

CERTIFICATE OF ANALYSIS

ERM[®]-FD120

Beads of α -alumina

Certified Values		
Pressure-volume curve between 0.1 MPa and 400 MPa (see Fig. A1 and A2 in Annex 1 and Table in Annex 2 for values at each data point)		
Diameter-volume curve between 3.7 nm and 14708 nm (see Fig. A3 and A4 in Annex 1 and Table in Annex 2 for values at each data point)		
Quantity	Certified value ¹⁾	Uncertainty ²⁾
Pore volume at 100 MPa in mm ³ ·g ⁻¹	545.0	± 12.2
Pore volume at 195 MPa in mm ³ ·g ⁻¹	546.7	± 12.7
Pore volume at 200 MPa in mm ³ ·g ⁻¹	546.8	± 12.7
Pore volume at 395 MPa in mm ³ ·g ⁻¹	548.1	± 13.1
Mean pore width d ₅₀ in nm	228.0	± 5.9
Most frequent pore width d _{p,m} in nm	232.2	± 8.8
¹⁾ Unweighted mean value of the means of 25 accepted sets of data, each set being obtained in a different laboratory.		
²⁾ Estimated expanded uncertainty U corresponding to a level of confidence > 95 %, as defined in the Guide to the expression of uncertainty in measurement, ISO (1995).		

This certificate is valid for three years after purchase.

NOTE

European Reference Material ERM[®]-FD120 was originally certified as BAM-PM-120. It was produced and certified under the responsibility of BAM Bundesanstalt für Materialforschung und –prüfung according to the principles laid down in the technical guidelines of the European Reference Materials[®] co-operation agreement between BAM-LGC-IRMM. Information on these guidelines is available on the Internet (<http://www.erm-crm.org>).

Accepted as an ERM[®], Berlin, 2004-04-14

Sales date:

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(Head of Department)

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Dr. R. Matschat
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Additional Material Information	
Quantity	Informative value
Specific surface area ³⁾ in m ² g ⁻¹	0.2
³⁾ only as additional information, given without uncertainty, calculated according to $A_{sp} = 4 \cdot V / d$ using the certified properties V_{200MPa} and d_{50} (diameter at 50 % specific pore volume)	

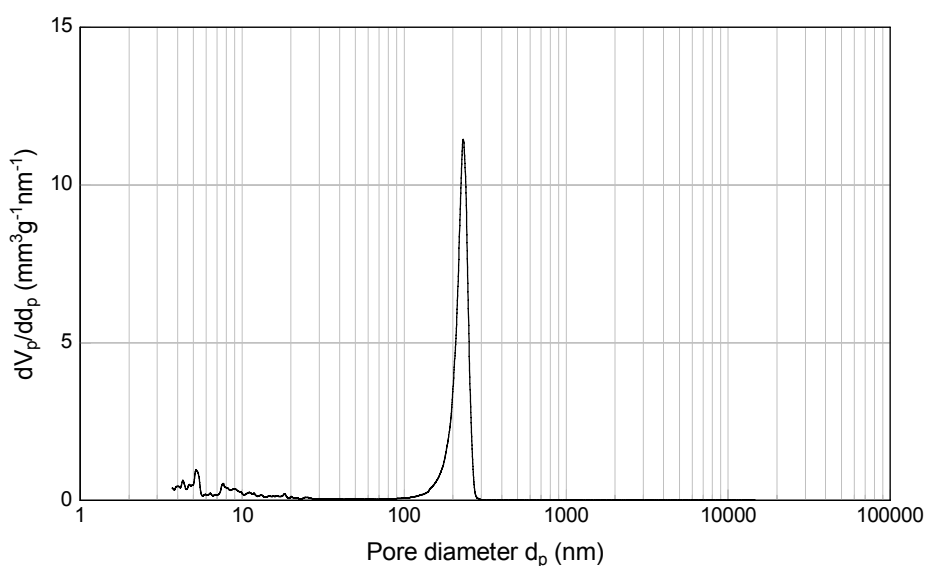


Figure 1: Pore size distribution of material ERM[®]-FD120 (non-certified)

DESCRIPTION OF THE SAMPLE

The reference material is intended for use in the calibration and checking of high pressure mercury porosimeters in the pressure range between 0.1 and 400 MPa.

The reference material consists of beads of α -alumina. The particles form stabile agglomerates. Mercury porosimetry measures the voids inside the agglomerates.

ANALYTICAL METHOD USED FOR CERTIFICATION

Mercury intrusion according to DIN 66133

PARTICIPANTS

Co-ordination

BAM Bundesanstalt für Materialforschung und -prüfung, DE

Participants:

