

Task:**Application field:** Geology / Metallurgy**Material:** Amorphous silica**Feed size:** 10 - 200 µm**Feed quantity:** about 10 g for each sieving**Material specification(s):** dry**Customer requirements(s):** Comparison of wet and air jet sieving 20 / 40 / 60 / 100 / 200 µm**Subsequent analysis:** Particle size analysis**Solution****Selected Instrument(s):** Vibratory Sieve Shaker AS 200 control
Air Jet Sieving Machine AS 200 jet**Configuration(s)
Item nos.:**

- 1 x AS 200 control, 100-240 V, 50/60 Hz, incl. test report acc. EN 10204 2.2
- 1 x Universal wet sieving clamping device "comfort"
- 1 x Collecting pan with outlet stainless steel, Ø 200x50 mm
- 4 x Venting ring for wet sieving stainless steel, Ø 200x25 mm
- 1 x Test Sieve, ISO 3310/1, 200x50mm, 20µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 200x50mm, 40µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 200x50mm, 63µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 200x50mm, 100µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 200x50mm, 200µm, stainless steel, with compliance certificate acc. EN 10204 2.1
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- 1 x Air Jet Sieving Machine AS 200 jet, 100-240 V, 50/60 Hz
- 1 x Industrial vacuum cleaner GM 80, 230 V, 50/60 Hz
- 1 x Test Sieve, ISO 3310/1, 8"x1", 20µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 8"x1", 40µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 8"x1", 63µm, stainless steel, with compliance certificate acc. EN 10204 2.1
- 1 x Test Sieve, ISO 3310/1, 8"x1", 100µm, stainless steel, with compliance certificate acc. EN 10204 2.1

1 x Test Sieve, ISO 3310/1, 8"x1", 200µm, stainless steel, with compliance certificate acc. EN 10204 2.1

1 x EasySieve, for Windows 2000/XP/Vista/7, English/German, Single-user-licence, incl. adapter RS232-USB

Please note: Other electrical versions of the instrument(s) are available with different item numbers.

Parameter(s):	AS 200 control: Amplitude 1.1 mm, Interval 10 sec AS 200 jet: revolution speed 55 U/min, negative pressure about 30 to 50 mbar
Time:	AS 200 control: ca. 3 min AS 200 jet: 1 min for each sieve
Achieved result(s):	See measuring protocols EasySieve
Remark(s):	Prior to sieving the sample is divided into 6 representative sub-samples. For this purpose the Sample Divider PT 100 with dividing head with 6 outlets is suitable. For air jet sieving one sub-sample is used for each sieve. For wet sieving the remaining sample is suspended in water and fed to the top sieve. The sieving is executed under water flow (about 500 ml/min) as long as the drained water is clouded. The remaining fractions are filtered, dried and weighed back. The fraction < 20 µm is not measured but calculated as loss of the initially fed sample amount. The differing results of the wet sieving compared to air jet sieving (fraction 20 - 40 µm) are systematic. A possible reason for this could be a significant (within the allowed tolerances acc. to ISO 3310) difference of the aperture sizes of the sieves used for wet and air jet sieving respectively.
Recommendation:	The Vibratory Sieve Shaker AS 200 control and the Air Jet Sieving Machine AS 200 jet are suitable to analyse the sample material under the above mentioned conditions.

