

Coal seam material

Protocol number: M080073

Industry: Chemistry

Feed Size: < 30 mm

Desired Fineness: d50 < 5µm

Quantity: 2 g

Recommendation: After pre crushing (e.g. with Jaw Crusher PULVERISETTE 1), we recommend using the Planetary Micro Mill PULVERISETTE 7 classic line for grinding your kind of sample. Also the Planetary Mono Mill PULVERISETTE 6 classic line is capable grinding the sample.

Result 1

Jaw Crusher PULVERISETTE 1 classic line Model I

gap position: 1,0

crushing jaws made of stainless steel



Material attributes: **pre grinding of material**

Feed quantity: ca. 128 g

Feed Size: < 30 mm

Grinding time: 15 sec

Final fineness: < 8 mm

Comments: Given sample of ~ 30mm thickness has been pre crushed with our Jaw Crusher PULVERISETTE 1.

All sample has been ground to ~ 8mm length within 15 seconds.

Jaws use to remain free of residue; even higher amounts can be ground without problems.

Result 2

Planetary Mono Mill PULVERISETTE 6 classic line

main disk speed: 650 rpm

80 ml grinding bowl made of stainless steel
+ 5x 20 mm Ø balls made of stainless steel



Feed quantity: 5 g

Feed Size: < 8 mm (see result 1)

Additive: + 20 ml water

Grinding time: 30 min

Final fineness: d50 < 4.8 µm

Comments: For a 80ml grinding bowl, we recommend filling minimum 10ml of sample. For this, we have taken 5g of coal seam material for grinding.
20ml of water has been added to prepare motor oil like viscosity for best grinding results. To avoid overpressure, we ground the sample in steps of 5 minutes, followed by a programmed pausing time of 10 minutes. After several cycles, the outside temperature of the bowl should be checked (remain below 80°C); grinding time or programmed pausing time might be readjusted afterwards.
This is also counting for the following grinding trial(s) too.

After 30 minutes of grinding time, a d50 < 4,8µm has been achieved (see meas. no. 3274 on separate page, meas. with Laser Particle Sizer ANALYSETTE 22 NanoTec).

Also a Planetary Micro Mill PULVERISETTE 7 classic line might be cable reaching the desired endfineness (see result 3).