- BAM Bundesanstalt für Materialforschung und -prüfung, Berlin, DE (5 equipments in 2 laboratories)
- Degussa AG, Hanau, DE
- Delft University of Technology, Delft, NL
- DMT - Gesellschaft für Lehre und Bildung mbH, Bochum, DE
- Dr. C. Otto Feuerfest GmbH, Bochum, DE
- Forschungsinstitut der Zementindustrie Düsseldorf, Düsseldorf, DE
- Forschungsinstitut für anorganische Werkstoffe - Glas/Keramik - GmbH, Höhr-Grenzhausen, DE
- Fraunhofer-Institut für Bauphysik, Valley, DE
- Grace GmbH, Worms, DE
- Hermsdorfer Institut für Technische Keramik e.V., Hermsdorf/Thür., DE
- Hüls Infracor GmbH, Marl, DE
- Materialprüfanstalt für das Bauwesen, Braunschweig, DE
- MBF Gesellschaft für Materialprüfung und Baustoffforschung mbH, Berlin, DE
- Merck KGaA, Darmstadt, DE
- Micromeritics GmbH, Mönchengladbach, DE
- Quantachrome GmbH, Odelzhausen, DE
- Rheinisch-Westfälische Technische Hochschule, Aachen, DE (2 laboratories)
- Technische Universität Dresden, Dresden, DE
- Technische Universität Hamburg-Harburg, Hamburg, DE
- ThermoQuest Italia S.p.A., CE Instruments, Rodano (Milan), IT
- Universität Gesamthochschule Siegen, Siegen, DE
- Universität Hannover, Hannover, DE
- Universität Karlsruhe, Karlsruhe, DE
- Universiteit van Amsterdam, Amsterdam, NL

INSTRUCTIONS FOR USE

Use mercury with a purity of 99.9999 % (outgassed) or better.

Prior to the analysis, a heating procedure for drying the sample is necessary. Heat the reference material for 3 hours at 105 °C.

The recommended minimum sample intake is 0.3 g or more depending on the equipment used.

Because of the volume between the particles of the sample (intergranular volume with a more or less random character), the mercury filling procedure of the penetrometer / dilatometer should be carried out with caution.

DATA EVALUATION

In order to obtain the certified values, the intergranular volume recorded during the filling procedure has to be subtracted from the intrusion curve at the beginning of the data evaluation. The transformation of the intrusion pressure data p_{Hg} into pore diameter values d_p according to the Washburn equation $d_p = -4 \gamma \cos\theta / p_{Hg}$ (assuming a cylindrical pore model) has to be carried out using the following values of the parameters: $\gamma = 0.48 \text{ N m}^{-1}$ (surface tension of mercury) and $\theta = 140^\circ$ (contact angle of mercury). The most frequent pore diameter is the maximum of the pore size distribution curve dV_p/dd_p (see Fig. 1).

STORAGE

The unopened bottle should be stored at normal ambient temperature in a dry place.

TECHNICAL REPORT

A detailed technical report (in German) describing the analysis procedures and the treatment of the analytical data used to certify ERM[®]-FD120 is available on request.

REFERENCES

- Guidelines for the production and certification of BAM reference materials
BCR/48/93 (1994) Guidelines for the production and certification of BCR reference materials
ASTM D 4284-92 Standard test method for determining pore volume distribution of catalysts by mercury intrusion porosimetry
BS 7591-1: 1992 Porosity and pore size distribution of materials.
Method of evaluation by mercury porosimetry
DIN 66133: 1993 Bestimmung der Porenvolumenverteilung und der spezifischen Oberfläche von Feststoffen durch Quecksilberintrusion
(Determination of the pore volume distribution and the specific surface area of solids by mercury intrusion)
ISO/WD 155 901-1 Pore size distribution and porosity of solid materials – Evaluation by mercury porosimetry and gas sorption, Part 1: Mercury porosimetry (WG 3) July 1998

Supply of Reference Materials by BAM Bundesanstalt für Materialforschung und –prüfung:

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Annex 1

Graphs of certified pressure-volume and diameter-volume curves for ERM[®]-FD120

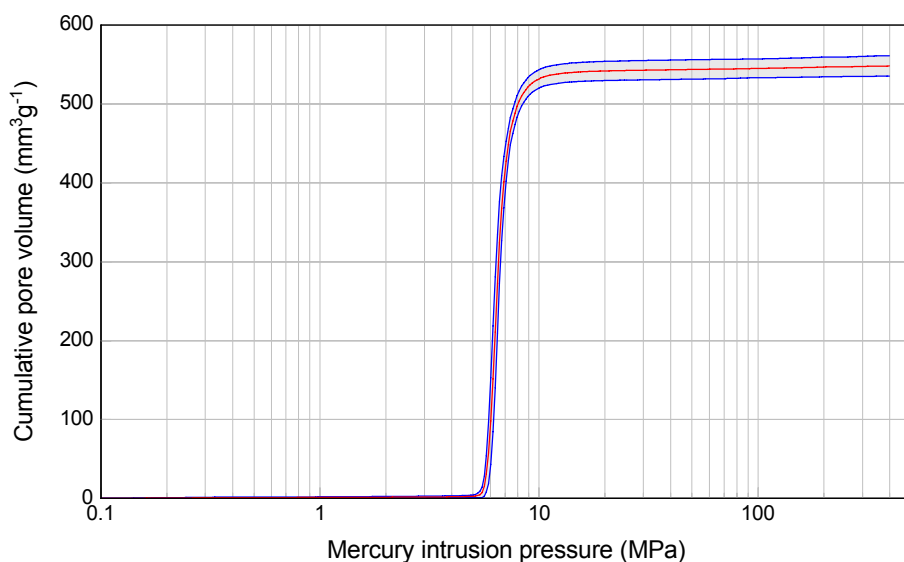


Figure A1: Certified pressure-volume curve of material ERM[®]-FD120 with uncertainty interval