RETSCH Sieve Analysis

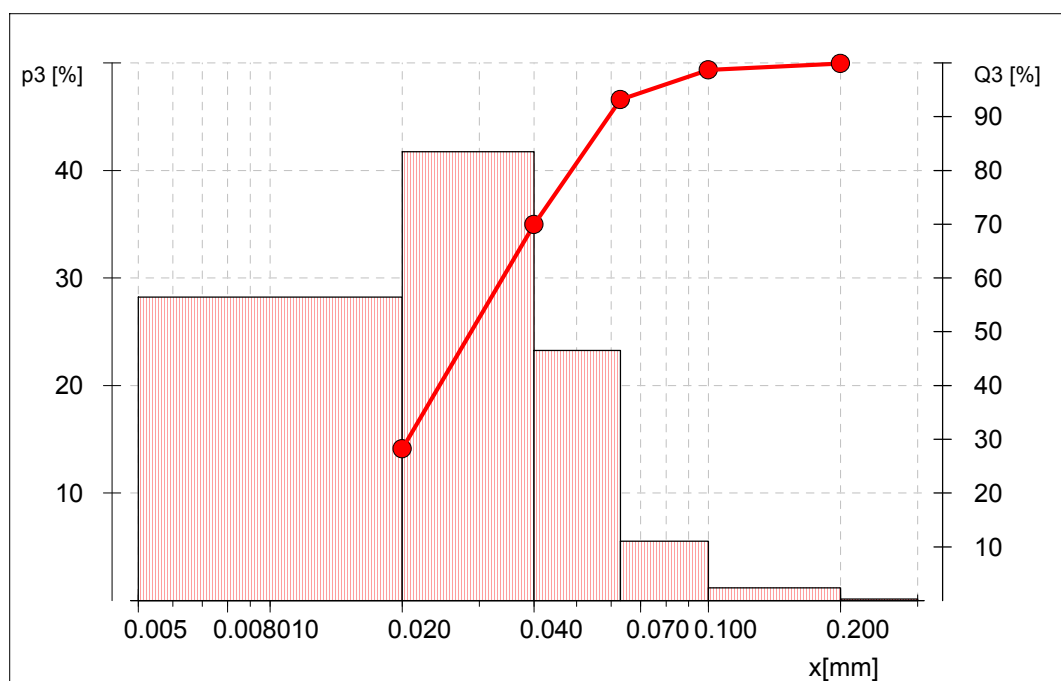
Company: _____
 User: MA
 Result file: ...ySieve\SIEVEDAT\14499 Amorphe Kieselsäure\14499_amorphous silica_18_air.rdf
 Task file: 14499 Amorphe KieselsäureSize classes file: 14499 Amorphe Kieselsäure.gkl
 Date: 18. 4.2013 14:34 Sieving duration [mm:ss]: 01:00
 Sieve machine: AS 200 jet Number of revolutions [1/min]: 55.0

Material: #18

Sample quantity [g]: 6.88 Sum loaded sieve weights [g]: 6.88
 Sieve loss [%]: 0.00

Sampling: Kundenprobe Sample preparation: Probenteilung mit PT100 1/6
 Sieve method: air jet sieving AS 200 jet Sieve diameter: 200 x 25 mm
 Sieves according to standard: DIN ISO 3310-1 Sieving aids: No sieving aids
 Comment:

Size class [mm]	p3 [%]	Q3 [%]	Δm [g]	$\Sigma \Delta m$ [g]
< 0.020	28.2	28.2	1.94	1.94
0.020 - 0.040	41.7	69.9	2.87	4.81
0.040 - 0.063	23.3	93.2	1.60	6.41
0.063 - 0.100	5.5	98.7	0.38	6.79
0.100 - 0.200	1.2	99.9	0.08	6.87
> 0.200	0.1	100.0	0.01	6.88



Characteristics:

Q3 [%]	x [mm]
10.0	0.007
50.0	0.030
90.0	0.060

User: _____

RETSCH Sieve Analysis

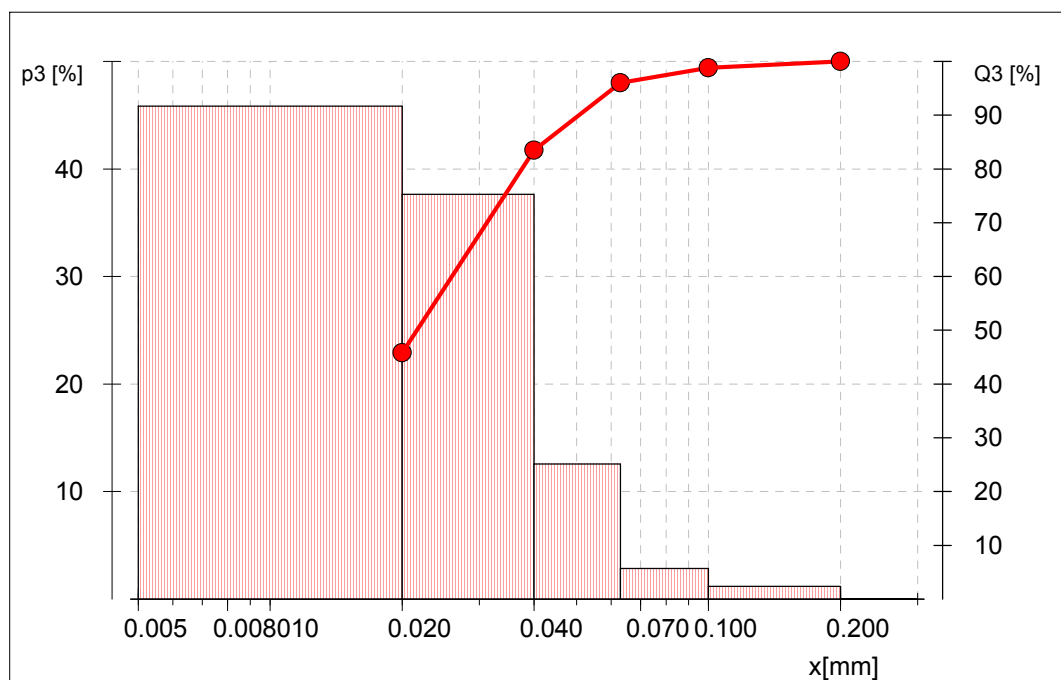
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 Task file: 14499 Amorphe Kieselsäure Size classes file: 14499 Amorphe Kieselsäure.gkl
 Date: 19. 4.2013 10:02 Sieving duration [mm:ss]: 01:00
 Sieve machine: AS 200 control Amplitude [mm]: 1.1
 Interval working Interval time [s]: 10.0
 Manual input

