ID N° 22737 - Contact Angle Measurement - M4$^{s+'}$

Executed on Mai 24, 2023, by M. Breitwieser

Cu-Blech (A20)

*Screening-Sequenz. Ende mit nochmals statischer Messung *** 21:23:12 #Charaterisierung Sequenz A . [Repetition N°20]*

- **Kupfer / Isooktan 99.5+%** : (20,0°C, 7,45', 20mm, 0,0496mm/s - static; *θ-superwetting*)

  $\Theta_{C,s}$ = **0**$_{\pm 0°}$ CAH 0°, $^{a}\bar{E}_s$ = **19,346**$_{\pm 0,019}$ **mN/m** $^{a}H_s$ -0,010mN/m, $\bar{B}_{\%,s}$= **103,2%**

Report

2. ===== Collection of Measurements in this Series Kupfer/Isooktan 99.5+% ======

Tabelle 1.2: Conditions and Results

N°	IDN° ...erData39	ϑ [°C]	Δτ [min]	$\bar{v}_z$ [mm/s]	$\bar{Ca}$ [1]	$t_{eq.}$ [s]	Θ_M [°]	CAH [°]	^{a}H [mN/m]	$^{a}\bar{E}$ [mN/m]	±σ [mN/m]	$\bar{S}$ [mJ/m²]	$\bar{B}_{\%,Isookta...}$ [%]
1.	22717_0	20	-76,1	»0,0469«	-	*3,23*	*<0>*	*<0>*	-0,028	19,337	±0,014	0,587	103,1%
2.	22718_1	20,004	-52,4	10,0	2,65E-4	*5,2*	*<22>*	*<-44>*	12,01	19,43	±0,21	0,680	103,6%
3.	22719_2	20,004	-51,4	5,00	1,32E-4	*5,4*	*<27>*	*<-54>*	17,075	19,70	±0,10	0,950	105,1%
4.	22720_3	20,009	-50,4	2,50	6,61E-5	*6,1*	*<18>*	*<-35>*	8,577	19,573	±0,057	0,823	104,4%
5.	22721_4	20,015	-49,2	1,25	3,31E-5	*5,3*	*<11>*	*<-22>*	4,272	19,493	±0,026	0,743	104,0%
6.	22722_5	20,023	-47,7	0,625	1,65E-5	*6,5*	*<6>*	*<-11>*	2,046	19,427	±0,021	0,677	103,6%
7.	22723_6	20,008	-45,5	0,313	8,27E-6	*6,1*	*<0>*	*<0>*	1,046	19,401	±0,016	0,651	103,5%
8.	22724_7	20,009	-42,2	0,156	4,13E-6	*6,4*	*<0>*	*<0>*	0,553	19,381	±0,015	0,631	103,4%
9.	22725_8	20,003	-36,7	<0,957>	2,53E-5	*5,0*	*<7>*	*<-14>*	3,289	19,863	±0,027	1,11	105,9%
10.	22726_9	20,007	-35,1	<0,710>	1,87E-5	*0,1*	*<8>*	*<-16>*	3,301	19,659	±0,031	0,909	104,8%
11.	22727_{10}	20,006	-33,3	<0,318>	8,43E-6	*0,1*	*<1>*	*<-2>*	1,618	19,668	±0,063	0,918	104,9%
12.	22728_{11}	20,003	-30,2	<0,357>*	9,42E-6	*0,2*	*<0>*	*<0>*	2,021	19,909	±0,023	1,16	106,2%
13.	22729_{12}	20	-27,1	<0,422>*	1,14E-5	*0,2*	*<3>*	*<-6>*	2,154	19,692	±0,028	0,942	105,0%
14.	22730_{13}	20,003	-24,5	<0,392>*	1,04E-5	*0,1*	*<2>*	*<-4>*	1,911	19,646	±0,030	0,896	104,8%
15.	22731_{14}	20,004	-21,9	<1,69>*	4,46E-5	*0,0*	*<18>*	*<-36>*	5,198	17,758	±0,088	-0,992	94,7%
16.	22732_{15}	20,004	-20,5	<1,93>*	5,10E-5	*0,0*	*<20>*	*<-40>*	9,843	19,36	±0,12	0,610	103,2%
17.	22733_{16}	20,002	-19,3	<2,55>*	6,74E-5	*0,0*	*<23>*	*<-47>*	7,822	16,690	±0,094	-2,06	89,0%
18.	22734_{17}	20,002	-18,1	<4,43>*	1,17E-4	*0,1*	*<12>*	*<-23>*	6,456	20,44	±0,10	1,69	109,0%
19.	22735_{18}	20,003	-17,1	<6,70>	1,77E-4	*5,0*	*<32>*	*<-63>*	26,4	21,5	±4,2	2,75	114,6%
20.	22736_{19}	20	-16,2	»0,0490«	-	*3,04*	*<0>*	*<0>*	-0,296	19,791	±0,014	1,04	105,6%
21.	**22737_{20}**	**20**	****0****	**»0,0491«**	**-**	***3,09***	***<0>***	***<0>***	**-0,010**	**19,346**	**±0,019**	**0,596**	**103,2%**

