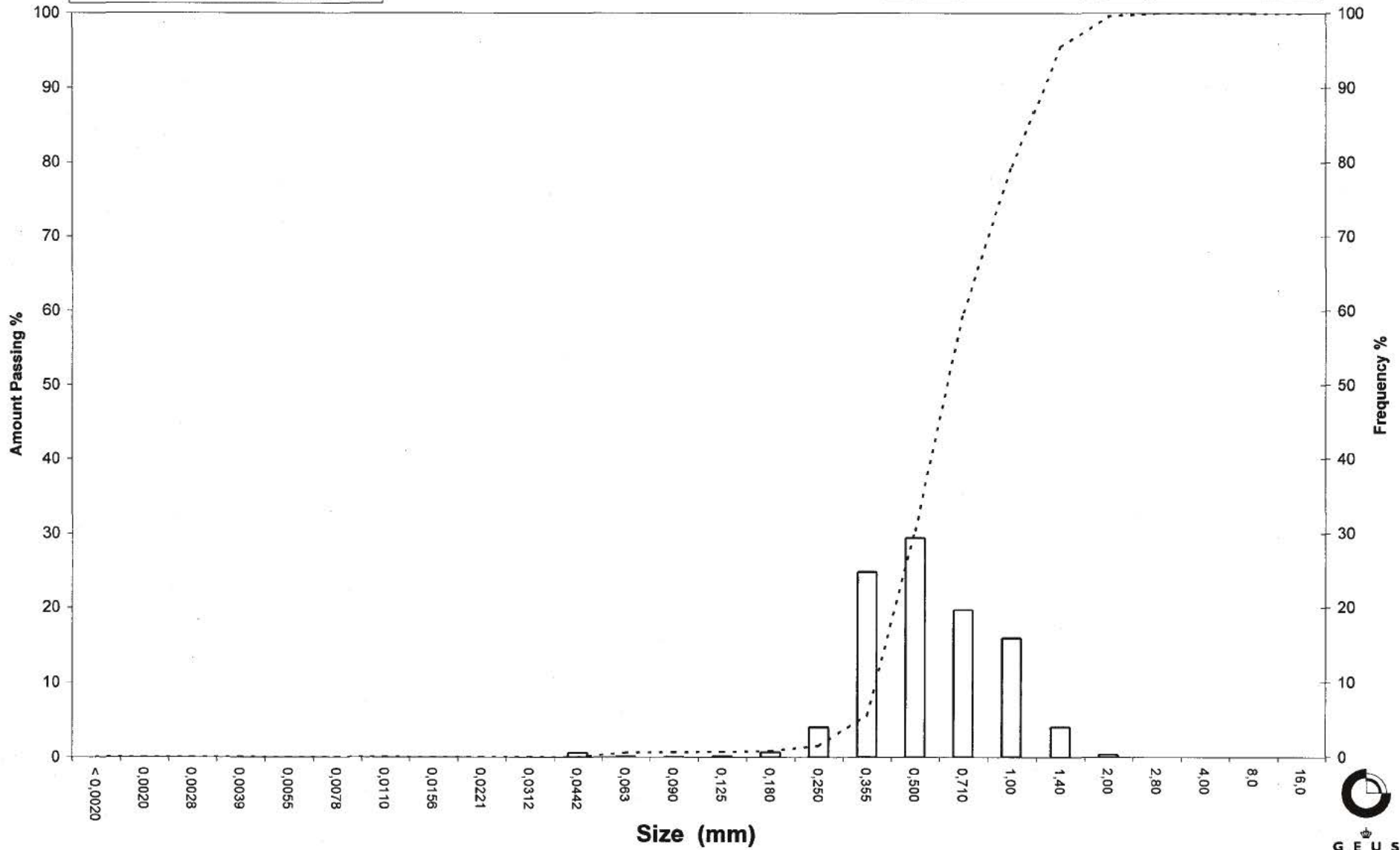
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 3



# Grain Size Distribution

Geotechnical

**Sample Id:** 5  
**Lab. Id:** 060365  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 125,96 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,12	0,10	99,90
2,00	-1,00	0,32	0,25	99,65
1,40	-0,49	2,04	1,62	98,03
1,00	0,00	8,18	6,49	91,54
0,710	0,49	18,38	14,59	76,95
0,500	1,00	39,92	31,69	45,25
0,355	1,49	47,80	37,95	7,30
0,250	2,00	6,91	5,49	1,82
0,180	2,47	1,05	0,83	0,98
0,125	3,00	0,26	0,21	0,78
0,090	3,47	0,09	0,07	0,71
0,063	3,99	0,08	0,06	0,64
0,0442	4,50	0,81	0,64	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,64
Sand, fine (0,063 mm - 0,200 mm):	0,58
Sand, medium (0,2 mm - 0,6 mm):	59,12
Sand, coarse (0,6 mm - 2 mm):	39,31
Gravel (> 2 mm):	0,35
Sum:	100,00

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	1,21	-0,28
16%	84%	0,85	0,23
25%	75%	0,70	0,52
40%	60%	0,60	0,74
50%	50%	0,53	0,91
75%	25%	0,42	1,24
84%	16%	0,39	1,37
90%	10%	0,37	1,45
95%	5%	0,31	1,69

## Moments Statistics

Mean	0,84
Sorting	0,58
Skewness	-0,21
Kurtosis	1,12
Uniformity Coefficient	1,64

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

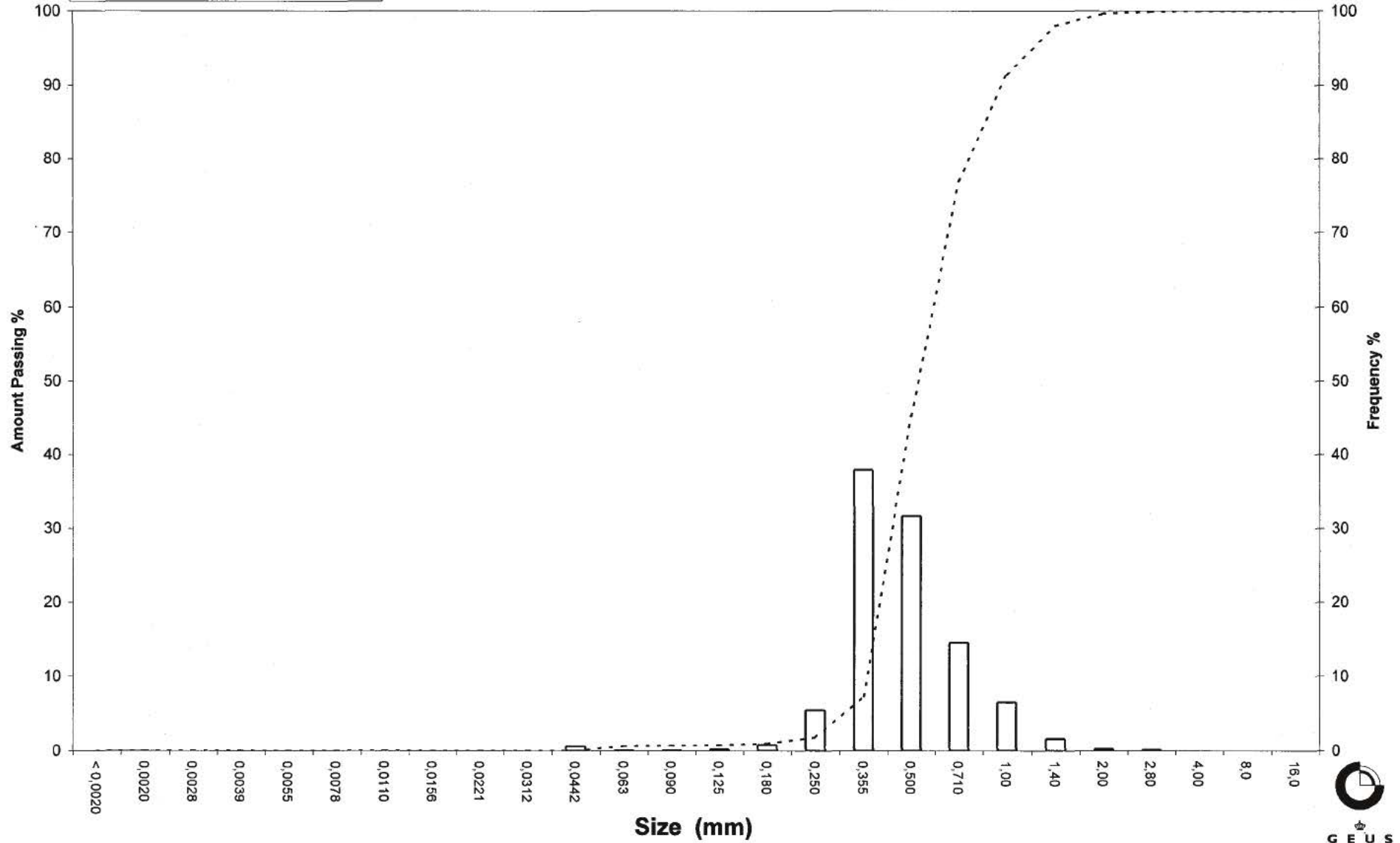
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 5

Frequency Percent  
Cumulated Amount Passing





# Grain Size Distribution

Geotechnical

**Sample Id:** 9  
**Lab. Id:** 060366  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 212,75 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,18	0,08	99,92
2,80	-1,49	0,59	0,28	99,64
2,00	-1,00	2,48	1,17	98,47
1,40	-0,49	10,11	4,75	93,72
1,00	0,00	34,58	16,25	77,47
0,710	0,49	54,27	25,51	51,96
0,500	1,00	57,12	26,85	25,11
0,355	1,49	37,58	17,66	7,45
0,250	2,00	10,75	5,05	2,39
0,180	2,47	2,91	1,37	1,02
0,125	3,00	0,54	0,25	0,77
0,090	3,47	0,32	0,15	0,62
0,063	3,99	0,26	0,12	0,50
0,0442	4,50	1,06	0,50	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,50
Sand, fine (0,063 mm - 0,200 mm):	0,92
Sand, medium (0,2 mm - 0,6 mm):	36,48
Sand, coarse (0,6 mm - 2 mm):	60,58
Gravel (> 2 mm):	1,53
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	1,56	-0,64
16%	84%	1,16	-0,22
25%	75%	0,97	0,04
40%	60%	0,80	0,32
50%	50%	0,69	0,53
75%	25%	0,50	1,00
84%	16%	0,43	1,23
90%	10%	0,38	1,41
95%	5%	0,30	1,72

## Moments Statistics

Mean	0,51
Sorting	0,72
Skewness	-0,01
Kurtosis	1,01
Uniformity Coefficient	2,13

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

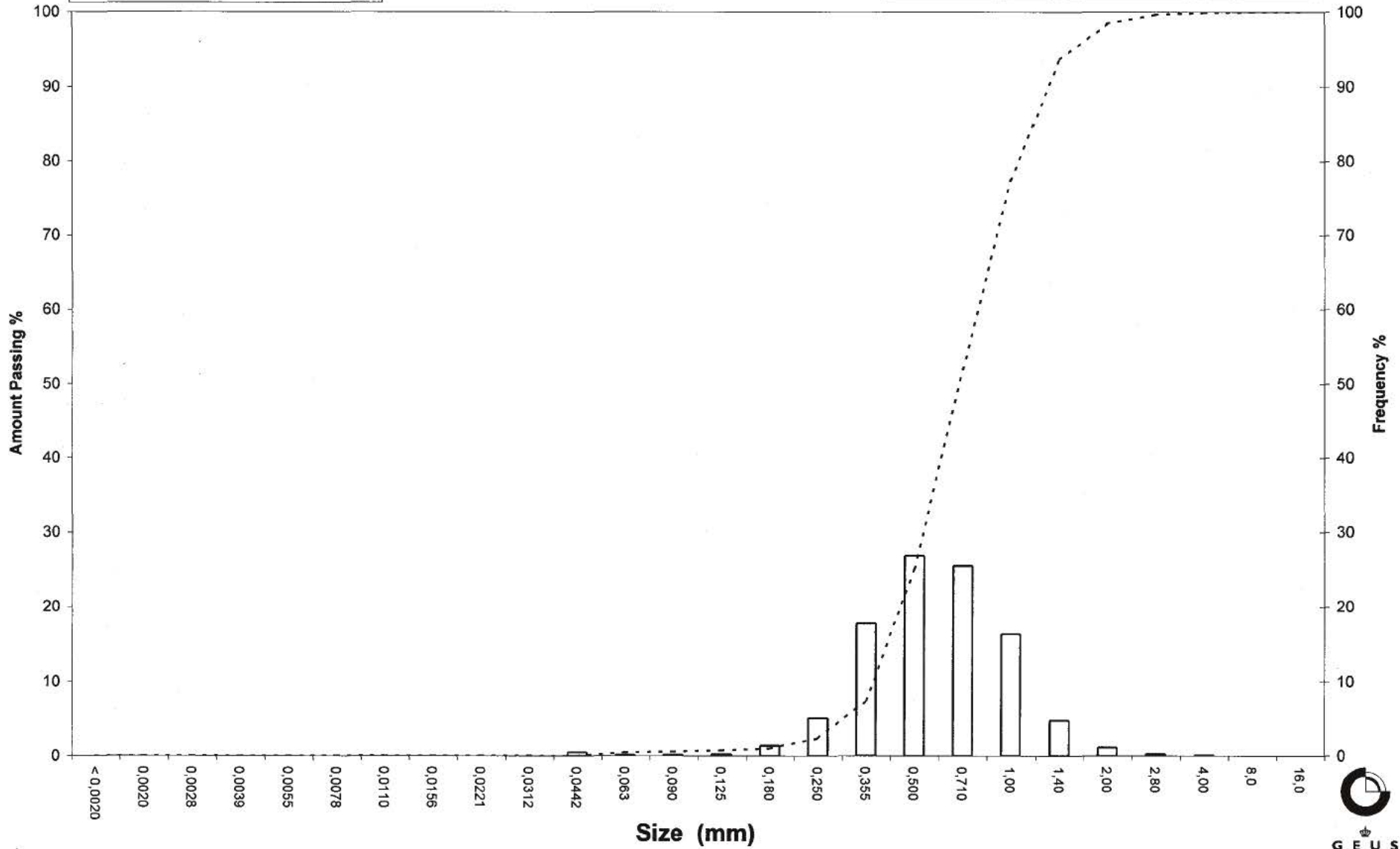
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 9

Frequency Percent  
Cumulated Amount Passing



# Grain Size Distribution

Geotechnical

**Sample Id:** 10  
**Lab. Id:** 060367  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 108,27 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,02	0,02	99,98
2,00	-1,00	0,02	0,02	99,96
1,40	-0,49	0,09	0,08	99,88
1,00	0,00	0,28	0,26	99,62
0,710	0,49	2,27	2,10	97,52
0,500	1,00	18,35	16,95	80,58
0,355	1,49	81,94	75,68	4,90
0,250	2,00	3,85	3,56	1,34
0,180	2,47	0,39	0,36	0,98
0,125	3,00	0,06	0,06	0,92
0,090	3,47	0,04	0,04	0,89
0,063	3,99	0,03	0,03	0,86
0,0442	4,50	0,93	0,86	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,86
Sand, fine (0,063 mm - 0,200 mm):	0,22
Sand, medium (0,2 mm - 0,6 mm):	87,57
Sand, coarse (0,6 mm - 2 mm):	11,32
Gravel (> 2 mm):	0,04
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,68	0,56
16%	84%	0,54	0,88
25%	75%	0,49	1,03
40%	60%	0,46	1,12
50%	50%	0,44	1,18
75%	25%	0,39	1,35
84%	16%	0,38	1,41
90%	10%	0,36	1,45
95%	5%	0,36	1,49