Material: #16

Sample quantity [g]: 9.49 Sum loaded sieve weights [g]: 9.49
 Sieve loss [%]: 0.00

Sampling: Kundenprobe Sample preparation: Probenteilung mit PT100 1/6
 Sieve method: Nasssiebung vertikal Sieve diameter: 200 x 50 mm
 Sieves according to standard: DIN ISO 3310-1 Sieving aids: No sieving aids
 Comment:

Size class [mm]	p3 [%]	Q3 [%]	Δm [g]	$\Sigma \Delta m$ [g]
< 0.020	45.8	45.8	4.35	4.35
0.020 - 0.040	37.6	83.5	3.57	7.92
0.040 - 0.063	12.5	96.0	1.19	9.11
0.063 - 0.100	2.8	98.8	0.27	9.38
0.100 - 0.200	1.2	100.0	0.11	9.49
> 0.200	0.0	100.0	0.00	9.49



Characteristics:

Q3 [%]	x [mm]
10.0	0.004
50.0	0.022
90.0	0.052

User:

RETSCH Sieve Analysis

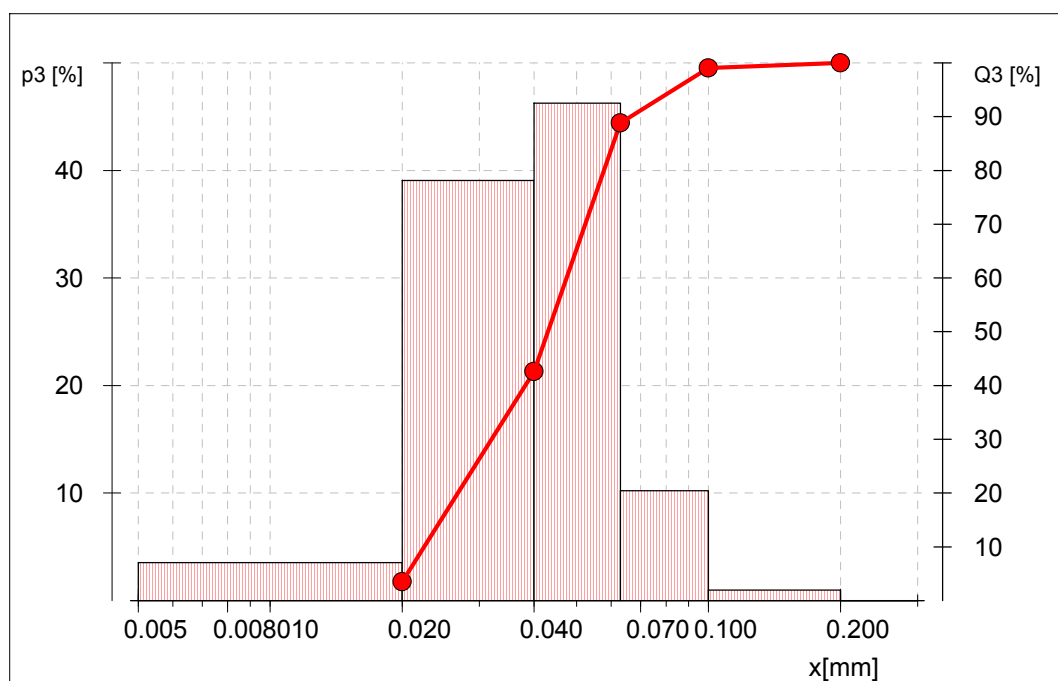
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 User: MA
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 Task file: 14499 Amorphe KieselsäureSize classes file: 14499 Amorphe Kieselsäure.gkl
 Date: 18. 4.2013 14:21 Sieving duration [mm:ss]: 01:00
 Sieve machine: AS 200 jet Number of revolutions [1/min]: 55.0