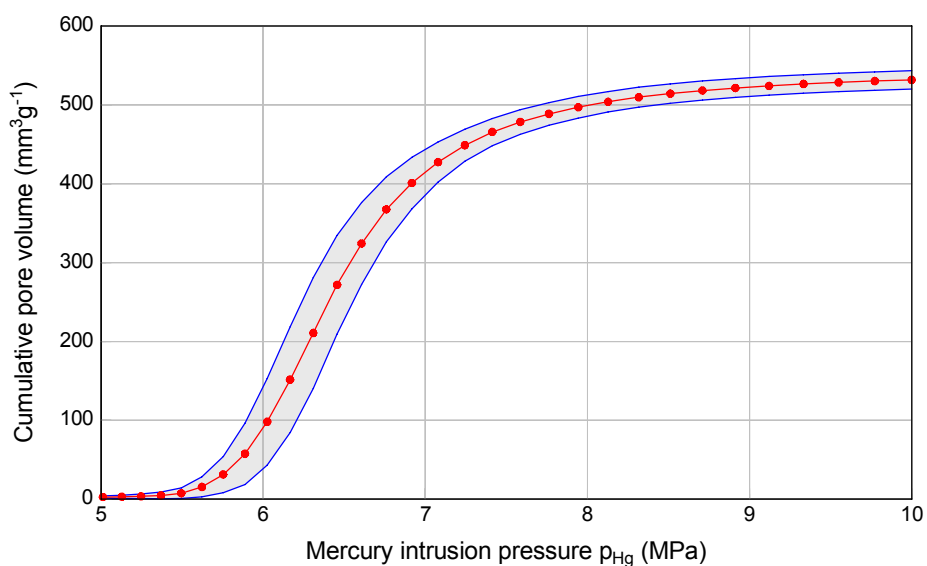


Figure A2: Certified pressure-volume curve of material ERM[®]-FD120 with uncertainty interval (detail between 5 and 10 MPa)

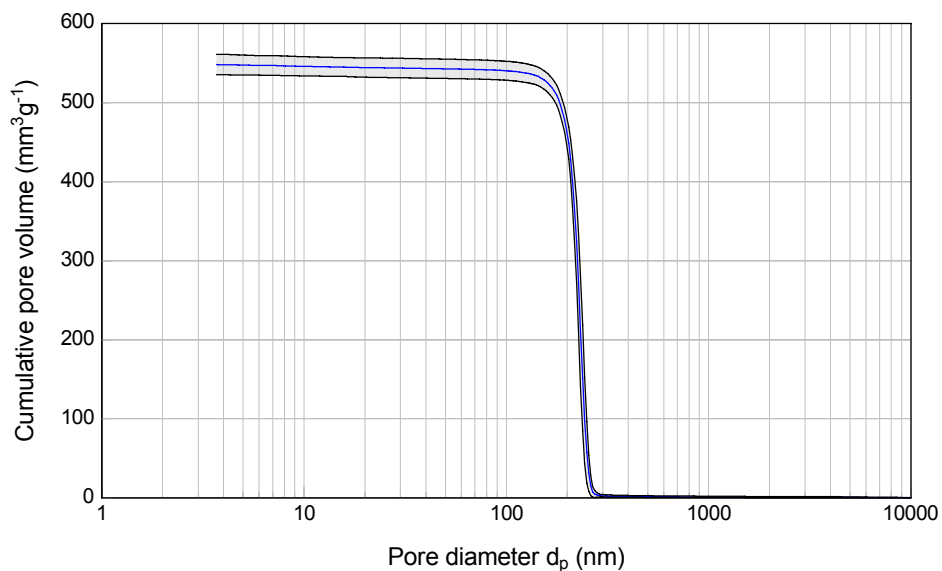


Figure A3: Certified diameter-volume curve of material ERM[®]-FD120 with uncertainty interval

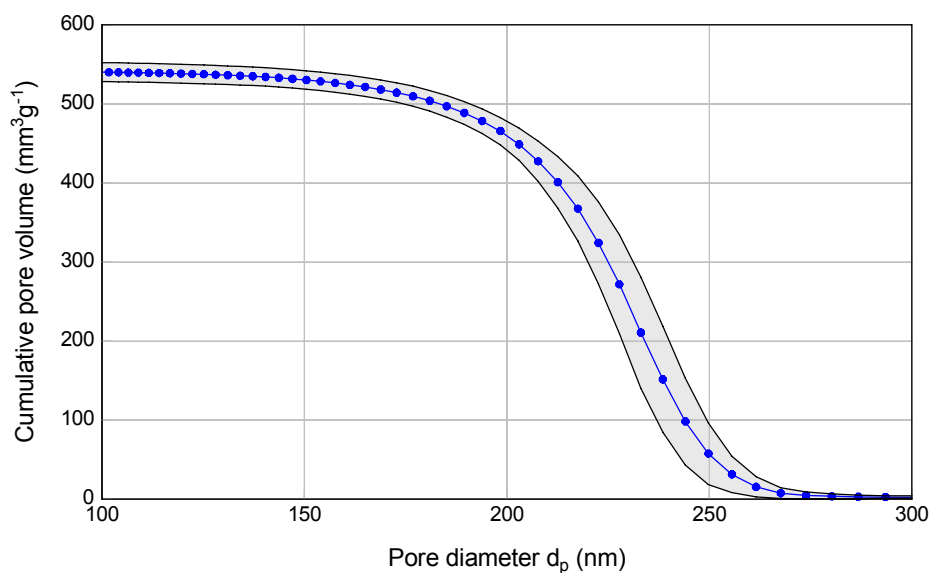


Figure A4: Certified diameter-volume curve of material ERM[®]-FD120 with uncertainty interval (detail between 100 and 300 nm)