*This table provides an overview of the measurements in this series. Each seperate M4 measurement is referenced by IDN°. The highlighted row indicates the data set of the measurement documented below. The column labeled **ϑ** shows the measurement temperature, **Δτ** the time interval to previous/following measurements, $\bar{v}_z$ the movement speed - where additional symbols clarify: »**n**« indicates static measurements, <**n**> represents distance-accelerated movement of the triple line, '*' stands for continous acceleration and a number without any symbol indicates a constant movement speed, $\bar{Ca}$ is the capillary number, $t_{eq.}$ is the equilibration time before turnaround - but for static measurements the number denotes the average equilibration time as a levelling time between the measurement points, Θ_M is the mean of the advancing and receding contact angle ('<**n**>' signs "errors"), contact angle hysteresis is given in degrees (**CAH**) and in energy units (^{a}H), $^{a}\bar{E}$ is the mean adhesion energy, and **±σ** is the corresponding standard deviation, $\bar{S}$ is the mean of the spreading parameter, and $\bar{B}_{\%,Isookta...}$ indicates the relative wettability ($B_{\%,lq|sl|md...}$= 100%·$^{a}E/\gamma$).*

Tabelle 2.2: Summary of sample weights in the individual measurements (initial weight W_0 = 6,6497 g)

N°	W_A [g]	ΔW_{A-0} [mg]	W_E [g]	ΔW_{E-0} [mg]	V_{E-0} [µL]	ΔV_{E-A} [µL]
1.	6,6497	0,0	6,6503	0,6	0,9	0,87
2.	6,6502	0,5	6,6565	6,8	9,8	9,0
3.	6,6563	6,6	6,6542	4,5	6,5	-3,3
4.	6,6541	4,4	6,6528	3,1	4,5	-2,0
5.	6,6526	2,9	6,6517	2,0	2,9	-1,6
6.	6,6516	1,9	6,6510	1,3	1,9	-1,0
7.	6,6509	1,2	6,6506	0,9	1,3	-0,58
8.	6,6507	1,0	6,6505	0,8	1,2	-0,14
9.	6,6505	0,8	6,6515	1,8	2,6	1,4
10.	6,6514	1,7	6,6515	1,8	2,6	~0
11.	6,6513	1,6	6,6509	1,2	1,7	-0,87
12.	6,6509	1,2	6,6508	1,1	1,6	-0,14
13.	6,6507	1,0	6,6513	1,6	2,3	0,72
14.	6,6511	1,4	6,6512	1,5	2,2	-0,14
15.	6,6512	1,5	6,6530	3,3	4,8	2,6
16.	6,6527	3,0	6,6532	3,5	5,1	0,29
17.	6,6530	3,3	6,6539	4,2	6,1	1,0
18.	6,6537	4,0	6,6556	5,9	8,5	2,5
19.	6,6553	5,6	6,6564	6,7	9,7	1,2
20.	6,6563	6,6	6,6506	0,9	1,3	-8,4
21.	**6,6506**	**0,9**	**6,6516**	**1,9**	**2,7**	**1,4**

Symbols: W_A: Total weight before each measurement, ΔW_{0-A}: Change in weight from the initial weight W_0 at the start of the series, W_E: Total weight after the measurement (possibly including the weight of any adherent fluid), ΔW_{E-0}: Change in weight from the initial weight W_0 at the start of the series, V_{E-0}: Weight change interpreted as fluid volume, ΔV_{E-A}: Fluid volume change calculated as the difference between W_E and W_A. (Automated weighings without contact to the surface of the fluid).