Material: #17

Sample quantity [g]: 8.22 Sum loaded sieve weights [g]: 8.22
 Sieve loss [%]: 0.00

Sampling: Kundenprobe Sample preparation: Probenteilung mit PT100 1/6
 Sieve method: air jet sieving AS 200 jet Sieve diameter: 200 x 25 mm
 Sieves according to standard: DIN ISO 3310-1 Sieving aids: No sieving aids
 Comment:

Size class [mm]	p3 [%]	Q3 [%]	Δm [g]	$\Sigma \Delta m$ [g]
< 0.020	3.5	3.5	0.29	0.29
0.020 - 0.040	39.1	42.6	3.21	3.50
0.040 - 0.063	46.2	88.8	3.80	7.30
0.063 - 0.100	10.2	99.0	0.84	8.14
0.100 - 0.200	1.0	100.0	0.08	8.22
> 0.200	0.0	100.0	0.00	8.22



Characteristics:

Q3 [%]	x [mm]
10.0	0.023
50.0	0.044
90.0	0.067

User: _____

RETSCH Sieve Analysis

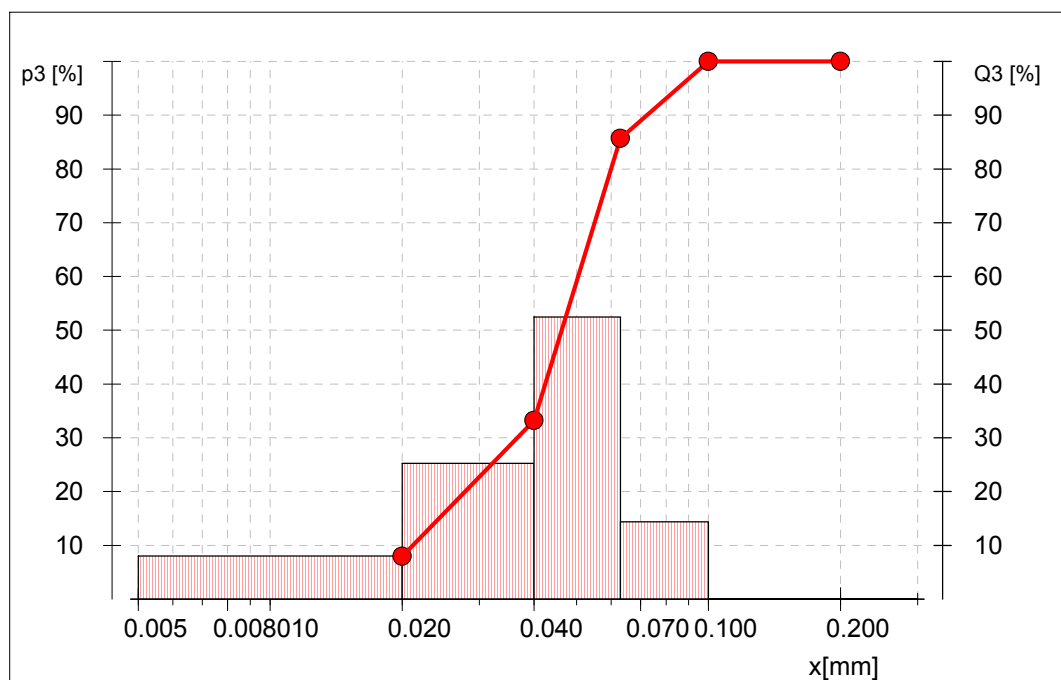
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 Task file: 14499 Amorphe Kieselsäure Size classes file: 14499 Amorphe Kieselsäure.gkl
 Date: 19. 4.2013 10:01 Sieving duration [mm:ss]: 01:00
 Sieve machine: AS 200 control Amplitude [mm]: 1.1
 Interval working Interval time [s]: 10.0
 Manual input