Annex 2

Certified values of pressure-volume and diameter-volume curves for ERM[®]-FD120 at each data point

Data point No.	p_{Hg} (MPa)	d_p (nm)	V_p (mm ³ g ⁻¹)	U (mm ³ g ⁻¹)	V_p+U (mm ³ g ⁻¹)	V_p-U (mm ³ g ⁻¹)
1	0.100	14708.053	0.000	0.220	0.220	-0.220
2	0.102	14373.299	0.004	0.218	0.222	-0.214
3	0.105	14046.062	0.011	0.216	0.227	-0.204
4	0.107	13726.345	0.021	0.215	0.236	-0.194
5	0.110	13413.882	0.035	0.216	0.251	-0.182
6	0.112	13108.548	0.054	0.226	0.280	-0.171
7	0.115	12810.219	0.074	0.236	0.310	-0.161
8	0.117	12518.558	0.092	0.243	0.335	-0.151
9	0.120	12233.671	0.110	0.253	0.363	-0.143
10	0.123	11955.143	0.132	0.263	0.394	-0.131
11	0.126	11682.979	0.156	0.275	0.431	-0.119
12	0.129	11417.080	0.182	0.293	0.475	-0.110
13	0.132	11157.172	0.204	0.306	0.510	-0.103
14	0.135	10903.254	0.221	0.316	0.537	-0.095
15	0.138	10655.076	0.239	0.327	0.566	-0.088
16	0.141	10412.486	0.266	0.347	0.613	-0.081
17	0.145	10175.485	0.292	0.369	0.660	-0.077
18	0.148	9943.854	0.314	0.384	0.698	-0.070
19	0.151	9717.522	0.340	0.401	0.741	-0.062
20	0.155	9496.296	0.364	0.421	0.785	-0.056
21	0.158	9280.173	0.385	0.435	0.820	-0.050
22	0.162	9068.913	0.415	0.444	0.859	-0.029
23	0.166	8862.462	0.437	0.455	0.892	-0.018
24	0.170	8660.762	0.459	0.469	0.928	-0.010
25	0.174	8463.605	0.481	0.481	0.961	0.000
26	0.178	8270.943	0.503	0.490	0.994	0.013
27	0.182	8082.680	0.525	0.503	1.028	0.021
28	0.186	7898.680	0.549	0.516	1.066	0.033
29	0.191	7718.899	0.575	0.534	1.108	0.041
30	0.195	7543.210	0.587	0.544	1.131	0.043
31	0.200	7371.497	0.600	0.554	1.154	0.046
32	0.204	7203.686	0.610	0.570	1.180	0.039
33	0.209	7039.704	0.618	0.584	1.202	0.034
34	0.214	6879.480	0.627	0.597	1.225	0.030
35	0.219	6722.882	0.639	0.615	1.254	0.023
36	0.224	6569.849	0.648	0.630	1.278	0.018
37	0.229	6420.292	0.659	0.648	1.307	0.011
38	0.234	6274.151	0.671	0.666	1.337	0.005
39	0.240	6131.345	0.682	0.681	1.363	0.000
40	0.245	5991.768	0.692	0.695	1.387	-0.003
41	0.251	5855.373	0.704	0.712	1.416	-0.008
42	0.257	5722.087	0.715	0.728	1.443	-0.013
43	0.263	5591.842	0.727	0.747	1.474	-0.020
44	0.269	5464.570	0.738	0.766	1.504	-0.027
45	0.275	5340.169	0.753	0.793	1.545	-0.040
46	0.282	5218.620	0.765	0.814	1.580	-0.049
47	0.288	5099.827	0.778	0.830	1.609	-0.052
48	0.295	4983.737	0.791	0.845	1.635	-0.054
49	0.302	4870.297	0.805	0.865	1.670	-0.060
50	0.309	4759.426	0.821	0.885	1.707	-0.064

p_{Hg} - mercury intrusion pressure
 d_p - pore diameter
 V_p - specific pore volume

U - uncertainty
 V_p+U - upper limit of the uncertainty interval
 V_p-U - lower limit of the uncertainty interval

Certified values of pressure-volume and diameter-volume curves for ERM[®]-FD120 at each data point