## Moments Statistics

Mean	1,16
Sorting	0,27
Skewness	-0,23
Kurtosis	1,22
Uniformity Coefficient	1,26

Size Classes and Percentiles are found by linear interpolation

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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Sieve Analysis

Sedigraph Analysis

Gravel

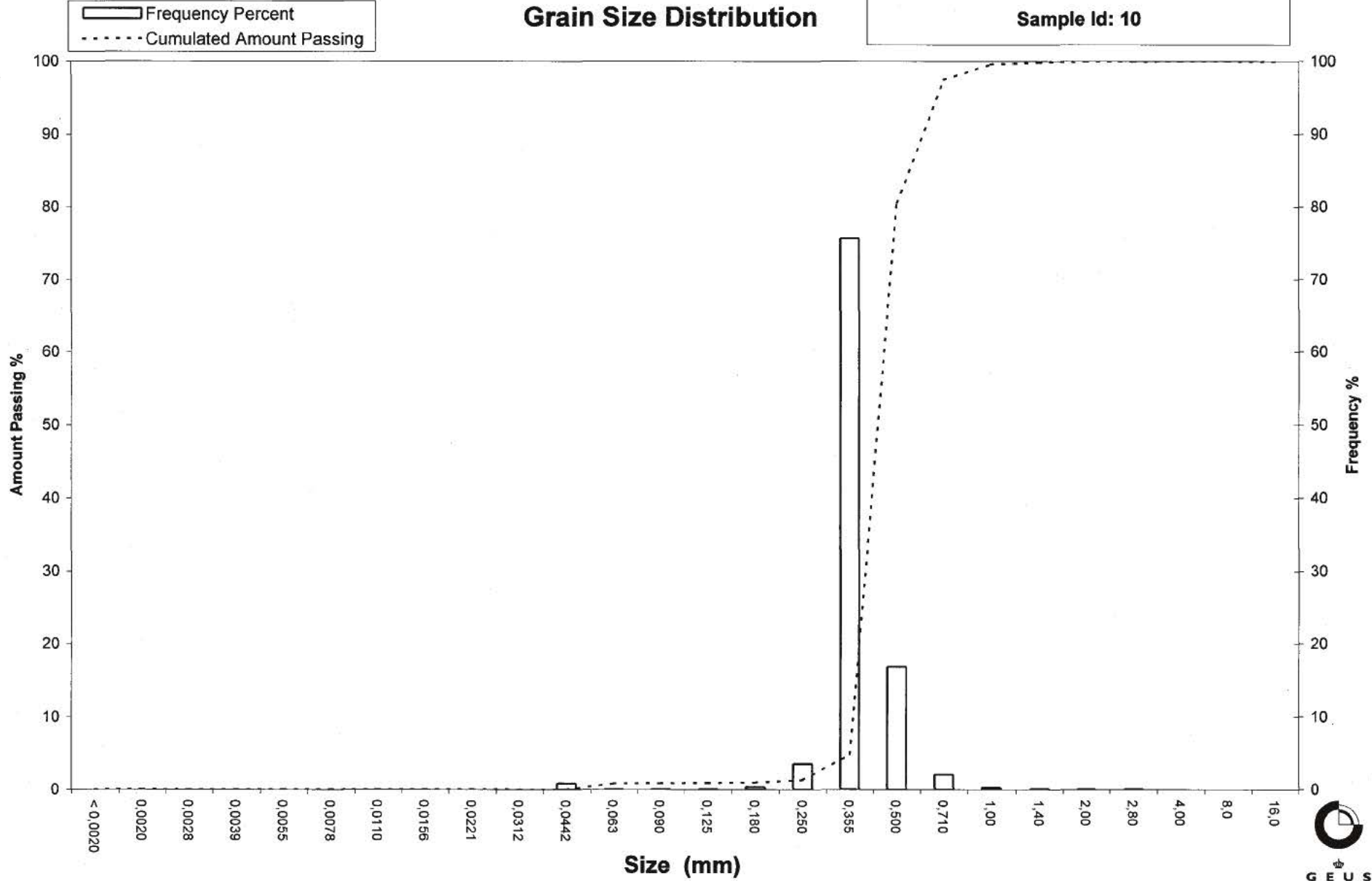
Sand

Silt

Clay

# Grain Size Distribution

Sample Id: 10



# Grain Size Distribution

Geotechnical

**Sample Id:** 11  
**Lab. Id:** 060368  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 200,93 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	4,70	2,34	97,66
4,00	-2,00	4,29	2,14	95,53
2,80	-1,49	4,91	2,44	93,08
2,00	-1,00	6,98	3,47	89,61
1,40	-0,49	18,10	9,01	80,60
1,00	0,00	34,51	17,18	63,43
0,710	0,49	37,37	18,60	44,83
0,500	1,00	35,83	17,83	26,99
0,355	1,49	30,14	15,00	11,99
0,250	2,00	16,28	8,10	3,89
0,180	2,47	4,85	2,41	1,48
0,125	3,00	0,96	0,48	1,00
0,090	3,47	0,43	0,21	0,79
0,063	3,99	0,37	0,18	0,60
0,0442	4,50	1,21	0,60	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel  
Sand

Sedigraph Analysis

Silt  
Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,60
Sand, fine (0,063 mm - 0,200 mm):	1,57
Sand, medium (0,2 mm - 0,6 mm):	33,32
Sand, coarse (0,6 mm - 2 mm):	54,12
Gravel (> 2 mm):	10,39
Sum:	100,00

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	3,74	-1,90
16%	84%	1,63	-0,70
25%	75%	1,27	-0,34
40%	60%	0,95	0,08
50%	50%	0,79	0,34
75%	25%	0,48	1,06
84%	16%	0,39	1,34
90%	10%	0,33	1,60
95%	5%	0,26	1,92

## Moments Statistics

Mean	0,33
Sorting	1,09
Skewness	-0,10
Kurtosis	1,12
Uniformity Coefficient	2,88

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

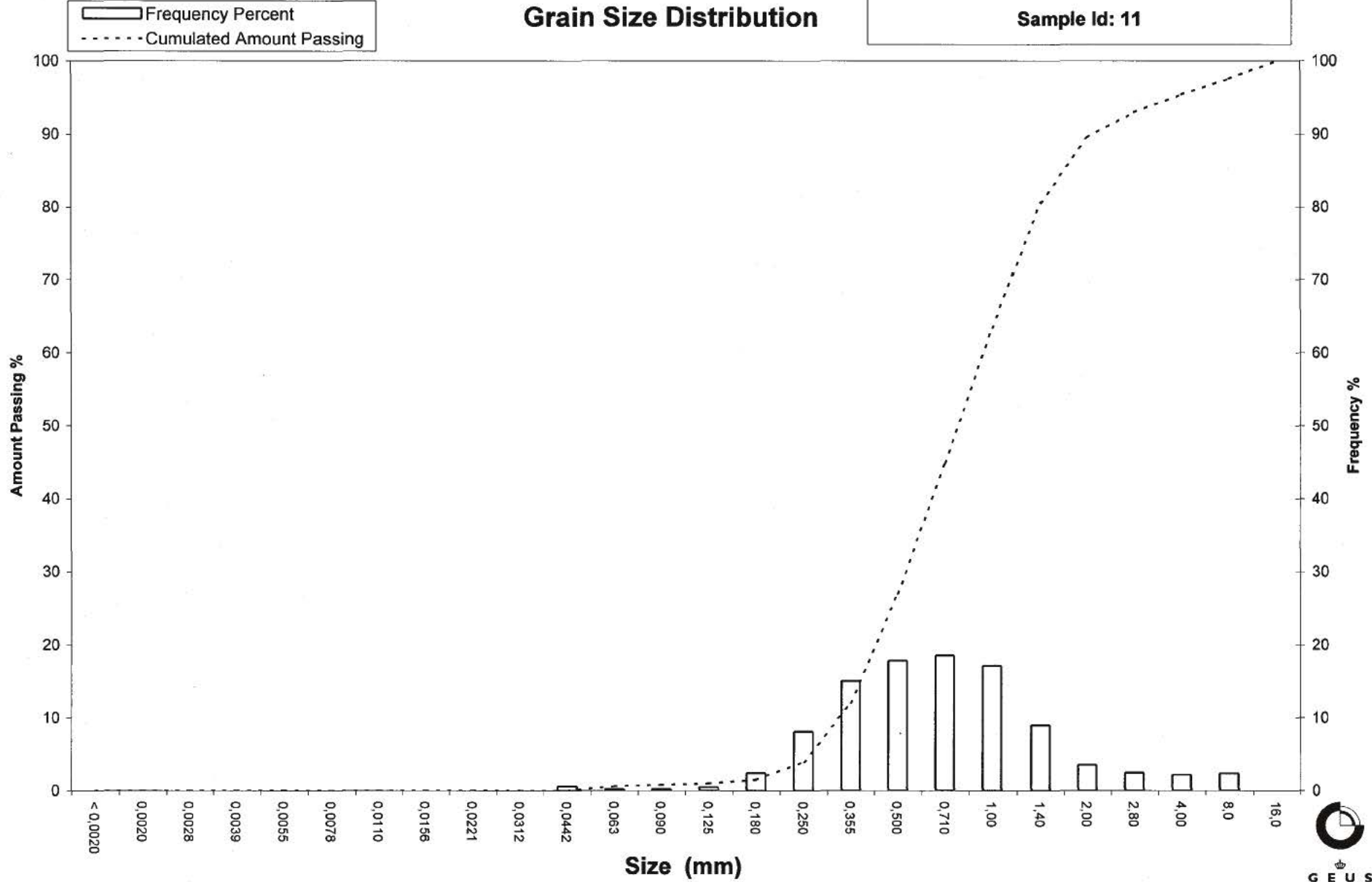
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 11



# Grain Size Distribution

Geotechnical

**Sample Id:** 12  
**Lab. Id:** 060369  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 116,7 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,03	0,03	99,97
2,80	-1,49	0,06	0,05	99,92
2,00	-1,00	0,22	0,19	99,73
1,40	-0,49	1,25	1,07	98,66
1,00	0,00	4,65	3,98	94,68
0,710	0,49	19,30	16,54	78,14
0,500	1,00	62,77	53,79	24,35
0,355	1,49	25,05	21,47	2,89
0,250	2,00	2,31	1,98	0,91
0,180	2,47	0,40	0,34	0,57
0,125	3,00	0,09	0,08	0,49
0,090	3,47	0,04	0,03	0,45
0,063	3,99	0,03	0,03	0,43
0,0442	4,50	0,50	0,43	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,43
Sand, fine (0,063 mm - 0,200 mm):	0,24
Sand, medium (0,2 mm - 0,6 mm):	49,30
Sand, coarse (0,6 mm - 2 mm):	49,77
Gravel (> 2 mm):	0,27
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	1,03	-0,05
16%	84%	0,81	0,30
25%	75%	0,70	0,52
40%	60%	0,64	0,65
50%	50%	0,60	0,74
75%	25%	0,50	0,99
84%	16%	0,44	1,17
90%	10%	0,40	1,31
95%	5%	0,37	1,44

## Moments Statistics

Mean	0,74
Sorting	0,44
Skewness	-0,03
Kurtosis	1,28
Uniformity Coefficient	1,59

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

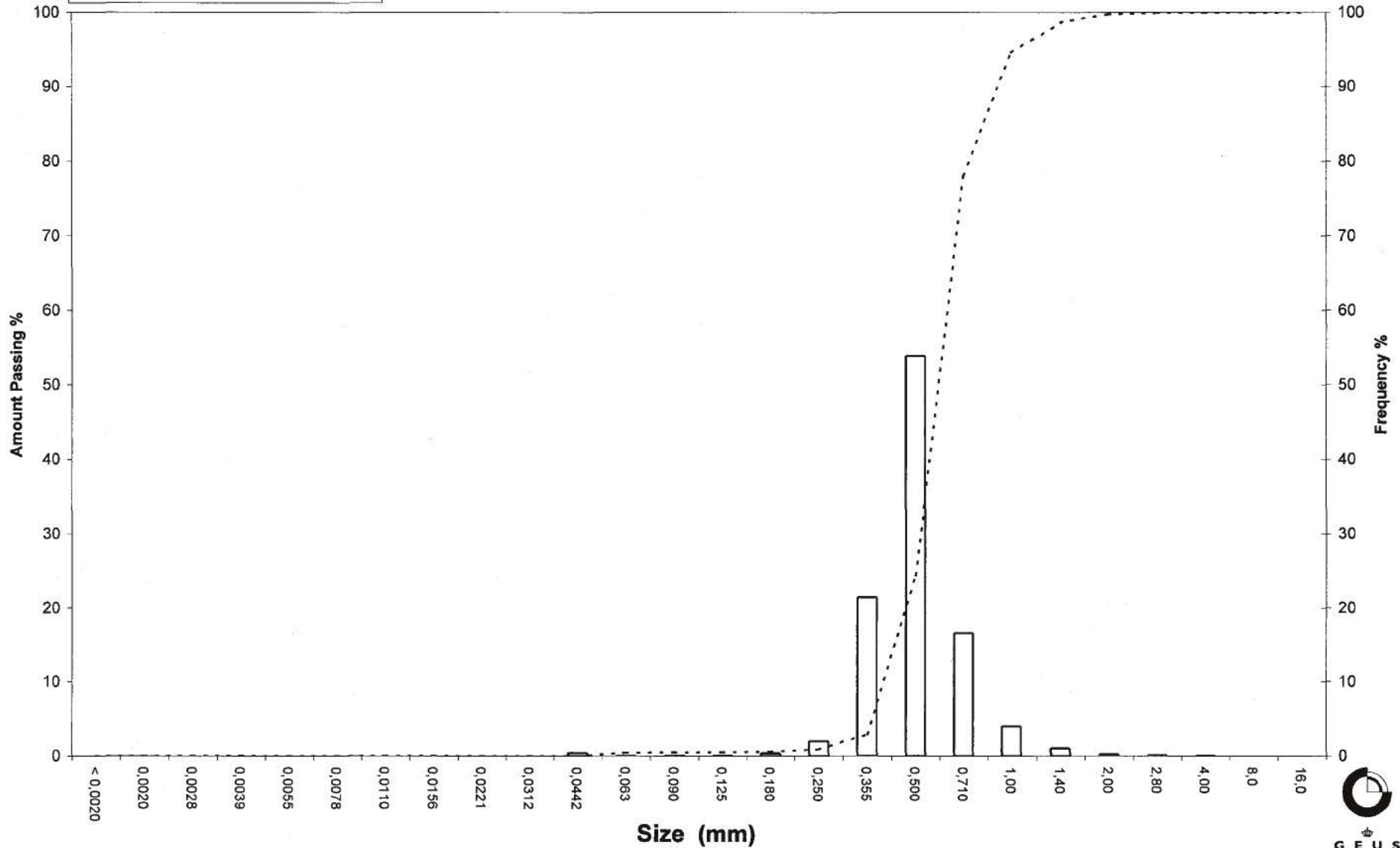
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 12