Material: #17

Sample quantity [g]: 8.16 Sum loaded sieve weights [g]: 8.16
 Sieve loss [%]: -0.00

Sampling: Kundenprobe Sample preparation: Probenteilung mit PT100 1/6
 Sieve method: Nasssiebung vertikal Sieve diameter: 200 x 50 mm
 Sieves according to standard: DIN ISO 3310-1 Sieving aids: No sieving aids
 Comment:

Size class [mm]	p3 [%]	Q3 [%]	Δm [g]	$\Sigma \Delta m$ [g]
< 0.020	8.0	8.0	0.65	0.65
0.020 - 0.040	25.2	33.2	2.06	2.71
0.040 - 0.063	52.5	85.7	4.28	6.99
0.063 - 0.100	14.3	100.0	1.17	8.16
0.100 - 0.200	0.0	100.0	0.00	8.16
> 0.200	0.0	100.0	0.00	8.16



Characteristics:

Q3 [%]	x [mm]
10.0	0.022
50.0	0.047
90.0	0.074

User:

RETSCH Sieve Analysis

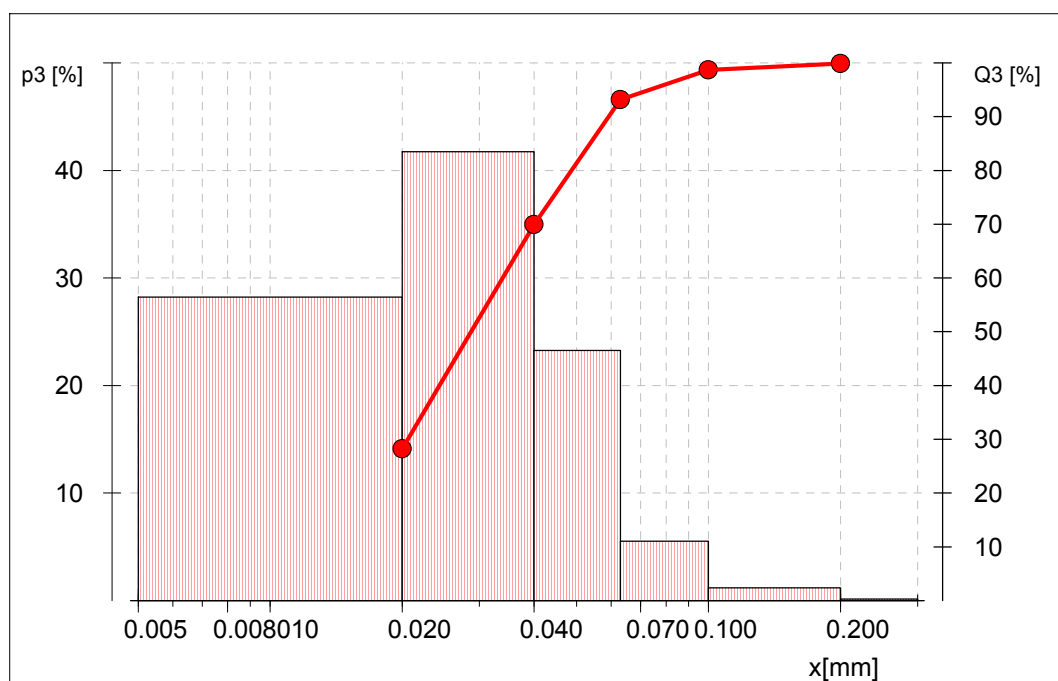
Company: _____
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 Result file: ...ySieve\SIEVEDAT\14499 Amorphe Kieselsäure\14499_amorphous silica_18_air.rdf
 Task file: 14499 Amorphe KieselsäureSize classes file: 14499 Amorphe Kieselsäure.gkl
 Date: 18. 4.2013 14:34 Sieving duration [mm:ss]: 01:00
 Sieve machine: AS 200 jet Number of revolutions [1/min]: 55.0

Material: #18

Sample quantity [g]: 6.88 Sum loaded sieve weights [g]: 6.88
 Sieve loss [%]: 0.00