Data point No.	p_{Hg} (MPa)	d_p (nm)	V_p (mm ³ g ⁻¹)	U (mm ³ g ⁻¹)	V_p+U (mm ³ g ⁻¹)	V_p-U (mm ³ g ⁻¹)
51	0.316	4651.091	0.836	0.905	1.741	-0.068
52	0.324	4545.218	0.851	0.925	1.777	-0.074
53	0.331	4441.763	0.866	0.942	1.808	-0.076
54	0.339	4340.656	0.880	0.961	1.841	-0.080
55	0.347	4241.847	0.895	0.985	1.880	-0.090
56	0.355	4145.297	0.908	1.004	1.912	-0.096
57	0.363	4050.935	0.919	1.019	1.938	-0.100
58	0.372	3958.726	0.927	1.020	1.947	-0.094
59	0.380	3868.616	0.934	1.023	1.957	-0.089
60	0.389	3780.553	0.940	1.026	1.965	-0.086
61	0.398	3694.498	0.944	1.028	1.972	-0.084
62	0.407	3610.401	0.951	1.028	1.980	-0.077
63	0.417	3528.219	0.959	1.028	1.987	-0.069
64	0.427	3447.900	0.966	1.028	1.994	-0.062
65	0.437	3369.419	0.974	1.028	2.002	-0.054
66	0.447	3292.720	0.983	1.030	2.012	-0.047
67	0.457	3217.773	0.991	1.032	2.023	-0.040
68	0.468	3144.527	0.998	1.032	2.030	-0.034
69	0.479	3072.948	1.008	1.034	2.042	-0.026
70	0.490	3002.998	1.014	1.035	2.049	-0.020
71	0.501	2934.644	1.022	1.036	2.057	-0.014
72	0.513	2867.844	1.029	1.037	2.066	-0.009
73	0.525	2802.564	1.036	1.039	2.075	-0.003
74	0.537	2738.767	1.044	1.041	2.085	0.003
75	0.550	2676.425	1.051	1.042	2.094	0.009
76	0.562	2615.504	1.058	1.045	2.103	0.014
77	0.575	2555.966	1.065	1.047	2.113	0.018
78	0.589	2497.784	1.073	1.050	2.123	0.023
79	0.603	2440.928	1.081	1.053	2.134	0.028
80	0.617	2385.367	1.088	1.055	2.142	0.033
81	0.631	2331.071	1.094	1.057	2.151	0.038
82	0.646	2278.009	1.100	1.059	2.159	0.042
83	0.661	2226.155	1.106	1.061	2.167	0.045
84	0.676	2175.480	1.112	1.063	2.175	0.049
85	0.692	2125.960	1.120	1.066	2.186	0.054
86	0.708	2077.567	1.126	1.068	2.194	0.058
87	0.724	2030.276	1.132	1.069	2.201	0.063
88	0.741	1984.062	1.138	1.071	2.209	0.067
89	0.759	1938.898	1.144	1.073	2.217	0.071
90	0.776	1894.765	1.151	1.074	2.225	0.078
91	0.794	1851.635	1.158	1.076	2.234	0.082
92	0.813	1809.485	1.165	1.078	2.243	0.087
93	0.832	1768.296	1.174	1.078	2.252	0.096
94	0.851	1728.046	1.184	1.078	2.262	0.107
95	0.871	1688.710	1.195	1.077	2.272	0.117
96	0.891	1650.271	1.205	1.077	2.282	0.128
97	0.912	1612.706	1.216	1.077	2.293	0.139
98	0.933	1575.997	1.228	1.077	2.305	0.151
99	0.955	1540.122	1.240	1.077	2.317	0.163
100	0.977	1505.065	1.252	1.078	2.330	0.174

p_{Hg} - mercury intrusion pressure
 d_p - pore diameter
 V_p - specific pore volume

U - uncertainty
 V_p+U - upper limit of the uncertainty interval
 V_p-U - lower limit of the uncertainty interval

Certified values of pressure-volume and diameter-volume curves for ERM[®]-FD120 at each data point

Data point No.	p_{Hg} (MPa)	d_p (nm)	V_p (mm ³ g ⁻¹)	U (mm ³ g ⁻¹)	V_p+U (mm ³ g ⁻¹)	V_p-U (mm ³ g ⁻¹)
101	1.000	1470.805	1.260	1.080	2.340	0.181
102	1.023	1437.330	1.267	1.082	2.349	0.185
103	1.047	1404.606	1.273	1.085	2.358	0.188
104	1.072	1372.635	1.279	1.087	2.366	0.192
105	1.096	1341.388	1.285	1.090	2.375	0.195
106	1.122	1310.855	1.291	1.093	2.384	0.198
107	1.148	1281.022	1.298	1.096	2.394	0.201
108	1.175	1251.856	1.304	1.100	2.403	0.204
109	1.202	1223.367	1.312	1.102	2.414	0.210
110	1.230	1195.514	1.319	1.106	2.425	0.213
111	1.259	1168.298	1.327	1.111	2.438	0.216
112	1.288	1141.708	1.335	1.116	2.451	0.219
113	1.318	1115.717	1.343	1.121	2.465	0.222
114	1.349	1090.325	1.352	1.127	2.479	0.225
115	1.380	1065.508	1.361	1.133	2.493	0.228
116	1.413	1041.249	1.372	1.138	2.510	0.234
117	1.445	1017.549	1.383	1.144	2.528	0.239
118	1.479	994.385	1.396	1.150	2.547	0.246
119	1.514	971.752	1.408	1.157	2.565	0.251
120	1.549	949.630	1.418	1.162	2.580	0.257
121	1.585	928.017	1.429	1.167	2.597	0.262
122	1.622	906.891	1.441	1.173	2.613	0.268
123	1.660	886.246	1.454	1.177	2.631	0.276
124	1.698	866.076	1.466	1.182	2.647	0.284
125	1.738	846.361	1.478	1.186	2.664	0.292
126	1.778	827.094	1.490	1.191	2.681	0.299
127	1.820	808.268	1.503	1.197	2.700	0.306
128	1.862	789.868	1.515	1.202	2.717	0.313
129	1.905	771.890	1.527	1.207	2.734	0.319
130	1.950	754.321	1.540	1.212	2.752	0.328
131	1.995	737.150	1.553	1.217	2.770	0.336
132	2.042	720.369	1.566	1.223	2.789	0.343
133	2.089	703.970	1.579	1.229	2.808	0.350
134	2.138	687.948	1.592	1.237	2.829	0.355
135	2.188	672.288	1.604	1.245	2.849	0.359
136	2.239	656.985	1.616	1.252	2.868	0.364
137	2.291	642.029	1.630	1.260	2.889	0.370
138	2.344	627.415	1.644	1.268	2.912	0.376
139	2.399	613.134	1.658	1.276	2.934	0.383
140	2.455	599.177	1.674	1.283	2.957	0.391
141	2.512	585.537	1.689	1.290	2.980	0.399
142	2.570	572.209	1.705	1.297	3.003	0.408
143	2.630	559.184	1.724	1.304	3.028	0.420
144	2.692	546.457	1.744	1.311	3.056	0.433
145	2.754	534.017	1.765	1.319	3.084	0.446
146	2.818	521.862	1.785	1.328	3.113	0.456
147	2.884	509.983	1.806	1.339	3.144	0.467
148	2.951	498.374	1.827	1.349	3.176	0.478
149	3.020	487.030	1.848	1.360	3.208	0.488
150	3.090	475.943	1.870	1.371	3.241	0.499