Meas. No. 3274 SOP 74 Date 20.03.2008 10:52:14 Operator: FRITSCHLAN\benes

Material: coal

p-6, 30min, 80ml steel+5x20mm

Description: in Wasser + Na4P2O7 + 30s Ultraschall

Calculation Automatische Modellerkennung

Mode Wet

Serial No. 22.2000.00/90771

Beam absorption 10.3 %

Pump 70.00 %

Meas. range 0.10 µm - 132.76 µm

Cellposition 2

Channels 102

Ultrasonic An

Scans 100

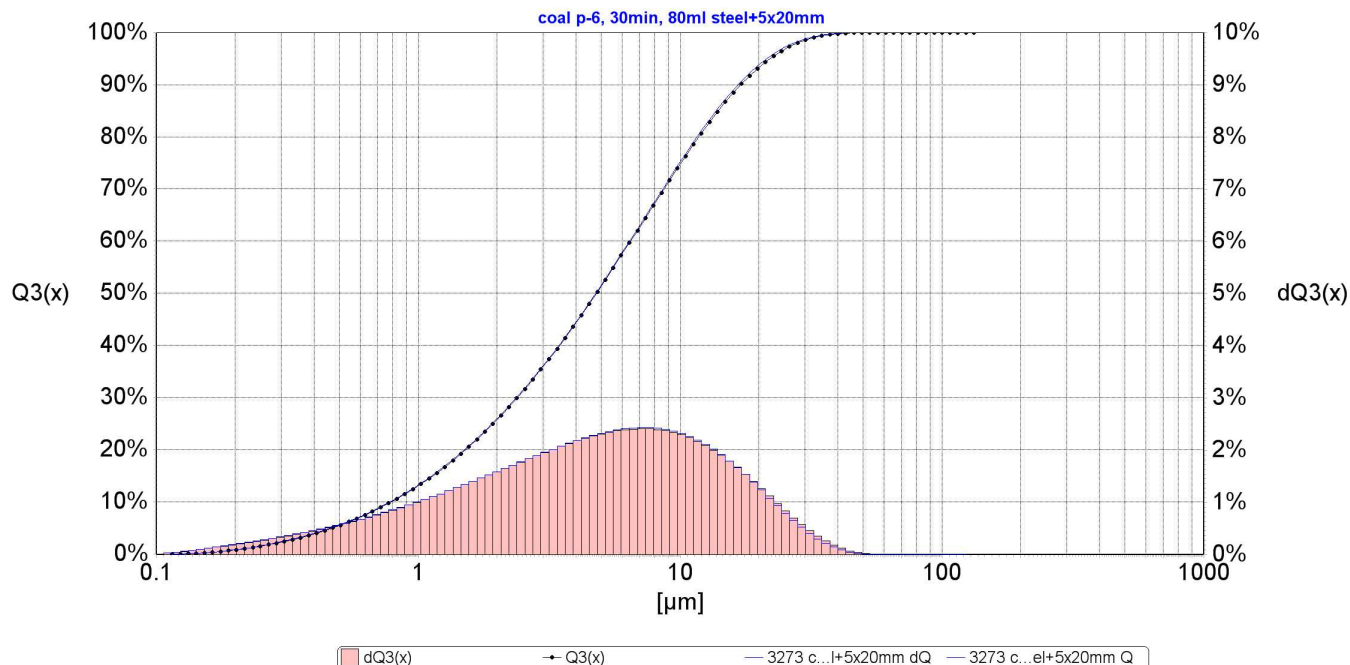
Prot.-No.: **080073**

5-99%

Obere Kornklasse [µm]	Q3(x) [%]
0.467	5.0
0.787	10.0
1.135	15.0
1.515	20.0
1.932	25.0
2.386	30.0
2.894	35.0
3.471	40.0
4.095	45.0
4.802	50.0
5.577	55.0
6.468	60.0
7.499	65.0
8.691	70.0
10.101	75.0
11.823	80.0
14.023	85.0
17.090	90.0
22.157	95.0
32.546	99.0

01-50µm

Obere Kornklasse [µm]	Q3(x) [%]
0.100	0.0
0.200	0.9
0.400	3.9
0.600	7.1
0.800	10.2
1.000	13.1
1.200	15.9
1.500	19.8
2.000	25.7
2.500	31.1
3.000	36.0
4.000	44.3
5.000	51.3
6.000	57.5
7.000	62.6
8.000	67.2
9.000	71.2
10.000	74.7
15.000	86.8
20.000	93.3
25.000	96.7
30.000	98.5
40.000	99.8
50.000	100.0



Result 3

Planetary Micro Mill PULVERISETTE 7 classic line

main disk speed: 800 rpm

45 ml grinding bowl made of stainless steel
+ 7x 15 mm Øgrinding balls made of stainless steel



Feed quantity: 4 g

Feed Size: < 8 mm (see result 1)

Additive: + 15 ml water

Grinding time: 25 min

Final fineness: d50 < 4 µm

Comments: For a 45ml grinding bowl, we recommend using minimum 3ml of sample. For this, 4g of coal seam material have been used.

15ml of water has been added to prepare motor oil like viscosity for best grinding results. After 25 minutes of grinding, fineness has been checked with our Laser Particle Sizer ANALYSETTE 22 NanoTec. A d50 < 4µm has been detected (see Meas. no. 3261 on separate page).

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Meas. No. 3261 SOP 74 Date 19.03.2008 14:43:40 Operator: FRITSCHLAN\benes

Material: coal

p-7, 25min, 45ml steel+7x15mm

Description: in Wasser + Na4P2O7 + 30s Ultraschall

Calculation Automatische Modellerkennung

Mode Wet

Serial No. 22.2000.00/90771

Beam absorption 11.1 %

Pump 70.00 %

Meas. range 0.10 µm - 132.76 µm

Cellposition 2

Channels 102

Ultrasonic An

Scans 100

Prot.-No.: **080073**

5-99%

Obere Kornklasse [µm]	Q3(x) [%]
0.411	5.0
0.675	10.0
0.962	15.0
1.277	20.0
1.624	25.0
2.011	30.0
2.428	35.0
2.899	40.0
3.439	45.0
4.025	50.0
4.701	55.0
5.450	60.0
6.315	65.0
7.336	70.0
8.539	75.0
10.007	80.0
11.874	85.0
14.455	90.0
18.664	95.0
27.340	99.0

01-50µm

Obere Kornklasse [µm]	Q3(x) [%]
0.100	0.0
0.200	1.1
0.400	4.8
0.600	8.6
0.800	12.2
1.000	15.6
1.200	18.8
1.500	23.3
2.000	29.9
2.500	35.8
3.000	41.0
4.000	49.8
5.000	57.1
6.000	63.3
7.000	68.4
8.000	72.9
9.000	76.7
10.000	80.0
15.000	90.9
20.000	96.0
25.000	98.4
30.000	99.4
40.000	100.0
50.000	100.0