Frequency Percent  
Cumulated Amount Passing





# Grain Size Distribution

Geotechnical

**Sample Id:** 14  
**Lab. Id:** 060370  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 110,62 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,01	0,01	99,99
2,00	-1,00	0,05	0,05	99,95
1,40	-0,49	0,33	0,30	99,65
1,00	0,00	2,62	2,37	97,28
0,710	0,49	20,44	18,48	78,80
0,500	1,00	68,82	62,21	16,59
0,355	1,49	16,08	14,54	2,05
0,250	2,00	1,18	1,07	0,99
0,180	2,47	0,22	0,20	0,79
0,125	3,00	0,06	0,05	0,73
0,090	3,47	0,04	0,04	0,70
0,063	3,99	0,03	0,03	0,67
0,0442	4,50	0,74	0,67	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,67
Sand, fine (0,063 mm - 0,200 mm):	0,17
Sand, medium (0,2 mm - 0,6 mm):	45,37
Sand, coarse (0,6 mm - 2 mm):	53,73
Gravel (> 2 mm):	0,05
Sum:	100,00

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	0,96	0,05
16%	84%	0,79	0,34
25%	75%	0,70	0,52
40%	60%	0,65	0,63
50%	50%	0,61	0,71
75%	25%	0,53	0,92
84%	16%	0,49	1,02
90%	10%	0,43	1,20
95%	5%	0,38	1,38

## Moments Statistics

Mean	0,69
Sorting	0,37
Skewness	-0,04
Kurtosis	1,36
Uniformity Coefficient	1,49

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

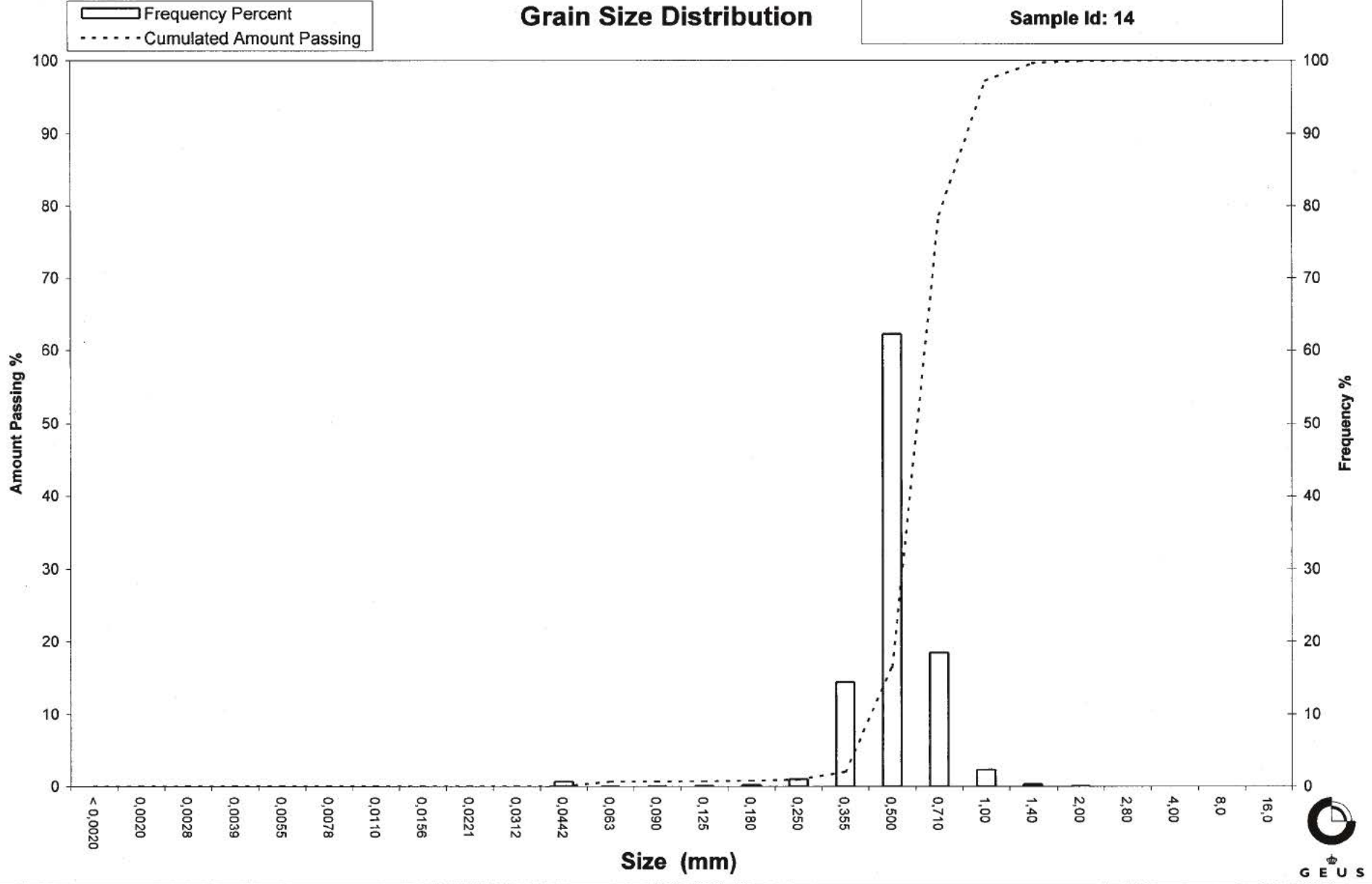
Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 14



# Grain Size Distribution

Geotechnical

**Sample Id:** 15  
**Lab. Id:** 060371  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 112,7 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,21	0,19	99,81
1,40	-0,49	1,09	0,97	98,85
1,00	0,00	7,13	6,33	92,52
0,710	0,49	37,06	32,88	59,64
0,500	1,00	43,05	38,20	21,44
0,355	1,49	18,54	16,45	4,99
0,250	2,00	4,37	3,88	1,11
0,180	2,47	0,38	0,34	0,77
0,125	3,00	0,14	0,12	0,65
0,090	3,47	0,07	0,06	0,59
0,063	3,99	0,03	0,03	0,56
0,0442	4,50	0,63	0,56	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,56
Sand, fine (0,063 mm - 0,200 mm):	0,31
Sand, medium (0,2 mm - 0,6 mm):	38,76
Sand, coarse (0,6 mm - 2 mm):	60,19
Gravel (> 2 mm):	0,19
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	1,16	-0,21
16%	84%	0,92	0,11
25%	75%	0,85	0,24
40%	60%	0,71	0,49
50%	50%	0,66	0,61
75%	25%	0,52	0,94
84%	16%	0,45	1,15
90%	10%	0,40	1,32
95%	5%	0,36	1,49

## Moments Statistics

Mean	0,62
Sorting	0,52
Skewness	0,04
Kurtosis	0,99
Uniformity Coefficient	1,79

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

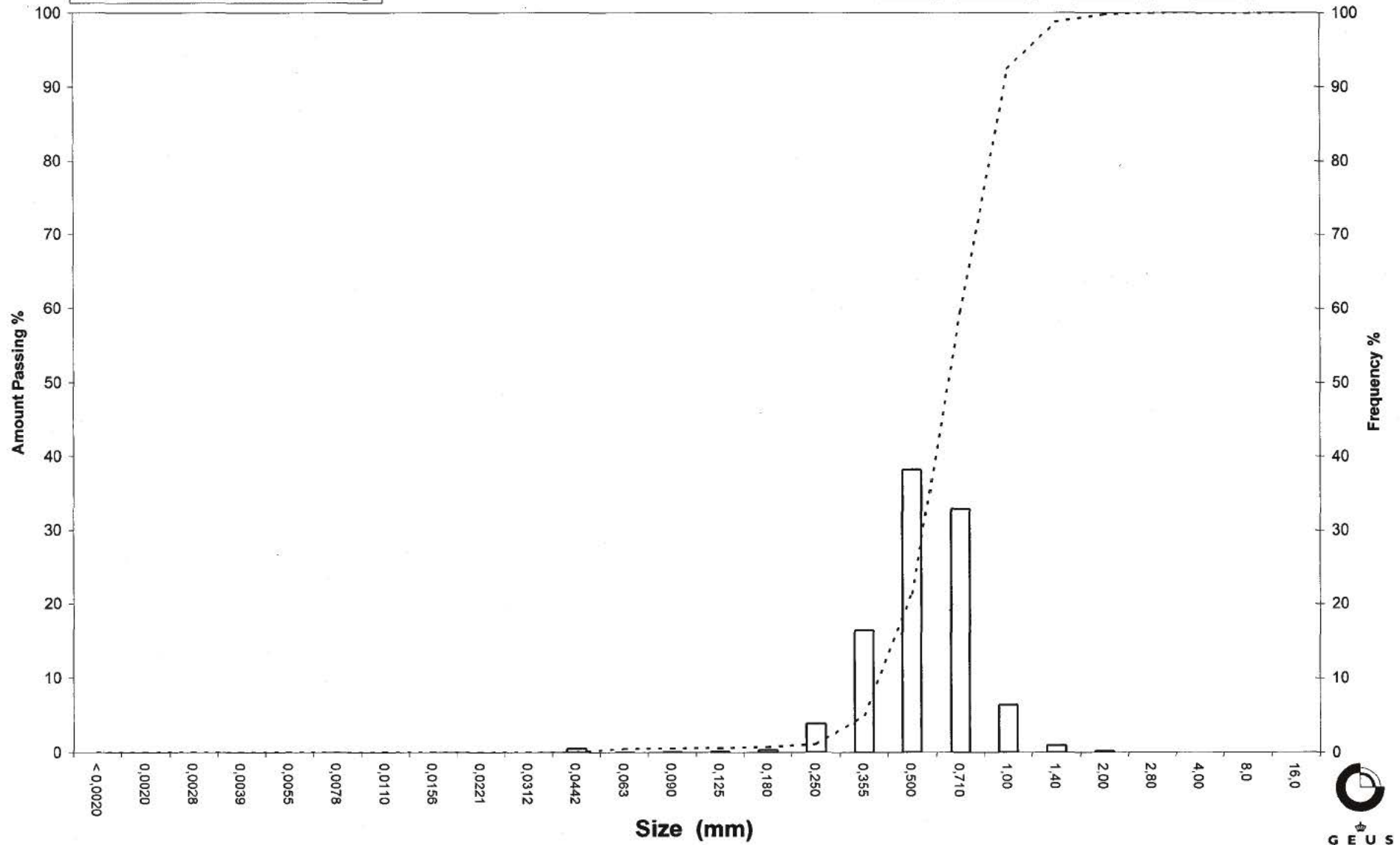
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 15



# Grain Size Distribution

## Geotechnical

**Sample Id:** 16  
**Lab. Id:** 060372  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**Total Weight** 106,91 g

### Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,00	0,00	100,00
1,40	-0,49	0,00	0,00	100,00
1,00	0,00	0,10	0,10	99,90
0,710	0,49	0,61	0,57	99,34
0,500	1,00	2,36	2,21	97,13
0,355	1,49	17,44	16,31	80,82
0,250	2,00	69,43	64,94	15,88
0,180	2,47	13,36	12,50	3,38
0,125	3,00	2,17	2,03	1,35
0,090	3,47	0,48	0,45	0,90
0,063	3,99	0,29	0,27	0,63
0,0442	4,50	0,67	0,63	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

### Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,63
Sand, fine (0,063 mm - 0,200 mm):	6,33
Sand, medium (0,2 mm - 0,6 mm):	91,22
Sand, coarse (0,6 mm - 2 mm):	1,82
Gravel (> 2 mm):	0,00
<b>Sum:</b>	<b>100,00</b>

### Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	0,48	1,06
16%	84%	0,38	1,38
25%	75%	0,35	1,53
40%	60%	0,32	1,64
50%	50%	0,31	1,71
75%	25%	0,26	1,92
84%	16%	0,25	2,00
90%	10%	0,22	2,20
95%	5%	0,19	2,40

### Moments Statistics

Mean	1,70
Sorting	0,36
Skewness	-0,02
Kurtosis	1,44
Uniformity Coefficient	1,48

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

### Formulas

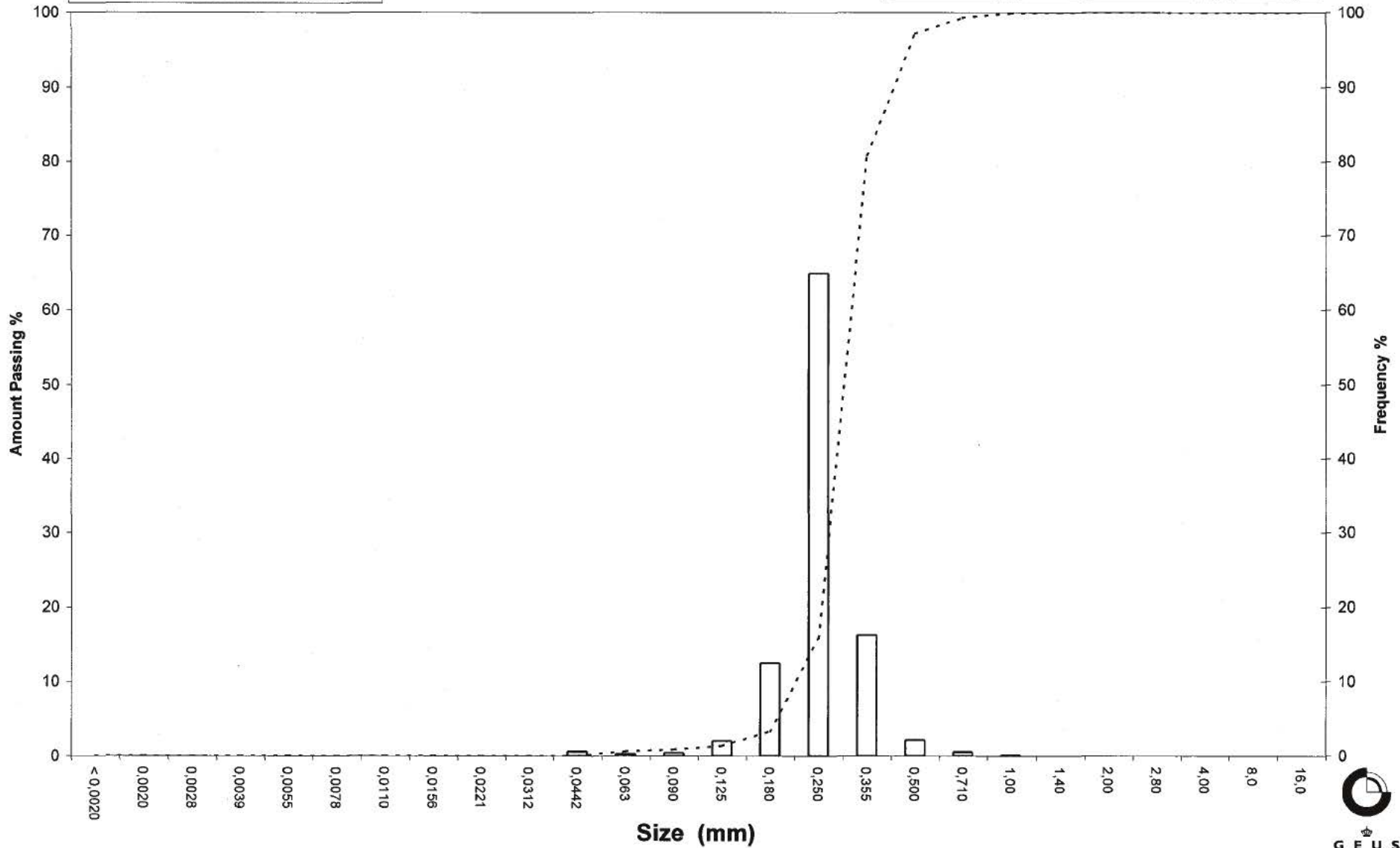
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 16