3. ===== Measurement IDN°22737: *Static* Contact Angle ======

Kupfer, cubic plate 25,5×0,6835mm

20mm Kupfer \ **Isooktan 99.5+%, γ =18,75mN/m** ϑ=20,0°C

Contact Angle, CA Θ_C	**<0 ±0°>**	- superwetting -

Contact Angle Hysteresis, CAH_s	<0°>		
	Advancing $\Theta_{A,s}$	**Receding $\Theta_{R,s}$**	Transition - mm
Contact Angles, Θ_s	**0°**	**0°**	$0°_{adv.} \Rightarrow 0°_{rec.}$
Rated measurements n mm-range	100 0,200 - 20,001mm	113 20,001 - 0,000mm	2 20,001 - 19,951mm
avg. Triple line speed $\bar{v}_z$ [mm/s]	*0,0496* ±0,0615	*-0,0485* ±0,441	
avg. Step distance $\bar{\Delta}h_0$ [mm]	0,200 ±1,00E-04	-0,177 ±0,0538	
avg. equilibration Time $\bar{t}_{eq.}$ [s]	**3,14 ±0,585**	**3,03 ±0,664**	

Static Contact Angle Measurement: For superwetting - consider adhesion parameters for analysis. The avg. equilibration Time $t_{eq.}$ is the mean of the time between positioning and aquiring the wetting force. The criterion of force equilibrium is defined in the utilized IMPro.

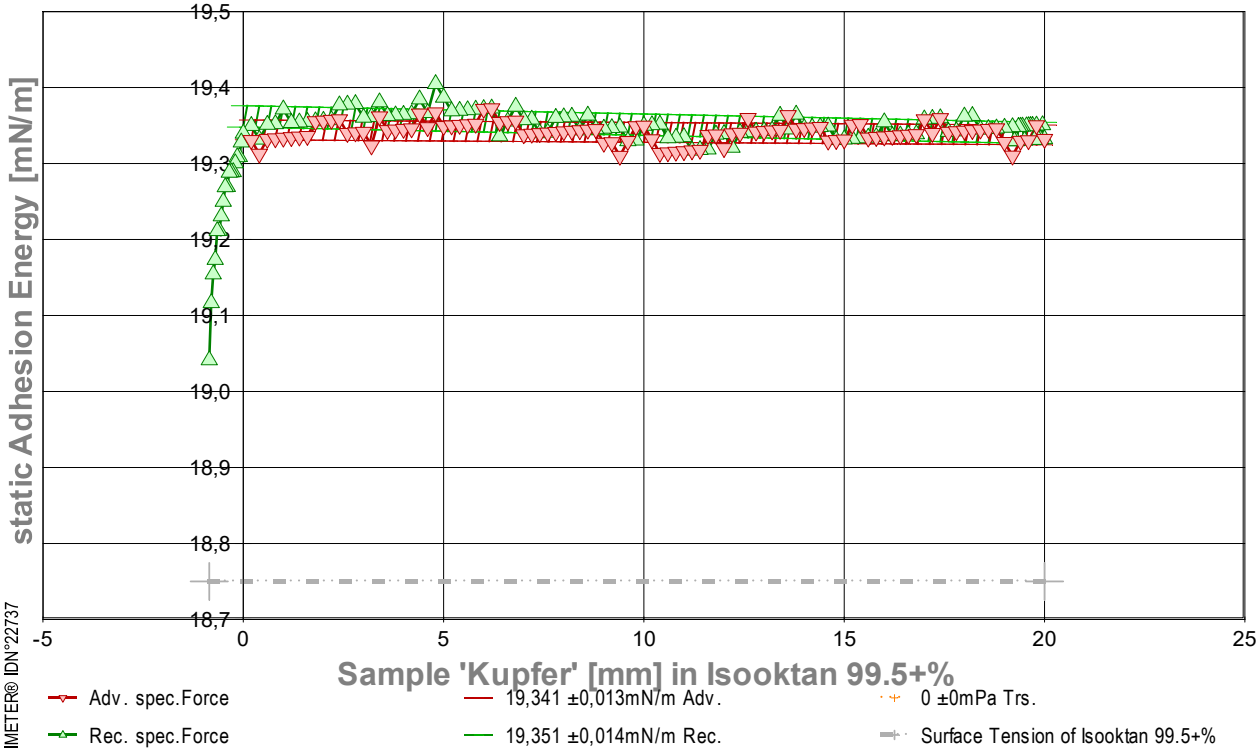
Adhesion Force of the equilibrated Triple Line