Sampling: Kundenprobe Sample preparation: Probenteilung mit PT100 1/6
 Sieve method: air jet sieving AS 200 jet Sieve diameter: 200 x 25 mm
 Sieves according to standard: DIN ISO 3310-1 Sieving aids: No sieving aids
 Comment:

Size class [mm]	p3 [%]	Q3 [%]	Δm [g]	$\Sigma \Delta m$ [g]
< 0.020	28.2	28.2	1.94	1.94
0.020 - 0.040	41.7	69.9	2.87	4.81
0.040 - 0.063	23.3	93.2	1.60	6.41
0.063 - 0.100	5.5	98.7	0.38	6.79
0.100 - 0.200	1.2	99.9	0.08	6.87
> 0.200	0.1	100.0	0.01	6.88



Characteristics:

Q3 [%]	x [mm]
10.0	0.007
50.0	0.030
90.0	0.060

User: _____

RETSCH Sieve Analysis

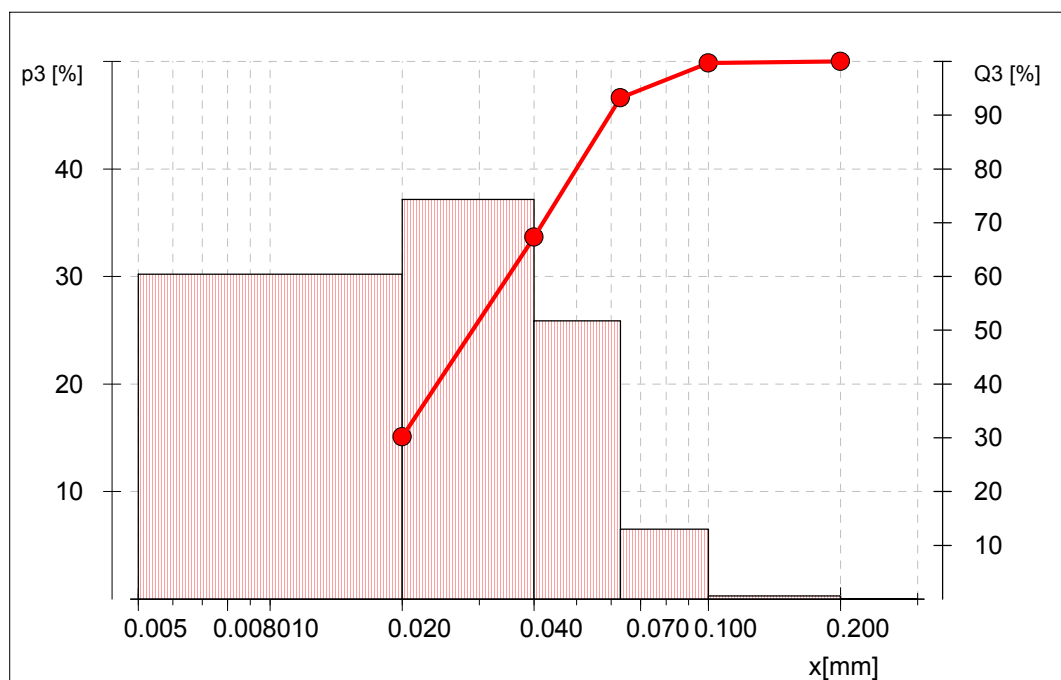
Company: User: MA
 Result file: ...ySieve\SIEVEDAT\14499 Amorphe Kieselsäure\14499_amorphous silica_18_wet.rdf
 Task file: 14499 Amorphe Kieselsäure Size classes file: 14499 Amorphe Kieselsäure.gkl
 Date: 19. 4.2013 9:58 Sieving duration [mm:ss]: 01:00
 Sieve machine: AS 200 control Amplitude [mm]: 1.1
 Interval working Interval time [s]: 10.0
 Manual input

Material: #18

Sample quantity [g]: 6.92 Sum loaded sieve weights [g]: 6.92
 Sieve loss [%]: 0.00

Sampling: Kundenprobe Sample preparation: Probenteilung mit PT100 1/6
 Sieve method: Nasssiebung vertikal Sieve diameter: 200 x 50 mm
 Sieves according to standard: DIN ISO 3310-1 Sieving aids: No sieving aids
 Comment:

Size class [mm]	p3 [%]	Q3 [%]	Δm [g]	$\Sigma \Delta m$ [g]
< 0.020	30.2	30.2	2.09	2.09
0.020 - 0.040	37.1	67.3	2.57	4.66
0.040 - 0.063	25.9	93.2	1.79	6.45
0.063 - 0.100	6.5	99.7	0.45	6.90
0.100 - 0.200	0.3	100.0	0.02	6.92
> 0.200	0.0	100.0	0.00	6.92

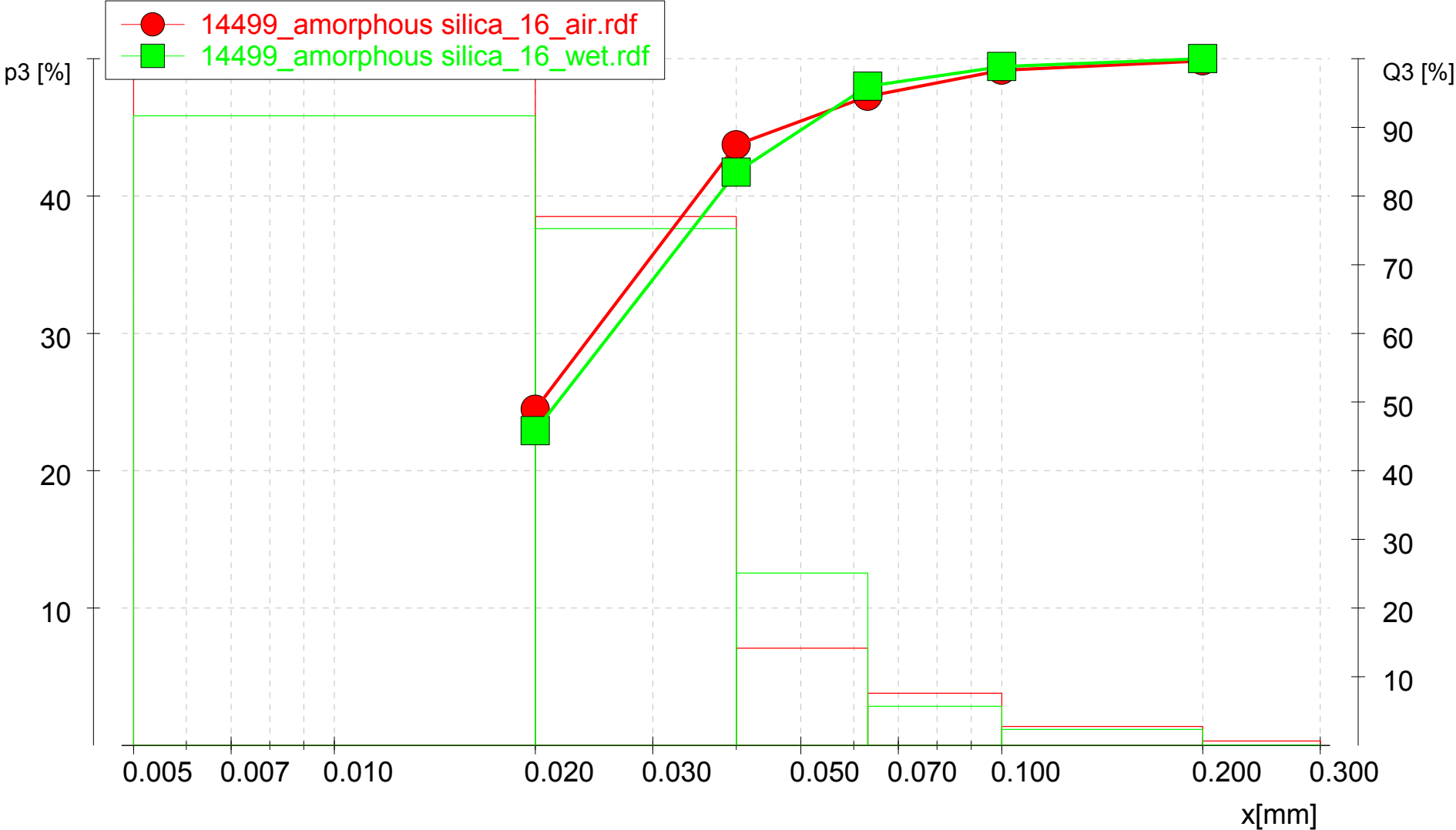


Characteristics:

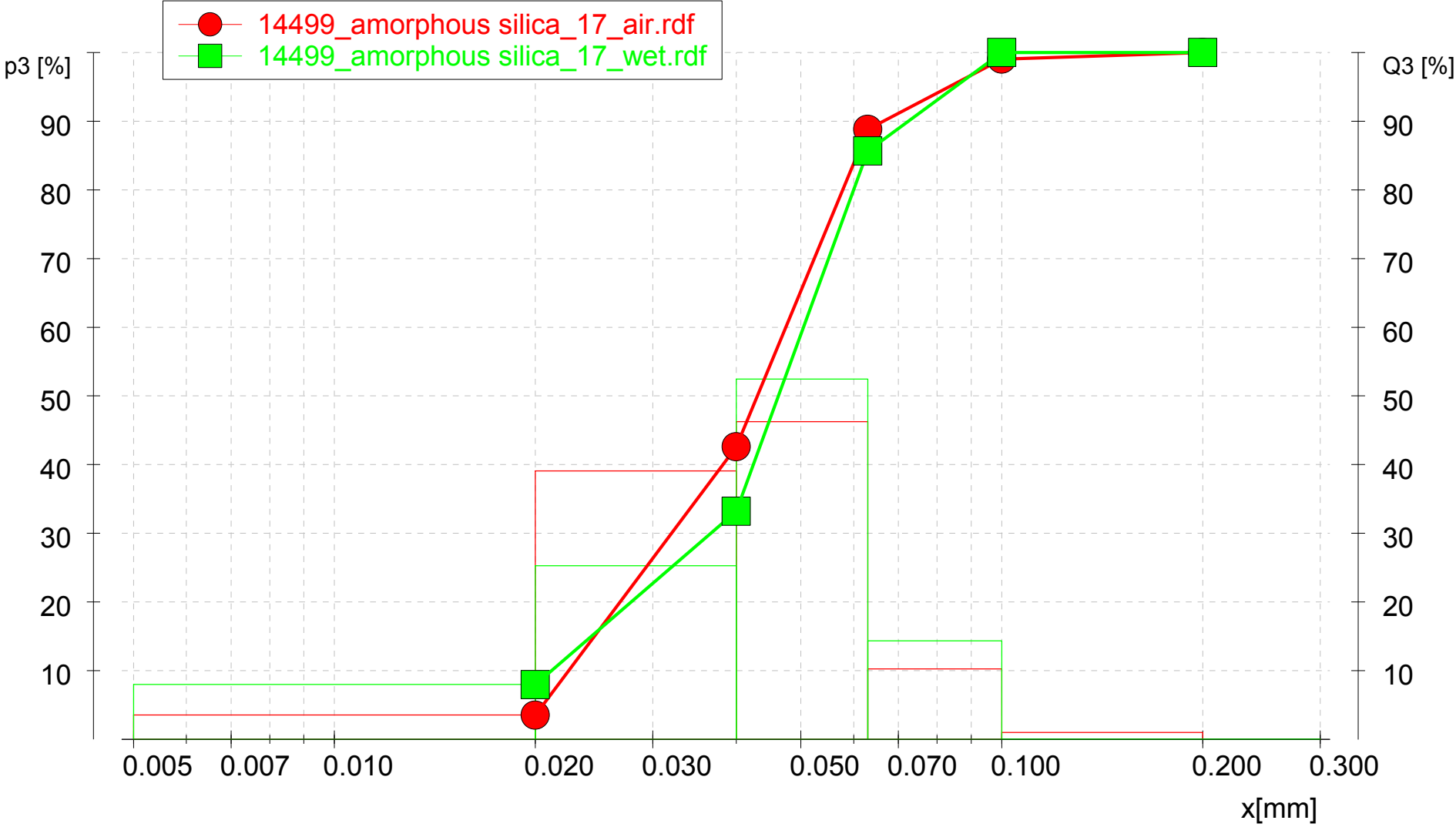
Q3 [%]	x [mm]
10.0	0.007
50.0	0.031
90.0	0.060

User: _____

Graph:
...14499_amorphous silica_16_air.rdf (14499 Amorphe Kieselsäure.afg)



Graph:
...14499_amorphous silica_17_air.rdf (14499 Amorphe Kieselsäure.afg)



Graph:
...14499_amorphous silica_18_air.rdf (14499 Amorphe Kieselsäure.afg)