p_{Hg} - mercury intrusion pressure
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Certified values of pressure-volume and diameter-volume curves for ERM[®]-FD120 at each data point

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151	3.162	465.109	1.894	1.382	3.276	0.511
152	3.236	454.522	1.916	1.391	3.307	0.526
153	3.311	444.176	1.939	1.401	3.340	0.537
154	3.388	434.066	1.961	1.412	3.374	0.549
155	3.467	424.185	1.985	1.425	3.410	0.560
156	3.548	414.530	2.008	1.438	3.446	0.570
157	3.631	405.093	2.030	1.451	3.481	0.579
158	3.715	395.873	2.055	1.467	3.523	0.588
159	3.802	386.862	2.082	1.482	3.564	0.599
160	3.890	378.055	2.109	1.499	3.608	0.611
161	3.981	369.450	2.140	1.516	3.656	0.624
162	4.074	361.040	2.173	1.534	3.707	0.639
163	4.169	352.822	2.215	1.550	3.765	0.664
164	4.266	344.790	2.259	1.568	3.826	0.691
165	4.365	336.942	2.304	1.587	3.891	0.718
166	4.467	329.272	2.361	1.602	3.963	0.759
167	4.571	321.777	2.420	1.619	4.039	0.801
168	4.677	314.453	2.479	1.638	4.117	0.841
169	4.786	307.295	2.541	1.658	4.198	0.883
170	4.898	300.300	2.630	1.691	4.322	0.939
171	5.012	293.464	2.826	1.847	4.673	0.979
172	5.129	286.784	3.149	2.268	5.417	0.882
173	5.248	280.256	3.738	3.110	6.848	0.628
174	5.370	273.877	4.795	4.434	9.228	0.361
175	5.495	267.643	7.614	7.102	14.716	0.512
176	5.623	261.550	15.682	12.901	28.583	2.781
177	5.754	255.597	31.477	23.183	54.660	8.295
178	5.888	249.778	57.722	39.151	96.873	18.571
179	6.026	244.093	98.272	55.119	153.392	43.153
180	6.166	238.537	151.561	67.289	218.850	84.272
181	6.310	233.107	210.735	70.461	281.196	140.274
182	6.457	227.801	271.768	62.623	334.391	209.145
183	6.607	222.616	324.152	52.140	376.292	272.011
184	6.761	217.548	367.548	41.453	409.000	326.095
185	6.918	212.596	400.978	32.760	433.738	368.218
186	7.079	207.757	427.395	25.618	453.012	401.777
187	7.244	203.028	448.808	20.526	469.334	428.282
188	7.413	198.406	465.671	17.497	483.168	448.174
189	7.586	193.890	478.269	15.853	494.122	462.416
190	7.762	189.476	488.551	14.630	503.181	473.921
191	7.943	185.163	496.962	13.899	510.861	483.063
192	8.128	180.948	503.873	13.272	517.145	490.601
193	8.318	176.830	509.601	12.861	522.462	496.740
194	8.511	172.805	514.174	12.595	526.769	501.578
195	8.710	168.871	518.048	12.377	530.424	505.671
196	8.913	165.027	521.317	12.221	533.538	509.096
197	9.120	161.271	524.065	12.117	536.182	511.948
198	9.333	157.600	526.432	11.959	538.391	514.472
199	9.550	154.012	528.445	11.870	540.314	516.575
200	9.772	150.507	530.184	11.867	542.051	518.317

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Certified values of pressure-volume and diameter-volume curves for ERM[®]-FD120 at each data point