Energy of Adhesion, $^a\bar{E}_S=({}^aE_A+{}^aE_R)/2$	**19,346 ±0,019 mN/m**
Hysteresis, $^aH_s = {}^aE_A - {}^aE_R$	-0,010 mN/m
Parameter of spreading, $\bar{S}_s = {}^a\bar{E} - \gamma$	0,596 mJ/m²
relative wettability, $\bar{B}_{\%,s}=100\cdot{}^a\bar{E}/\gamma$	103,2% with Isooktan 99.5+%

	Advancing $^aE_{A,s}$	**Receding $^aE_{R,s}$**	Transition - mm
Energy of Adhesion, ^aE_s [mN/m]	**19,341**	**19,351**	$19{,}351_{<adv.>} \Rightarrow 19{,}332$ rec.
Standard deviation $^a\sigma$ [mN/m]	±0,013	±0,014	±0
Linear regression, slope [mPa]	0,000	-0,001	0
correlation coefficient r^2	0,02	0,19	1,0
Relative wettability, $B_{\%,S}$	103,2%	103,2%	

Data has left the region of measurable Contact Angles. resolving a kind of superwetting: $^aE_{A,R} > \gamma\cdot\cos\theta$ and wettability B>100%

¬ *Diagramm 1.3: 'Triple-line Force²' static forces at the triple line, $\bar{v}_z$=0,049 mm/s*



- Das Diagramm zeigt den Verlauf der Adhäsionsenergie ^aE entlang der Probenoberfläche. Den Messwerte werden bei unbewegtem Pegel des Fluids am Probekörper als statische Gleichgewichtszustände bestimmt. Die roten ∇-Markierungen stehen für adv.-Messwerte (Eintauchen; von links nach rechts aufgezeichnet), grüne Δ-Markierungen gehören zu rec.-Werten (Rückzugsbewegung; von rechts nach links laufend). Die Oberflächenspannung von Isooktan 99.5+% ist als grau gestrichelte Horizontale bei 18,75 mN/m eingezeichnet; sie gibt die *maximale Zugfestigkeit* an, die eine flüssige Isooktan 99.5+%-Oberfläche aushalten kann. Doch, die Adhäsionsenergie zwischen Isooktan 99.5+% und Kupfer übersteigt die Oberflächenspannung. Diese *Überbenetzung* (*Superwetting*) ist gekennzeichnet durch die *Kontaktwinkelproblematik*, weil offensichtlich *cos(θ)>1* vorliegt. Insofern andere Störeinflüsse (ggf. elektrostatische, rheologische) auszuschließen sind, kommen Grenzschicht- und/oder tribologische Effekte in den Blick, die den lokalen Wert der Oberflächenspannung raumgreifend - oder den Wert einer ungeklärten Zusatzkraft an der *Triple Line* - steigern und das Geschehen verändern könnten.

4. ===== Details on the Measurement and Setup ======

This document is reporting the **20. Repetition of the Measurement IDN°22717**

- Details of the setup, data on liquid and sample of this IDN°22737 are declared in the first measurement that is IDN°22717 of this series.

Weight at Start: 6,6506 g; alteration to reference 0,0009 g.