# Grain Size Distribution

Geotechnical

**Sample Id:** 17  
**Lab. Id:** 060373  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 106,76 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,02	0,02	99,98
1,40	-0,49	0,11	0,10	99,88
1,00	0,00	0,12	0,11	99,77
0,710	0,49	0,18	0,17	99,60
0,500	1,00	2,58	2,42	97,18
0,355	1,49	44,71	41,88	55,30
0,250	2,00	52,52	49,19	6,11
0,180	2,47	4,63	4,34	1,77
0,125	3,00	0,61	0,57	1,20
0,090	3,47	0,24	0,22	0,97
0,063	3,99	0,22	0,21	0,77
0,0442	4,50	0,82	0,77	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,77
Sand, fine (0,063 mm - 0,200 mm):	2,24
Sand, medium (0,2 mm - 0,6 mm):	95,32
Sand, coarse (0,6 mm - 2 mm):	1,65
Gravel (> 2 mm):	0,02
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	0,49	1,02
16%	84%	0,45	1,14
25%	75%	0,42	1,24
40%	60%	0,37	1,43
50%	50%	0,34	1,54
75%	25%	0,29	1,78
84%	16%	0,27	1,88
90%	10%	0,26	1,95
95%	5%	0,23	2,11

## Moments Statistics

Mean	1,52
Sorting	0,35
Skewness	-0,02
Kurtosis	0,82
Uniformity Coefficient	1,44

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

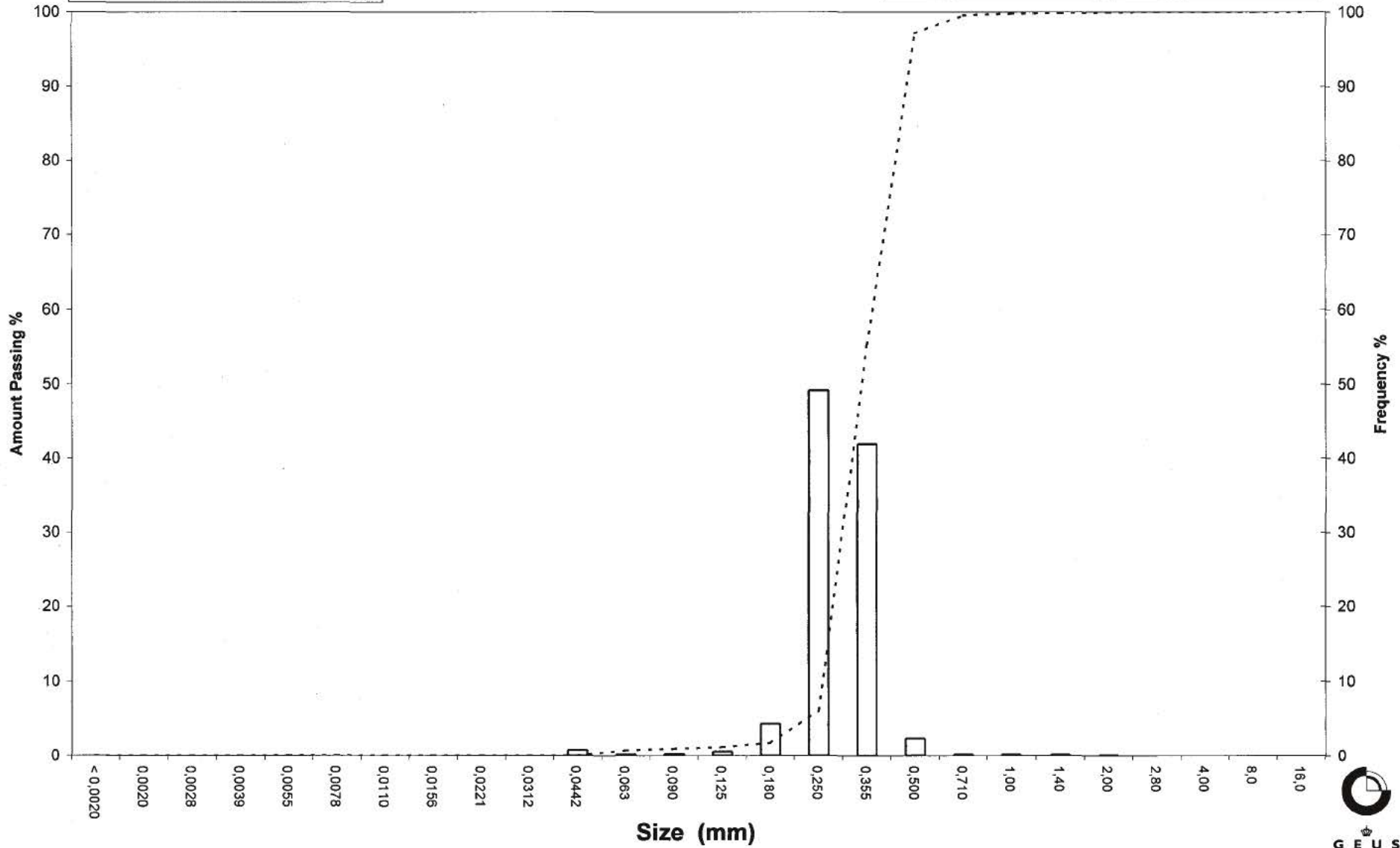
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 17

Frequency Percent  
Cumulated Amount Passing





# Grain Size Distribution

Geotechnical

**Sample Id:** 18  
**Lab. Id:** 060374  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 112,3 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,08	0,07	99,93
1,40	-0,49	0,14	0,13	99,80
1,00	0,00	0,29	0,26	99,54
0,710	0,49	1,23	1,10	98,44
0,500	1,00	15,31	13,63	84,81
0,355	1,49	75,42	67,16	17,65
0,250	2,00	15,43	13,74	3,90
0,180	2,47	2,24	2,00	1,91
0,125	3,00	0,62	0,55	1,36
0,090	3,47	0,41	0,37	0,99
0,063	3,99	0,16	0,15	0,84
0,0442	4,50	0,95	0,84	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,84
Sand, fine (0,063 mm - 0,200 mm):	1,63
Sand, medium (0,2 mm - 0,6 mm):	88,82
Sand, coarse (0,6 mm - 2 mm):	8,63
Gravel (> 2 mm):	0,07
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,66	0,61
16%	84%	0,50	1,01
25%	75%	0,48	1,06
40%	60%	0,45	1,16
50%	50%	0,42	1,23
75%	25%	0,37	1,43
84%	16%	0,34	1,55
90%	10%	0,30	1,75
95%	5%	0,26	1,95

## Moments Statistics

Mean	1,26
Sorting	0,34
Skewness	0,11
Kurtosis	1,50
Uniformity Coefficient	1,51

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

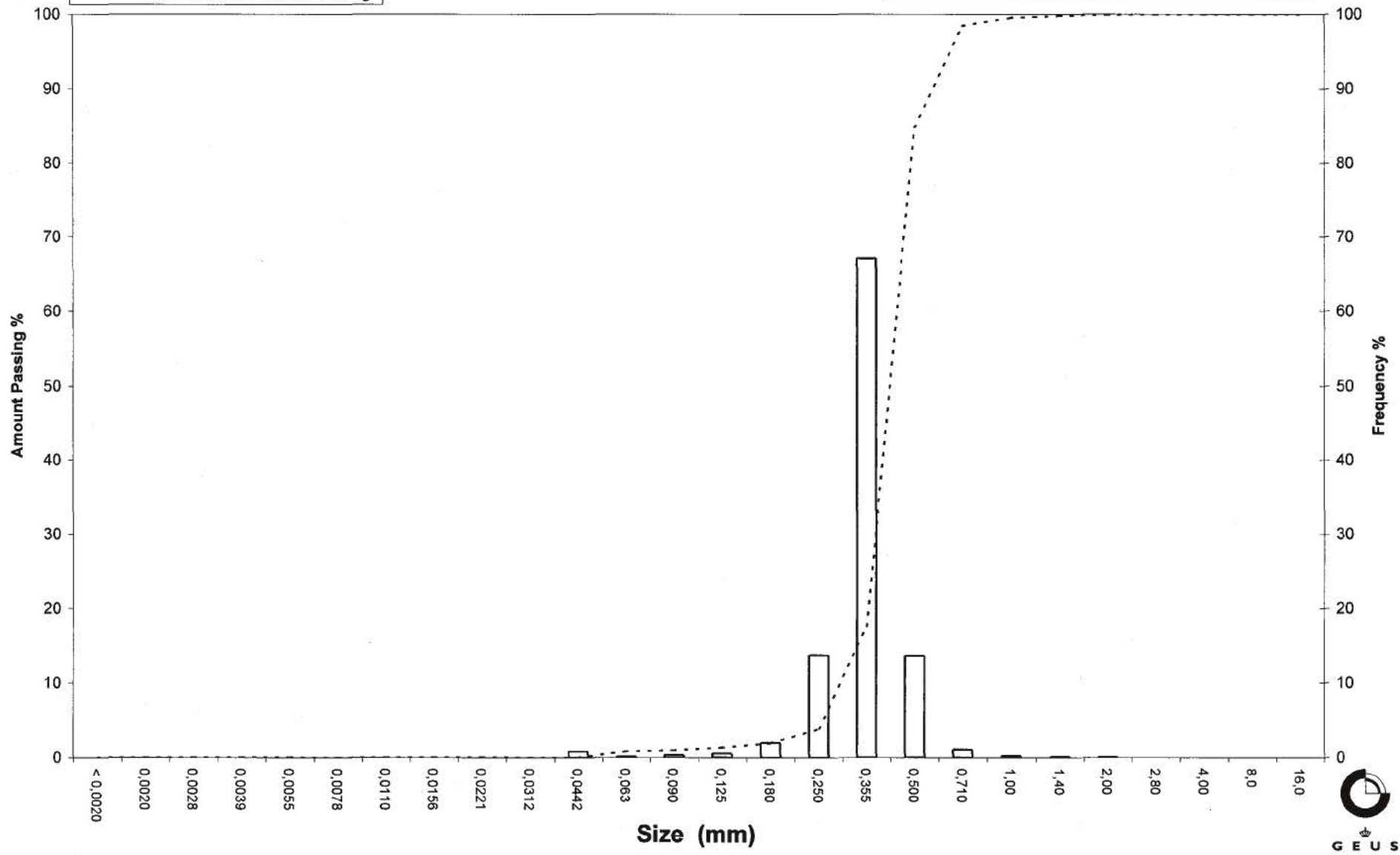
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 18

Frequency Percent  
Cumulated Amount Passing



# Grain Size Distribution

Geotechnical

**Sample Id:** 19  
**Lab. Id:** 060375  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 112,44 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,04	0,04	99,96
1,40	-0,49	0,13	0,12	99,85
1,00	0,00	0,41	0,36	99,48
0,710	0,49	6,85	6,09	93,39
0,500	1,00	19,22	17,09	76,30
0,355	1,49	27,09	24,09	52,21
0,250	2,00	37,27	33,15	19,06
0,180	2,47	18,42	16,38	2,68
0,125	3,00	1,61	1,43	1,25
0,090	3,47	0,33	0,29	0,95
0,063	3,99	0,22	0,20	0,76
0,0442	4,50	0,85	0,76	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,76
Sand, fine (0,063 mm - 0,200 mm):	6,60
Sand, medium (0,2 mm - 0,6 mm):	77,08
Sand, coarse (0,6 mm - 2 mm):	15,53
Gravel (> 2 mm):	0,04
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	0,79	0,35
16%	84%	0,59	0,75
25%	75%	0,49	1,02
40%	60%	0,40	1,32
50%	50%	0,35	1,52
75%	25%	0,27	1,90
84%	16%	0,24	2,08
90%	10%	0,21	2,24
95%	5%	0,19	2,40

## Moments Statistics

Mean	1,45
Sorting	0,64
Skewness	-0,16
Kurtosis	0,96
Uniformity Coefficient	1,90

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

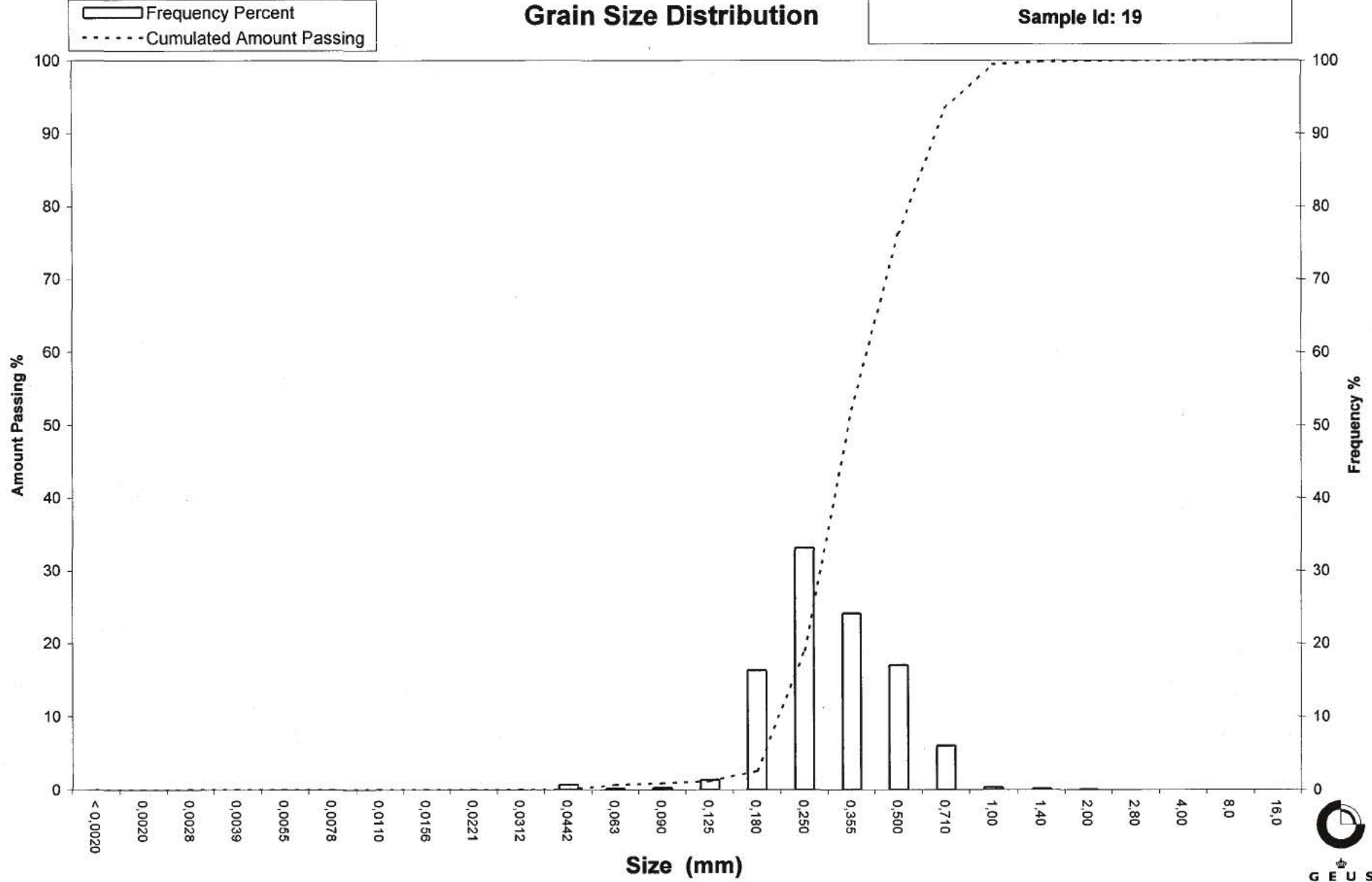
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 19