Data point No.	p_{Hg} (MPa)	d_p (nm)	V_p (mm ³ g ⁻¹)	U (mm ³ g ⁻¹)	V_p+U (mm ³ g ⁻¹)	V_p-U (mm ³ g ⁻¹)
201	10.000	147.081	531.637	11.856	543.493	519.780
202	10.233	143.733	532.996	11.809	544.805	521.187
203	10.471	140.461	533.976	11.873	545.848	522.103
204	10.715	137.263	534.826	11.954	546.780	522.872
205	10.965	134.139	535.567	11.983	547.550	523.584
206	11.220	131.085	536.200	12.043	548.243	524.157
207	11.482	128.102	536.762	12.063	548.825	524.698
208	11.749	125.186	537.304	12.054	549.357	525.250
209	12.023	122.337	537.759	12.071	549.830	525.688
210	12.303	119.551	538.165	12.084	550.248	526.081
211	12.589	116.830	538.523	12.100	550.623	526.423
212	12.882	114.171	538.847	12.104	550.951	526.743
213	13.183	111.572	539.120	12.125	551.245	526.995
214	13.490	109.033	539.387	12.161	551.547	527.226
215	13.804	106.551	539.613	12.171	551.783	527.442
216	14.125	104.125	539.817	12.192	552.009	527.625
217	14.454	101.755	540.024	12.202	552.226	527.822
218	14.791	99.439	540.228	12.201	552.429	528.027
219	15.136	97.175	540.400	12.212	552.611	528.188
220	15.488	94.963	540.558	12.224	552.782	528.334
221	15.849	92.802	540.706	12.226	552.932	528.480
222	16.218	90.689	540.843	12.226	553.069	528.616
223	16.596	88.625	540.966	12.233	553.199	528.732
224	16.982	86.608	541.084	12.245	553.329	528.838
225	17.378	84.636	541.183	12.247	553.429	528.936
226	17.783	82.709	541.295	12.262	553.556	529.033
227	18.197	80.827	541.384	12.277	553.661	529.107
228	18.621	78.987	541.469	12.290	553.758	529.179
229	19.055	77.189	541.560	12.300	553.860	529.259
230	19.498	75.432	541.655	12.310	553.965	529.345
231	19.953	73.715	541.745	12.317	554.062	529.427
232	20.417	72.037	541.819	12.324	554.143	529.494
233	20.893	70.397	541.886	12.331	554.217	529.555
234	21.380	68.795	541.946	12.334	554.280	529.612
235	21.878	67.229	542.009	12.338	554.347	529.671
236	22.387	65.698	542.063	12.345	554.408	529.718
237	22.909	64.203	542.118	12.356	554.473	529.762
238	23.442	62.742	542.187	12.363	554.550	529.824
239	23.988	61.313	542.248	12.368	554.615	529.880
240	24.547	59.918	542.301	12.378	554.679	529.923
241	25.119	58.554	542.367	12.387	554.754	529.979
242	25.704	57.221	542.412	12.394	554.806	530.017
243	26.303	55.918	542.462	12.398	554.860	530.064
244	26.915	54.646	542.516	12.405	554.921	530.111
245	27.542	53.402	542.571	12.406	554.977	530.164
246	28.184	52.186	542.619	12.414	555.033	530.204
247	28.840	50.998	542.666	12.418	555.084	530.247
248	29.512	49.837	542.718	12.421	555.139	530.297
249	30.200	48.703	542.766	12.416	555.182	530.349
250	30.903	47.594	542.809	12.416	555.225	530.393

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Certified values of pressure-volume and diameter-volume curves for ERM[®]-FD120 at each data point

Data point No.	p_{Hg} (MPa)	d_p (nm)	V_p (mm ³ g ⁻¹)	U (mm ³ g ⁻¹)	V_p+U (mm ³ g ⁻¹)	V_p-U (mm ³ g ⁻¹)
251	31.623	46.511	542.859	12.416	555.275	530.443
252	32.359	45.452	542.917	12.419	555.336	530.498
253	33.113	44.418	542.956	12.423	555.378	530.533
254	33.884	43.407	542.998	12.418	555.415	530.580
255	34.674	42.418	543.034	12.424	555.457	530.610
256	35.481	41.453	543.070	12.428	555.498	530.641
257	36.308	40.509	543.111	12.428	555.539	530.683
258	37.154	39.587	543.150	12.428	555.578	530.722
259	38.019	38.686	543.191	12.432	555.623	530.759
260	38.904	37.806	543.231	12.437	555.668	530.794
261	39.811	36.945	543.273	12.433	555.706	530.840
262	40.738	36.104	543.312	12.434	555.746	530.877
263	41.687	35.282	543.351	12.435	555.786	530.916
264	42.658	34.479	543.392	12.436	555.828	530.956
265	43.652	33.694	543.434	12.444	555.877	530.990
266	44.668	32.927	543.481	12.446	555.927	531.034
267	45.709	32.178	543.515	12.459	555.974	531.056
268	46.774	31.445	543.554	12.459	556.013	531.094
269	47.863	30.729	543.587	12.459	556.046	531.128
270	48.978	30.030	543.619	12.457	556.075	531.162
271	50.119	29.346	543.652	12.455	556.107	531.197
272	51.286	28.678	543.686	12.452	556.138	531.234
273	52.481	28.026	543.717	12.450	556.167	531.266
274	53.703	27.388	543.748	12.449	556.197	531.299
275	54.954	26.764	543.785	12.450	556.235	531.334
276	56.234	26.155	543.829	12.445	556.274	531.383
277	57.544	25.560	543.881	12.435	556.316	531.445
278	58.884	24.978	543.941	12.424	556.365	531.516
279	60.256	24.409	543.991	12.423	556.414	531.567
280	61.660	23.854	544.045	12.419	556.464	531.626
281	63.096	23.311	544.076	12.421	556.496	531.655
282	64.565	22.780	544.095	12.424	556.519	531.671
283	66.069	22.262	544.113	12.422	556.535	531.691
284	67.608	21.755	544.160	12.406	556.566	531.754
285	69.183	21.260	544.187	12.408	556.594	531.779
286	70.795	20.776	544.236	12.401	556.637	531.834
287	72.444	20.303	544.272	12.391	556.663	531.881
288	74.131	19.841	544.341	12.369	556.710	531.972
289	75.858	19.389	544.368	12.363	556.731	532.004
290	77.625	18.948	544.403	12.356	556.759	532.047
291	79.433	18.516	544.461	12.346	556.806	532.115
292	81.283	18.095	544.560	12.284	556.843	532.276
293	83.176	17.683	544.620	12.264	556.884	532.355
294	85.114	17.280	544.678	12.245	556.923	532.433
295	87.096	16.887	544.725	12.235	556.959	532.490
296	89.125	16.503	544.778	12.226	557.004	532.551
297	91.201	16.127	544.835	12.210	557.045	532.625
298	93.325	15.760	544.878	12.207	557.085	532.671
299	95.499	15.401	544.932	12.209	557.141	532.722
300	97.724	15.051	544.971	12.206	557.176	532.765