# Grain Size Distribution

Geotechnical

**Sample Id:** 20  
**Lab. Id:** 060376  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 110,32 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,12	0,11	99,89
2,00	-1,00	0,10	0,09	99,80
1,40	-0,49	0,56	0,51	99,29
1,00	0,00	2,04	1,85	97,44
0,710	0,49	5,33	4,83	92,61
0,500	1,00	15,46	14,01	78,60
0,355	1,49	53,29	48,30	30,29
0,250	2,00	27,38	24,82	5,47
0,180	2,47	4,10	3,72	1,76
0,125	3,00	0,65	0,59	1,17
0,090	3,47	0,24	0,22	0,95
0,063	3,99	0,11	0,10	0,85
0,0442	4,50	0,94	0,85	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	0,85
Sand, fine (0,063 mm - 0,200 mm)	1,97
Sand, medium (0,2 mm - 0,6 mm)	82,45
Sand, coarse (0,6 mm - 2 mm)	14,53
Gravel (> 2 mm)	0,20
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,85	0,23
16%	84%	0,58	0,78
25%	75%	0,49	1,03
40%	60%	0,44	1,17
50%	50%	0,41	1,27
75%	25%	0,33	1,59
84%	16%	0,29	1,76
90%	10%	0,27	1,89
95%	5%	0,24	2,05

## Moments Statistics

Mean	1,27
Sorting	0,52
Skewness	-0,07
Kurtosis	1,34
Uniformity Coefficient	1,65

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

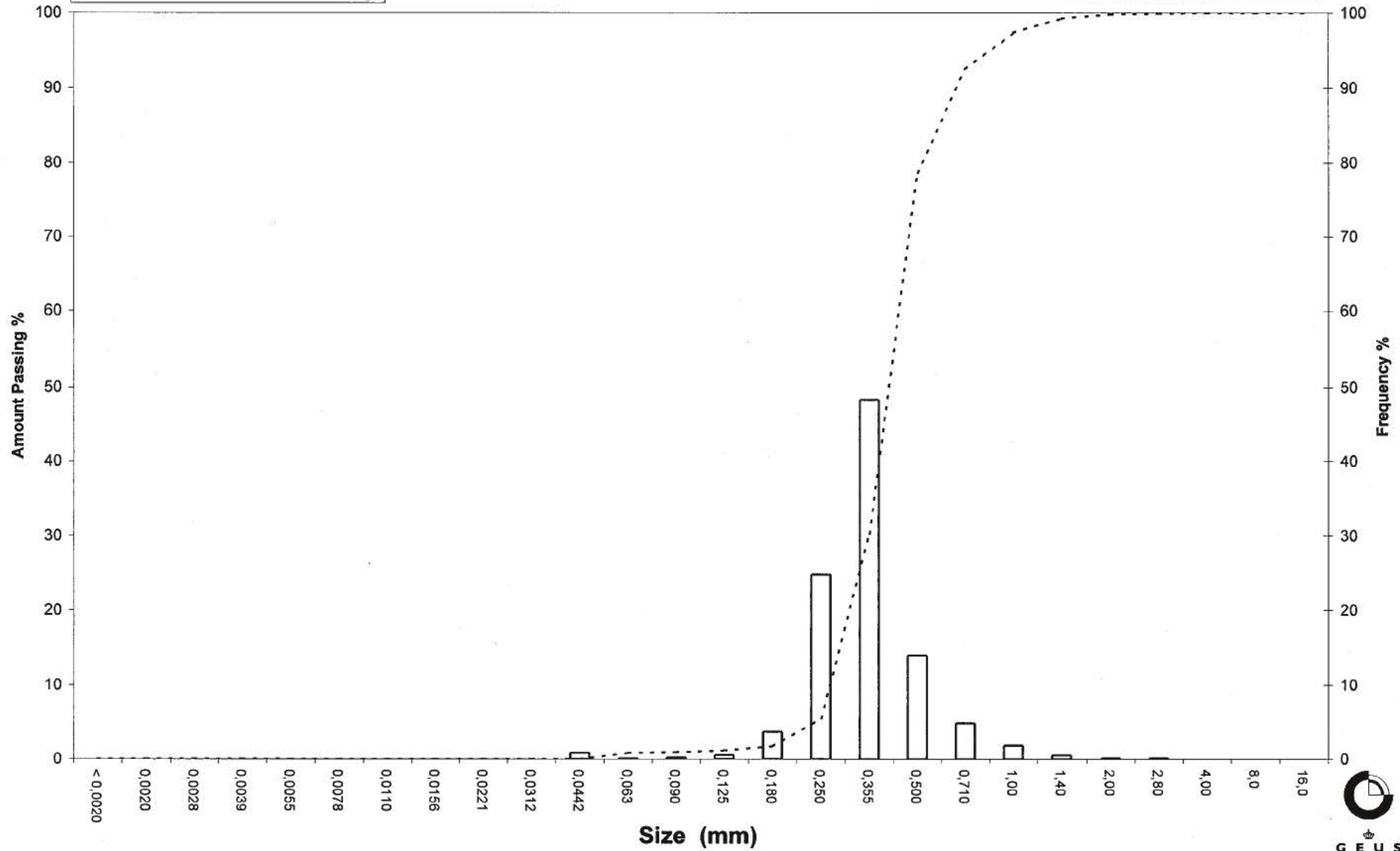
Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 20

Frequency Percent  
Cumulated Amount Passing



# Grain Size Distribution

Geotechnical

**Sample Id:** 21  
**Lab. Id:** 060377  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 202,07 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,65	0,32	99,68
2,80	-1,49	1,26	0,62	99,05
2,00	-1,00	1,71	0,85	98,21
1,40	-0,49	3,25	1,61	96,60
1,00	0,00	11,51	5,70	90,90
0,710	0,49	28,84	14,27	76,63
0,500	1,00	43,09	21,32	55,31
0,355	1,49	45,98	22,75	32,55
0,250	2,00	47,03	23,27	9,28
0,180	2,47	15,45	7,65	1,63
0,125	3,00	1,33	0,66	0,97
0,090	3,47	0,33	0,16	0,81
0,063	3,99	0,21	0,10	0,71
0,0442	4,50	1,43	0,71	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,71
Sand, fine (0,063 mm - 0,200 mm):	3,11
Sand, medium (0,2 mm - 0,6 mm):	61,64
Sand, coarse (0,6 mm - 2 mm):	32,75
Gravel (> 2 mm):	1,79
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	1,29	-0,36
16%	84%	0,86	0,22
25%	75%	0,69	0,53
40%	60%	0,55	0,87
50%	50%	0,47	1,10
75%	25%	0,32	1,64
84%	16%	0,28	1,83
90%	10%	0,25	1,98
95%	5%	0,21	2,25

## Moments Statistics

Mean	1,05
Sorting	0,80
Skewness	-0,11
Kurtosis	0,96
Uniformity Coefficient	2,16

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

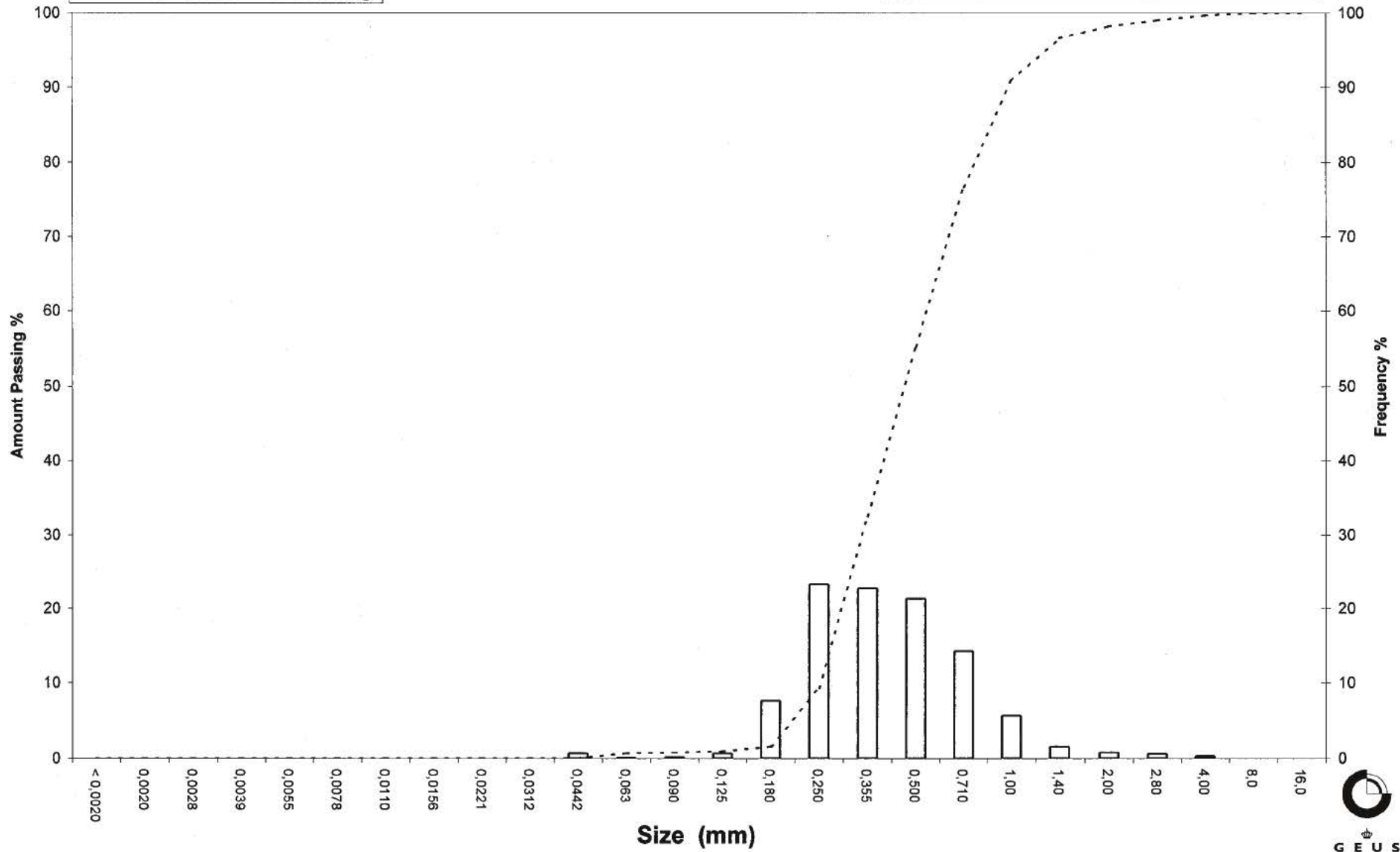
Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 21





# Grain Size Distribution

Geotechnical

**Sample Id:** 22  
**Lab. Id:** 060378  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 101,03 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,00	0,00	100,00
2,00	-1,00	0,04	0,04	99,96
1,40	-0,49	0,14	0,14	99,82
1,00	0,00	0,16	0,16	99,66
0,710	0,49	0,61	0,60	99,06
0,500	1,00	3,29	3,26	95,80
0,355	1,49	14,91	14,76	81,05
0,250	2,00	48,39	47,90	33,15
0,180	2,47	27,94	27,66	5,49
0,125	3,00	3,64	3,60	1,89
0,090	3,47	0,83	0,82	1,07
0,063	3,99	0,29	0,29	0,78
0,0442	4,50	0,79	0,78	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,78
Sand, fine (0,063 mm - 0,200 mm):	12,61
Sand, medium (0,2 mm - 0,6 mm):	83,96
Sand, coarse (0,6 mm - 2 mm):	2,61
Gravel (> 2 mm):	0,04
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,49	1,02
16%	84%	0,38	1,38
25%	75%	0,34	1,55
40%	60%	0,31	1,69
50%	50%	0,29	1,80
75%	25%	0,23	2,12
84%	16%	0,21	2,28
90%	10%	0,19	2,39
95%	5%	0,17	2,54

## Moments Statistics

Mean	1,82
Sorting	0,45
Skewness	0,02
Kurtosis	1,08
Uniformity Coefficient	1,61

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dGF-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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Sieve Analysis

Gravel

Sand

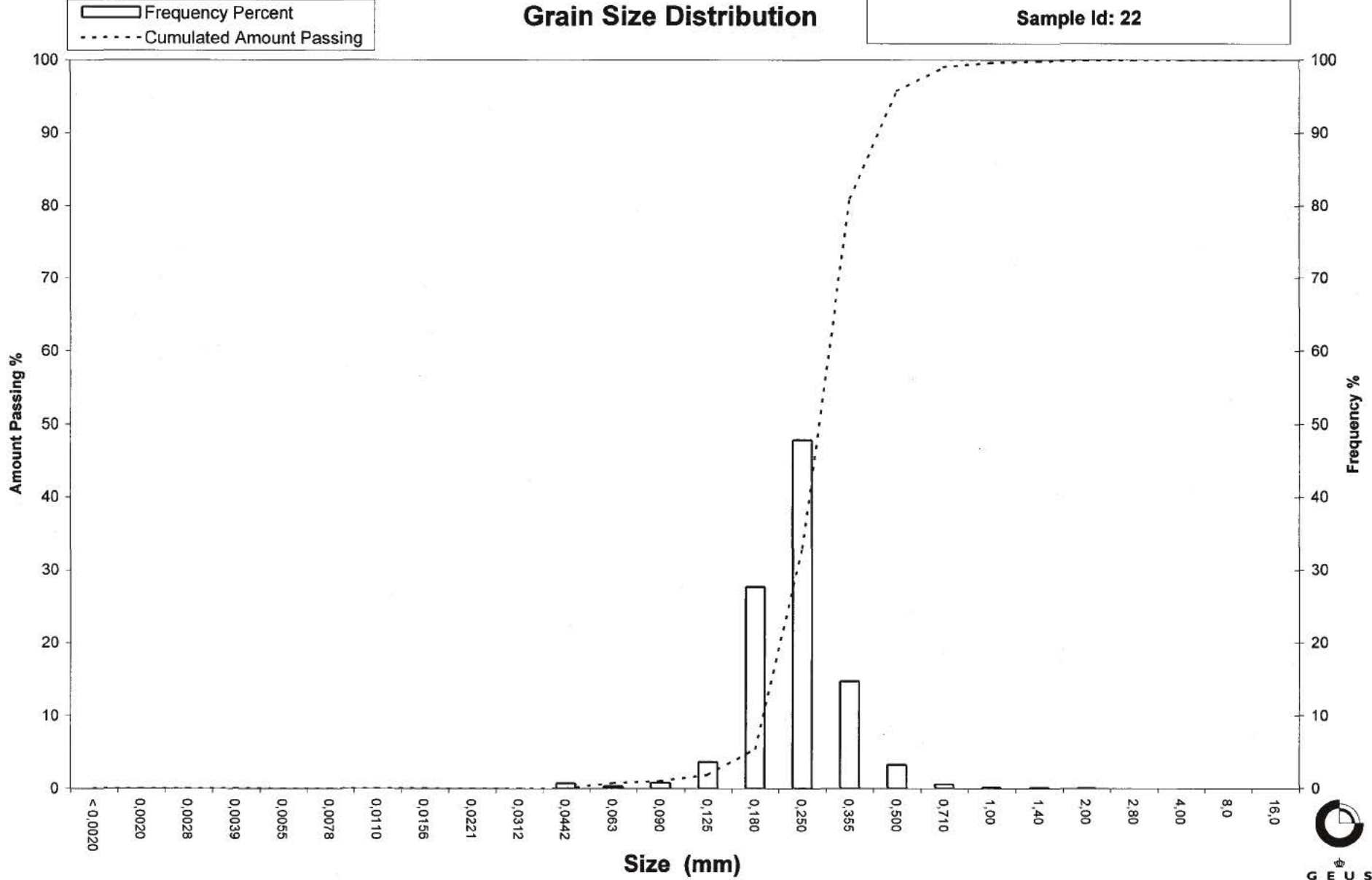
Sedigraph Analysis

Silt

Clay

# Grain Size Distribution

Sample Id: 22



# Grain Size Distribution

Geotechnical

**Sample Id:** 23  
**Lab. Id:** 060379  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 200,8 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,81	0,40	99,60
2,80	-1,49	3,42	1,70	97,89
2,00	-1,00	6,13	3,05	94,84
1,40	-0,49	11,26	5,61	89,23
1,00	0,00	18,06	8,99	80,24
0,710	0,49	26,02	12,96	67,28
0,500	1,00	35,01	17,44	49,85
0,355	1,49	49,94	24,87	24,98
0,250	2,00	38,20	19,02	5,95
0,180	2,47	9,37	4,67	1,28
0,125	3,00	0,96	0,48	0,81
0,090	3,47	0,20	0,10	0,71
0,063	3,99	0,09	0,04	0,66
0,0442	4,50	1,33	0,66	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	0,66
Sand, fine (0,063 mm - 0,200 mm)	1,96
Sand, medium (0,2 mm - 0,6 mm)	55,53
Sand, coarse (0,6 mm - 2 mm)	36,69
Gravel (> 2 mm)	5,16
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	2,04	-1,03
16%	84%	1,17	-0,22
25%	75%	0,88	0,18
40%	60%	0,62	0,68
50%	50%	0,50	0,99
75%	25%	0,36	1,49
84%	16%	0,31	1,71
90%	10%	0,27	1,88
95%	5%	0,24	2,08

## Moments Statistics

Mean	0,83
Sorting	0,96
Skewness	-0,28
Kurtosis	0,97
Uniformity Coefficient	2,28

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

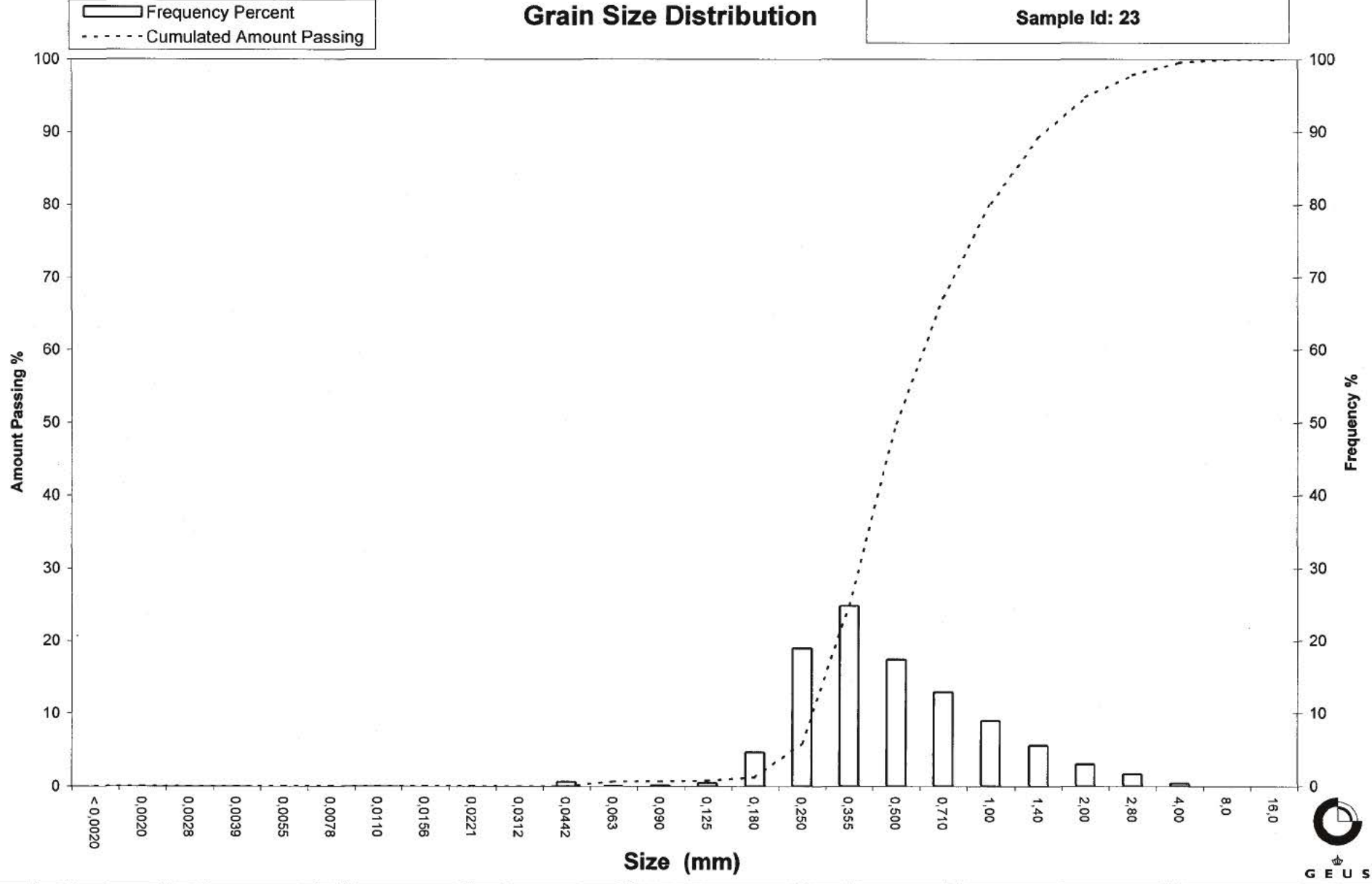
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 23



# Grain Size Distribution

Geotechnical

**Sample Id:** 24  
**Lab. Id:** 060380  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** 1. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 204,73 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	4,58	2,24	97,76
2,80	-1,49	3,83	1,87	95,89
2,00	-1,00	4,13	2,02	93,87
1,40	-0,49	6,89	3,37	90,51
1,00	0,00	16,57	8,09	82,42
0,710	0,49	20,24	9,89	72,53
0,500	1,00	29,71	14,51	58,02
0,355	1,49	50,82	24,82	33,19
0,250	2,00	47,72	23,31	9,89
0,180	2,47	16,33	7,98	1,91
0,125	3,00	1,85	0,90	1,01
0,090	3,47	0,36	0,18	0,83
0,063	3,99	0,18	0,09	0,74
0,0442	4,50	1,52	0,74	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	0,74
Sand, fine (0,063 mm - 0,200 mm)	3,45
Sand, medium (0,2 mm - 0,6 mm)	60,74
Sand, coarse (0,6 mm - 2 mm)	28,95
Gravel (> 2 mm)	6,13
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	2,45	-1,29
16%	84%	1,08	-0,11
25%	75%	0,78	0,35
40%	60%	0,53	0,92
50%	50%	0,45	1,14
75%	25%	0,32	1,65
84%	16%	0,28	1,85
90%	10%	0,25	2,00
95%	5%	0,21	2,27

## Moments Statistics

Mean	0,96
Sorting	1,03
Skewness	-0,32
Kurtosis	1,12
Uniformity Coefficient	2,11

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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Sieve Analysis

Gravel

Sand

Sedigraph Analysis

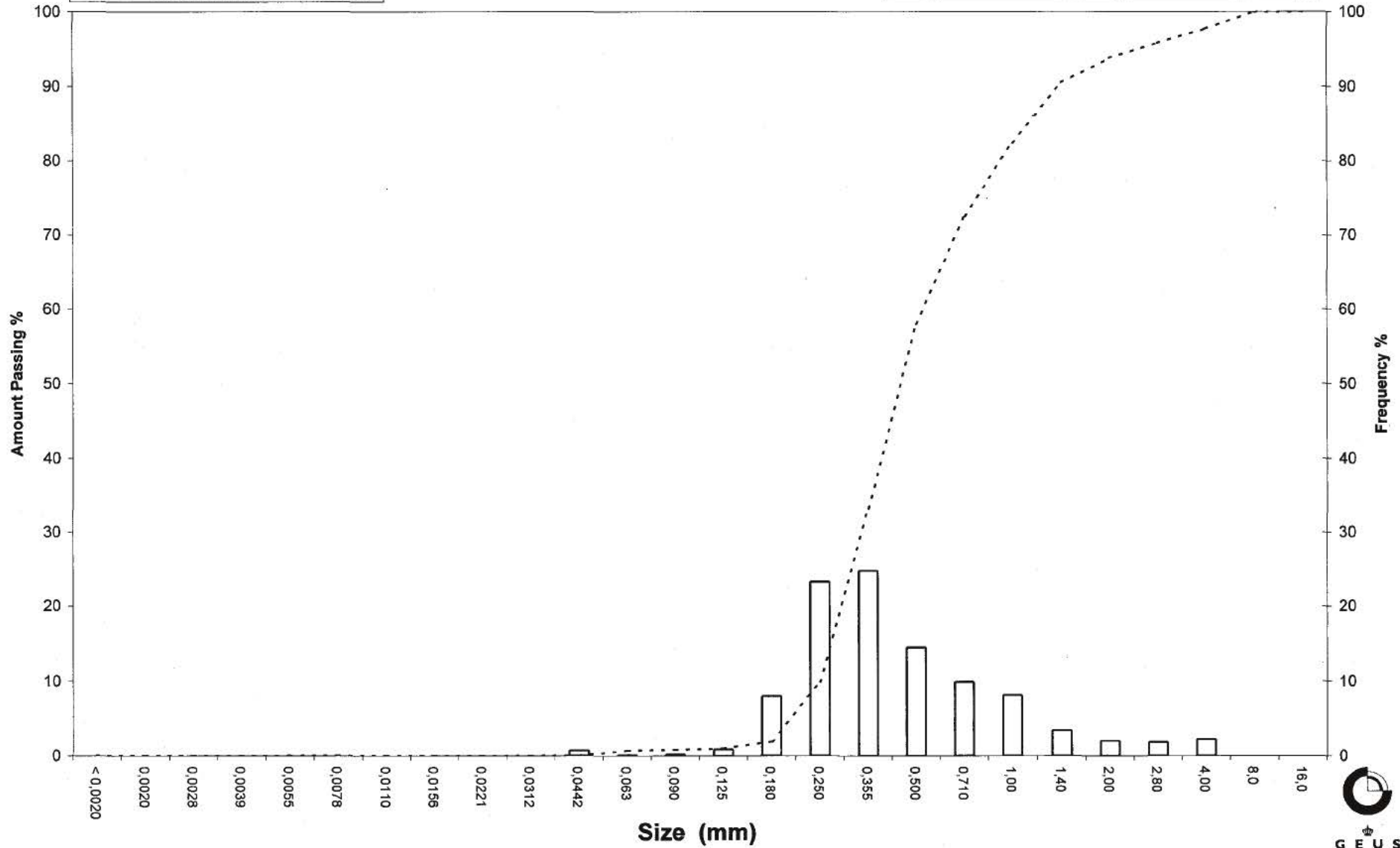
Silt

Clay

# Grain Size Distribution

Sample Id: 24

Frequency Percent  
Cumulated Amount Passing



# Grain Size Distribution

Geotechnical

**Sample Id:** 25  
**Lab. Id:** 060381  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 205,65 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,85	0,41	99,59
2,80	-1,49	2,31	1,12	98,46
2,00	-1,00	3,44	1,67	96,79
1,40	-0,49	7,43	3,61	93,18
1,00	0,00	11,68	5,68	87,50
0,710	0,49	22,96	11,16	76,33
0,500	1,00	46,18	22,46	53,88
0,355	1,49	47,79	23,24	30,64
0,250	2,00	41,52	20,19	10,45
0,180	2,47	16,31	7,93	2,52
0,125	3,00	2,61	1,27	1,25
0,090	3,47	0,53	0,26	0,99
0,063	3,99	0,27	0,13	0,86
0,0442	4,50	1,77	0,86	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,86
Sand, fine (0,063 mm - 0,200 mm):	3,92
Sand, medium (0,2 mm - 0,6 mm):	59,79
Sand, coarse (0,6 mm - 2 mm):	32,22
Gravel (> 2 mm):	3,21
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	φ
Amount in sieve	Amount passing		
5%	95%	1,70	-0,77
16%	84%	0,91	0,14
25%	75%	0,70	0,52
40%	60%	0,56	0,84
50%	50%	0,48	1,07
75%	25%	0,33	1,62
84%	16%	0,28	1,84
90%	10%	0,25	2,02
95%	5%	0,20	2,31