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Data point No.	p_{Hg} (MPa)	d_p (nm)	V_p (mm ³ g ⁻¹)	U (mm ³ g ⁻¹)	V_p+U (mm ³ g ⁻¹)	V_p-U (mm ³ g ⁻¹)
301	100.000	14.708	545.021	12.200	557.220	532.821
302	102.329	14.373	545.067	12.192	557.258	532.875
303	104.713	14.046	545.104	12.187	557.291	532.917
304	107.152	13.726	545.142	12.185	557.327	532.956
305	109.648	13.414	545.176	12.192	557.368	532.983
306	112.202	13.109	545.231	12.204	557.434	533.027
307	114.815	12.810	545.278	12.209	557.487	533.068
308	117.490	12.519	545.324	12.217	557.541	533.107
309	120.226	12.234	545.360	12.226	557.586	533.133
310	123.027	11.955	545.407	12.237	557.644	533.169
311	125.893	11.683	545.478	12.262	557.740	533.216
312	128.825	11.417	545.523	12.284	557.806	533.239
313	131.826	11.157	545.589	12.300	557.889	533.289
314	134.896	10.903	545.654	12.320	557.974	533.333
315	138.038	10.655	545.709	12.341	558.049	533.368
316	141.254	10.412	545.762	12.359	558.121	533.403
317	144.544	10.175	545.799	12.377	558.175	533.422
318	147.911	9.944	545.847	12.398	558.245	533.449
319	151.356	9.718	545.910	12.417	558.327	533.493
320	154.882	9.496	545.972	12.439	558.410	533.533
321	158.489	9.280	546.037	12.461	558.497	533.576
322	162.181	9.069	546.112	12.483	558.595	533.628
323	165.959	8.862	546.188	12.504	558.692	533.683
324	169.824	8.661	546.261	12.526	558.786	533.735
325	173.780	8.464	546.328	12.550	558.877	533.778
326	177.828	8.271	546.390	12.579	558.968	533.811
327	181.970	8.083	546.465	12.612	559.077	533.853
328	186.209	7.899	546.542	12.651	559.193	533.890
329	190.546	7.719	546.614	12.686	559.299	533.928
330	194.984	7.543	546.715	12.712	559.427	534.002
331	199.526	7.371	546.793	12.731	559.523	534.062
332	204.174	7.204	546.829	12.726	559.555	534.102
333	208.930	7.040	546.864	12.723	559.587	534.141
334	213.796	6.879	546.889	12.718	559.607	534.171
335	218.776	6.723	546.922	12.716	559.638	534.206
336	223.872	6.570	546.944	12.711	559.655	534.233
337	229.087	6.420	546.967	12.708	559.675	534.259
338	234.423	6.274	547.005	12.712	559.717	534.292
339	239.883	6.131	547.028	12.709	559.737	534.319
340	245.471	5.992	547.052	12.707	559.759	534.345
341	251.189	5.855	547.080	12.707	559.787	534.373
342	257.040	5.722	547.103	12.702	559.805	534.401
343	263.027	5.592	547.125	12.700	559.825	534.425
344	269.153	5.465	547.158	12.704	559.861	534.454
345	275.423	5.340	547.268	12.750	560.017	534.518
346	281.838	5.219	547.368	12.802	560.169	534.566
347	288.403	5.100	547.494	12.897	560.390	534.597
348	295.121	4.984	547.546	12.927	560.473	534.619
349	301.995	4.870	547.609	12.971	560.580	534.637
350	309.030	4.759	547.655	12.994	560.649	534.661

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351	316.228	4.651	547.715	13.029	560.744	534.685
352	323.594	4.545	547.755	13.050	560.805	534.705
353	331.131	4.442	547.791	13.063	560.854	534.728
354	338.844	4.341	547.845	13.087	560.932	534.758
355	346.737	4.242	547.914	13.096	561.010	534.818
356	354.813	4.145	547.948	13.099	561.046	534.849
357	363.078	4.051	547.992	13.099	561.091	534.893
358	371.535	3.959	548.032	13.081	561.113	534.951
359	380.189	3.869	548.073	13.090	561.163	534.983
360	389.045	3.781	548.100	13.092	561.192	535.007
361	398.107	3.694	548.135	13.096	561.231	535.039

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