## Moments Statistics

Mean	1,02
Sorting	0,89
Skewness	-0,15
Kurtosis	1,15
Uniformity Coefficient	2,26

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

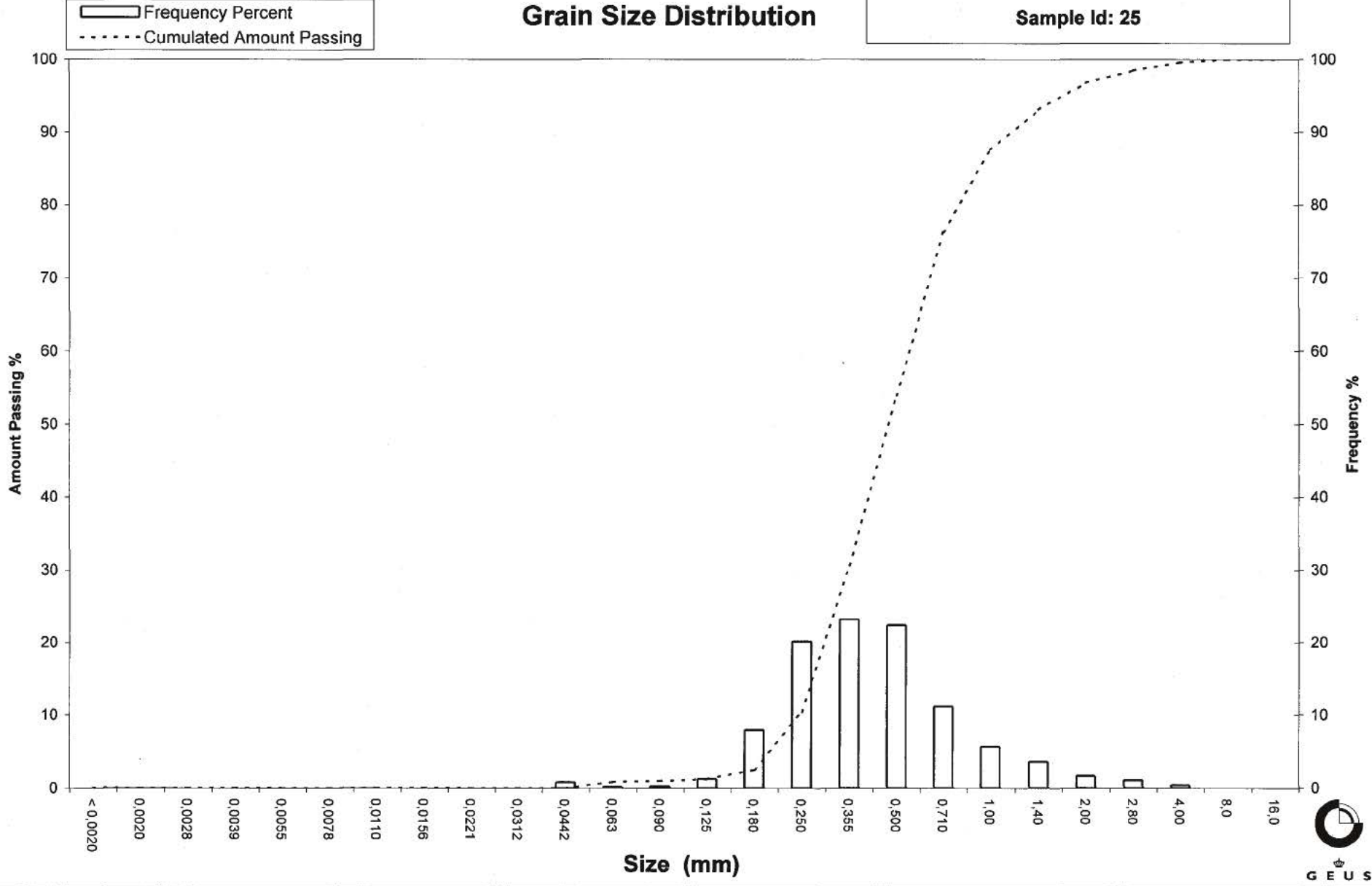
Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 25





# Grain Size Distribution

Geotechnical

**Sample Id:** 26  
**Lab. Id:** 060382  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**Total Weight** 108,32 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,18	0,17	99,83
2,80	-1,49	0,16	0,15	99,69
2,00	-1,00	0,07	0,06	99,62
1,40	-0,49	0,12	0,11	99,51
1,00	0,00	1,62	1,50	98,02
0,710	0,49	23,42	21,62	76,39
0,500	1,00	22,44	20,72	55,68
0,355	1,49	22,91	21,15	34,53
0,250	2,00	25,36	23,41	11,12
0,180	2,47	9,38	8,66	2,46
0,125	3,00	1,35	1,25	1,21
0,090	3,47	0,32	0,30	0,91
0,063	3,99	0,24	0,22	0,69
0,0442	4,50	0,75	0,69	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel  
Sand

Sedigraph Analysis

Silt  
Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,69
Sand, fine (0,063 mm - 0,200 mm):	4,24
Sand, medium (0,2 mm - 0,6 mm):	60,61
Sand, coarse (0,6 mm - 2 mm):	34,08
Gravel (> 2 mm):	0,38
Sum:	100,00

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,96	0,06
16%	84%	0,81	0,30
25%	75%	0,70	0,52
40%	60%	0,54	0,88
50%	50%	0,46	1,12
75%	25%	0,31	1,68
84%	16%	0,27	1,88
90%	10%	0,24	2,05
95%	5%	0,20	2,32

## Moments Statistics

Mean	1,10
Sorting	0,74
Skewness	0,01
Kurtosis	0,80
Uniformity Coefficient	2,26

The analysis is executed according to DS/EN 933-1 extended by sieves to the 1/2 phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)

Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)

Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)

Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)

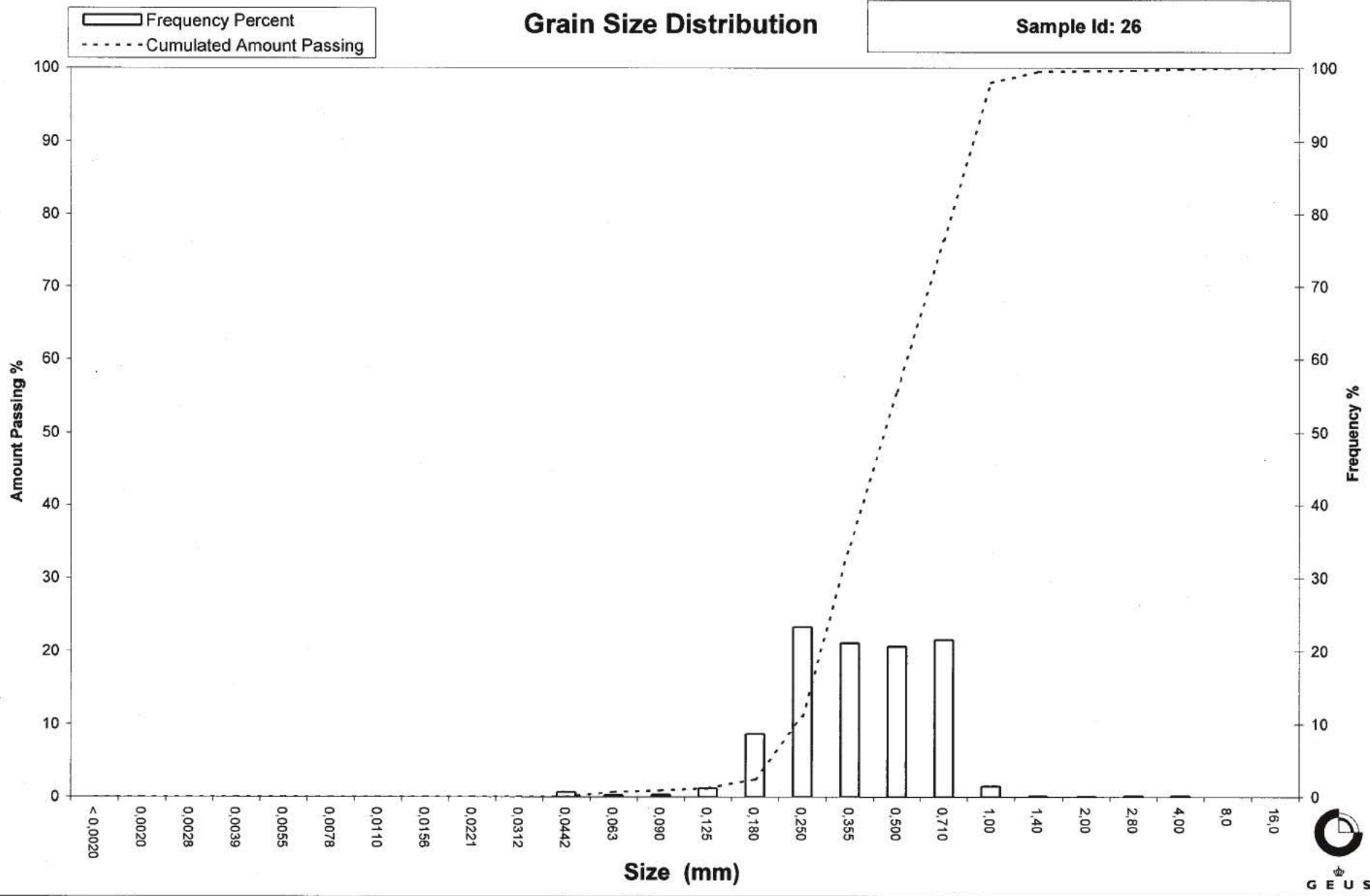
Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 26



# Grain Size Distribution

Geotechnical

**Sample Id:** 27  
**Lab. Id:** 060383  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**Total Weight** 119,63 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,10	0,08	99,92
2,00	-1,00	0,00	0,00	99,92
1,40	-0,49	0,11	0,09	99,82
1,00	0,00	0,81	0,68	99,15
0,710	0,49	13,80	11,54	87,61
0,500	1,00	39,66	33,15	54,46
0,355	1,49	28,92	24,17	30,29
0,250	2,00	24,75	20,69	9,60
0,180	2,47	9,35	7,82	1,78
0,125	3,00	1,12	0,94	0,84
0,090	3,47	0,25	0,21	0,64
0,063	3,99	0,17	0,14	0,49
0,0442	4,50	0,59	0,49	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel  
Sand

Sedigraph Analysis

Silt  
Clay

## Size Classes (DGF-Bulletin 1 1988)

	Weight %
Clay (< 0,002 mm):	0,00
Silt, fine (0,002 mm - 0,006 mm):	0,00
Silt, medium (0,006 mm - 0,020 mm):	0,00
Silt, coarse (0,020 mm - 0,063 mm):	0,49
Sand, fine (0,063 mm - 0,200 mm):	3,52
Sand, medium (0,2 mm - 0,6 mm):	66,23
Sand, coarse (0,6 mm - 2 mm):	29,67
Gravel (> 2 mm):	0,08
Sum:	100,00

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,90	0,16
16%	84%	0,69	0,54
25%	75%	0,63	0,67
40%	60%	0,54	0,90
50%	50%	0,47	1,08
75%	25%	0,33	1,61
84%	16%	0,28	1,82
90%	10%	0,25	1,99
95%	5%	0,21	2,26

## Moments Statistics

Mean	1,15
Sorting	0,64
Skewness	0,14
Kurtosis	0,91
Uniformity Coefficient	2,12

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

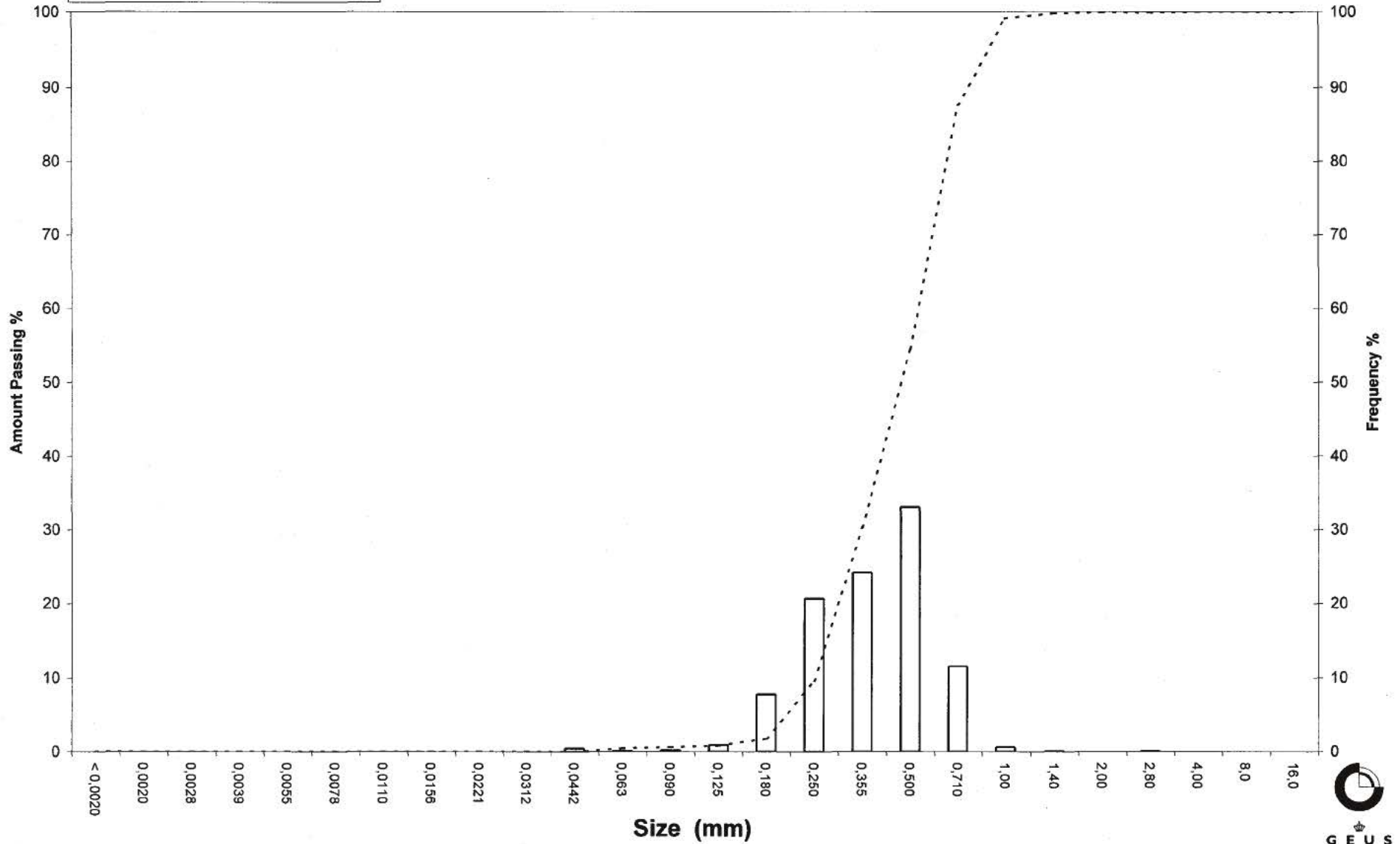
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 27



# Grain Size Distribution

Geotechnical

**Sample Id:** 28  
**Lab. Id:** 060384  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 108,06 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	%
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,00	0,00	100,00
2,80	-1,49	0,13	0,12	99,88
2,00	-1,00	0,12	0,11	99,77
1,40	-0,49	0,10	0,09	99,68
1,00	0,00	0,58	0,54	99,14
0,710	0,49	12,11	11,21	87,93
0,500	1,00	35,27	32,64	55,29
0,355	1,49	38,66	35,78	19,52
0,250	2,00	14,08	13,03	6,49
0,180	2,47	5,26	4,87	1,62
0,125	3,00	0,91	0,84	0,78
0,090	3,47	0,25	0,23	0,55
0,063	3,99	0,14	0,13	0,42
0,0442	4,50	0,45	0,42	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	2,59
Sand, fine (0,063 mm - 0,200 mm)	2,59
Sand, medium (0,2 mm - 0,6 mm)	67,83
Sand, coarse (0,6 mm - 2 mm)	28,93
Gravel (> 2 mm)	0,23
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,89	0,16
16%	84%	0,68	0,55
25%	75%	0,63	0,67
40%	60%	0,53	0,92
50%	50%	0,48	1,06
75%	25%	0,38	1,41
84%	16%	0,33	1,61
90%	10%	0,28	1,85
95%	5%	0,23	2,13

## Moments Statistics

Mean	1,07
Sorting	0,56
Skewness	0,06
Kurtosis	1,10
Uniformity Coefficient	1,91

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

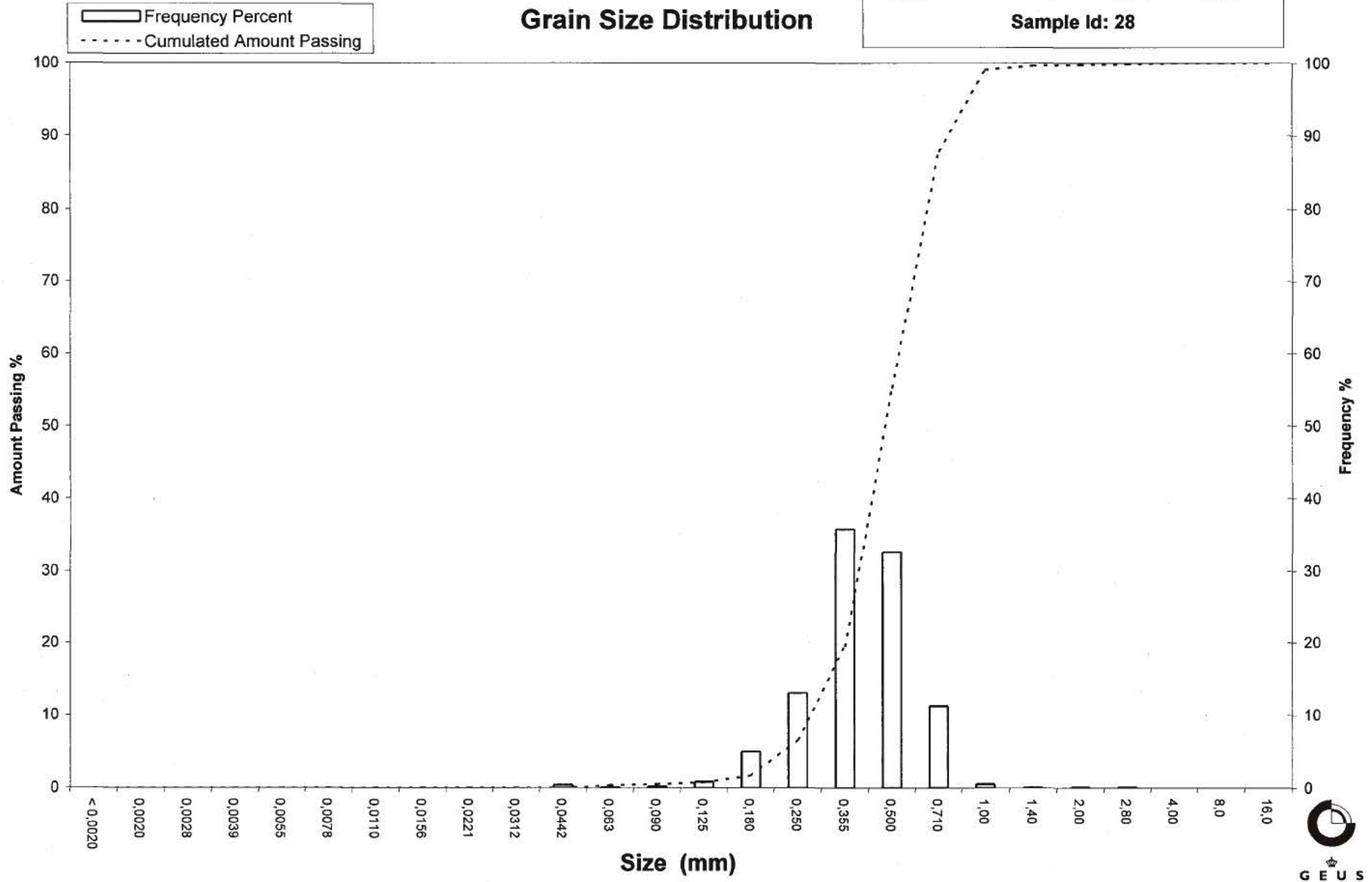
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 28



# Grain Size Distribution

Geotechnical

**Sample Id:** 29  
**Lab. Id:** 060385  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 8 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 204,28 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,18	0,09	99,91
4,00	-2,00	0,99	0,48	99,43
2,80	-1,49	0,61	0,30	99,13
2,00	-1,00	0,33	0,16	98,97
1,40	-0,49	0,69	0,34	98,63
1,00	0,00	3,90	1,91	96,72
0,710	0,49	39,68	19,42	77,30
0,500	1,00	63,02	30,85	46,45
0,355	1,49	33,49	16,39	30,05
0,250	2,00	36,12	17,68	12,37
0,180	2,47	19,15	9,37	3,00
0,125	3,00	3,49	1,71	1,29
0,090	3,47	0,72	0,35	0,93
0,063	3,99	0,44	0,22	0,72
0,0442	4,50	1,47	0,72	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	0,72
Sand, fine (0,063 mm - 0,200 mm)	4,95
Sand, medium (0,2 mm - 0,6 mm)	55,46
Sand, coarse (0,6 mm - 2 mm)	37,83
Gravel (> 2 mm)	1,03
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,97	0,04
16%	84%	0,81	0,30
25%	75%	0,69	0,53
40%	60%	0,59	0,76
50%	50%	0,52	0,93
75%	25%	0,33	1,62
84%	16%	0,27	1,88
90%	10%	0,23	2,11
95%	5%	0,19	2,36

## Moments Statistics

Mean	1,04
Sorting	0,75
Skewness	0,22
Kurtosis	0,87
Uniformity Coefficient	2,55

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

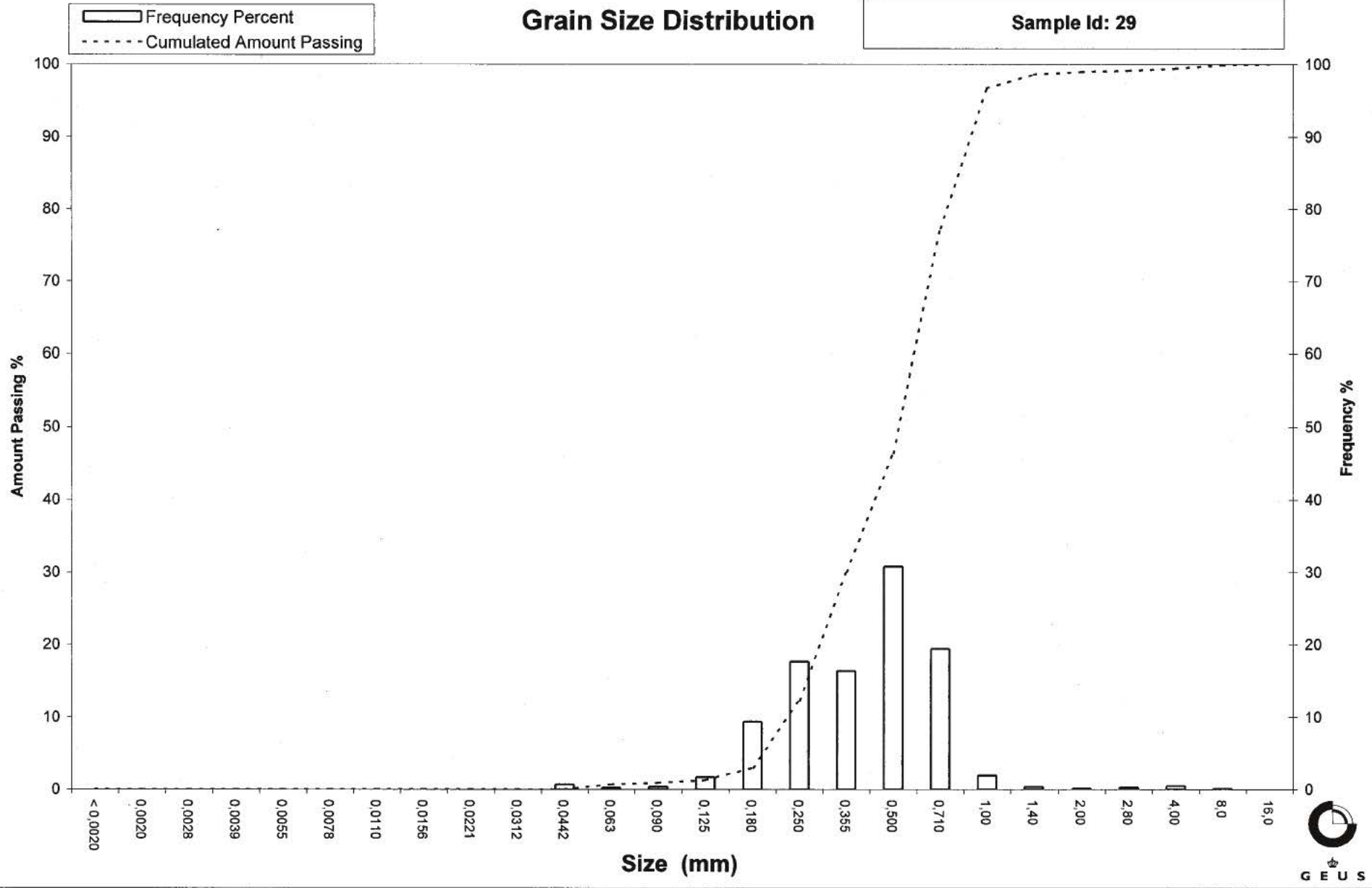
Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 29





# Grain Size Distribution

Geotechnical

**Sample Id:** 30  
**Lab. Id:** 060386  
**Submitter:** Bio/consult  
**Subject:** Horns\_Rev2 12/12/2005  
**Date:** Februar 2006  
**Executed:** I. Nørgaard  
**Remarks:** Sample < 2 mm. Too small amount of material < 0,063mm for sedigrafanalysis. Sample Flocculate



**GEUS**

**Total Weight** 109,51 g

## Size Fractions

Size	Size	Weight	Weight	Cumulated amount passing
mm	Φ	g	%	
16,00	-4,00	0,00	0,00	100,00
8,00	-3,00	0,00	0,00	100,00
4,00	-2,00	0,52	0,47	99,53
2,80	-1,49	0,00	0,00	99,53
2,00	-1,00	0,08	0,07	99,45
1,40	-0,49	0,30	0,27	99,18
1,00	0,00	1,40	1,28	97,90
0,710	0,49	15,76	14,39	83,51
0,500	1,00	36,35	33,19	50,32
0,355	1,49	38,83	35,46	14,86
0,250	2,00	11,14	10,17	4,68
0,180	2,47	3,01	2,75	1,94
0,125	3,00	0,87	0,79	1,14
0,090	3,47	0,51	0,47	0,68
0,063	3,99	0,29	0,26	0,41
0,0442	4,50	0,45	0,41	0,00
0,0312	5,00	0,00	0,00	0,00
0,0221	5,50	0,00	0,00	0,00
0,0156	6,00	0,00	0,00	0,00
0,0110	6,51	0,00	0,00	0,00
0,0078	7,00	0,00	0,00	0,00
0,0055	7,51	0,00	0,00	0,00
0,0039	8,00	0,00	0,00	0,00
0,0028	8,48	0,00	0,00	0,00
0,0020	8,97	0,00	0,00	0,00
<0,0020	>8,97	0,00	0,00	0,00

Sieve Analysis

Gravel

Sand

Sedigraph Analysis

Silt

Clay

## Size Classes (DGF-Bulletin 1 1988)

Size Class	Weight %
Clay (< 0,002 mm)	0,00
Silt, fine (0,002 mm - 0,006 mm)	0,00
Silt, medium (0,006 mm - 0,020 mm)	0,00
Silt, coarse (0,020 mm - 0,063 mm)	0,41
Sand, fine (0,063 mm - 0,200 mm)	2,31
Sand, medium (0,2 mm - 0,6 mm)	63,40
Sand, coarse (0,6 mm - 2 mm)	33,33
Gravel (> 2 mm)	0,55
<b>Sum:</b>	<b>100,00</b>

## Moments Measures

Percentile	Percentile	d(mm)	Φ
Amount in sieve	Amount passing		
5%	95%	0,94	0,09
16%	84%	0,72	0,47
25%	75%	0,66	0,61
40%	60%	0,56	0,83
50%	50%	0,50	1,00
75%	25%	0,40	1,33
84%	16%	0,36	1,48
90%	10%	0,30	1,71
95%	5%	0,25	1,98

## Moments Statistics

Mean	0,98
Sorting	0,54
Skewness	-0,01
Kurtosis	1,07
Uniformity Coefficient	1,84

The analysis is executed according to DS/EN 933-1 extended by sieves to the ½ phi scale and test portion mass 0,1 kg

Size Classes and Percentiles are found by linear interpolation

## Formulas

Mean  $(\phi_{16\%} + \phi_{84\%} + \phi_{50\%}) / 3$  (Folk and Ward 1957)  
 Sorting  $(\phi_{84\%} - \phi_{16\%}) / 4 + (\phi_{95\%} - \phi_{5\%}) / 6,6$  (Folk and Ward 1957)  
 Kurtosis  $(\phi_{95\%} - \phi_{5\%}) / (2,44 * (\phi_{75\%} - \phi_{25\%}))$  (Folk and Ward 1957)  
 Skewness  $(\phi_{16\%} + \phi_{84\%} - 2 * \phi_{50\%}) / (2 * (\phi_{84\%} - \phi_{16\%})) + (\phi_{5\%} + \phi_{95\%} - 2 * \phi_{50\%}) / (2 * (\phi_{95\%} - \phi_{5\%}))$  (Folk and Ward 1957)  
 Uniformity Coefficient  $(d_{60\%} / d_{10\%})$  (dgf-Bulletin 1988)

Mean, sorting, skewness and kurtosis are based on "Amount in sieve". Uniformity coefficient is based on "Amount passing".

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# Grain Size Distribution

Sample Id: 30