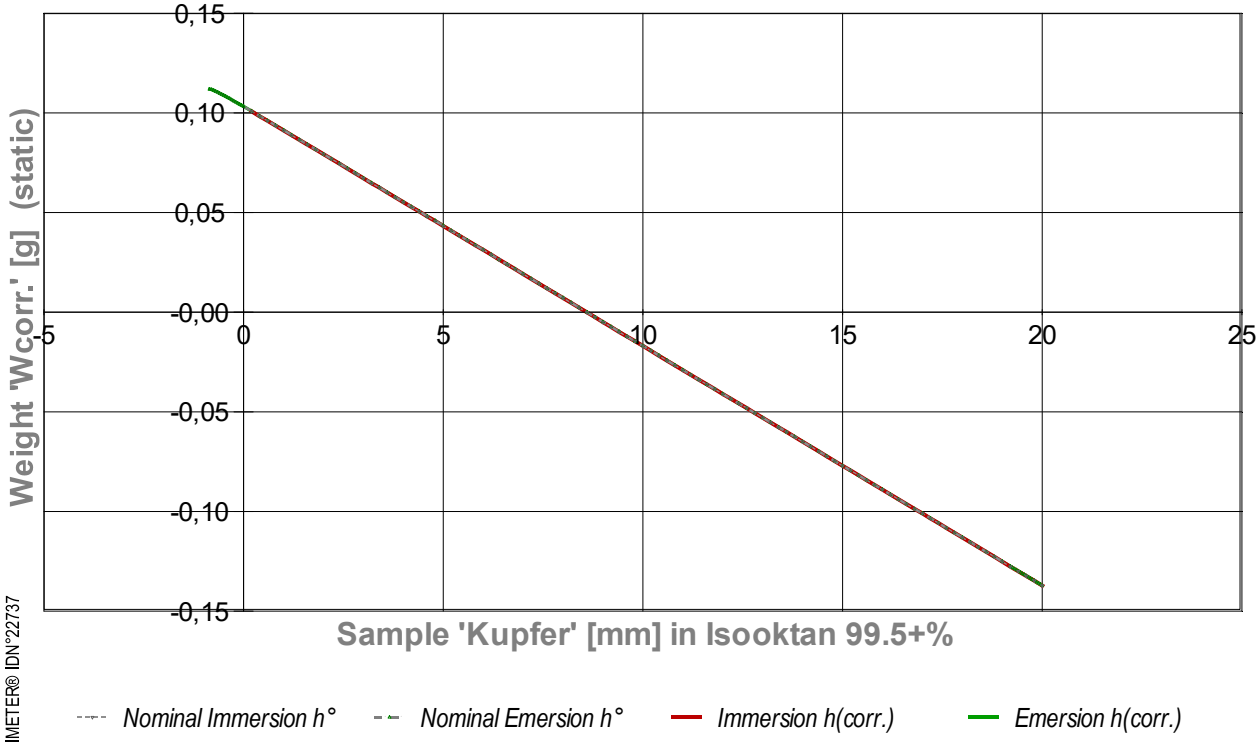
Measurement algorithm: static CA-measurement, acquisition of equilibrated values, stepwise movement. Maximum immersion of 20,001 mm and force equilibration at the inflection point for 3,4 s. Duration for immersion 6,7 min, for emersion 45 s. The *CLT* was used. - *The 'CLT' Constant-Level-Technic prevents rising/falling of the Isooktan 99.5+%-level in the vessel (surface 1452mm²) through immersion/emersion of the sample volume in the vessel by appropriate pumping of Isooktan 99.5+%.*

Time & Temperature: 15 Minuten; Temperaturverlauf blieb im gesamten Zeitraum mäßig isotherm bei 20°C. ¬ *Diagramm 2.4: 'Temperature & Events²' -- Survey on Temperature and Time*

- Das Diagramm "Temperature & Events²" dokumentiert neben der Flüssigkeitstemperatur der Messfluids (Isooktan 99.5+%) die zeitliche Abfolge der Verfahrensschritte. Die Temperaturmesswerte sind als kleine Kreise abgebildet; die kugelförmige Marke gibt die der Messung insgesamt zugeordnete Temperatur an (20°C). Weitere gelbe Dreiecke auf der grünen Horizontalen bezeichnen die Schaltung jweiliger Messmodi ('a-r' bedeutet *Advancing-* - und *Receding*-Bewegung). Die roten Dreiecke, unten im Diagramm, markieren die Zeitpunkte der

Probenwägung von Kupfer (ohne Kontakt zur Fluidoberfläche).

¬ *Diagramm 3.4: 'RawData²' -- Acquired weights during immersion and emersion (raw data and immersion corrected lengths)*



- Im Diagramm "RawData²" werden die Wägewerte zur statischen Kontaktwinkelmessung gegen die Eintauchtiefe der Probe abgebildet. Von den Roh-Wägewerten W_{RAW} wurden Proben- und Aufhängungsgewichte subtrahiert, so dass hier die *Gewichte* der Benetzungs- und Auftriebskräfte abgebildet werden ($W_{corr.}$). Die Kurvenverläufe fallen mit der Eintauchtiefe *h* (*immersion depth*) ab, indes der Volumenauftrieb des eintauchenden Probekörpers zunimmt. Im Diagramm sind Wägewerte für die advancing- und receding-Bewegung eingetragen, sowohl für nominelle (h_0) und für korrigierte Eintauchtiefen ($h_{corr.}$). Die roten Dreiecke bezeichnen die Messwerte bei $h_{corr.}$ bei der Vorwärtsbewegung (adv.), die grünen Dreiecke gehören zu Auszugsbewegungen (rec.). Durch 'CLT' (die *Constant-Level-Technic*) wird die Pegelveränderung besonders durch das ein- und austauchendes Probenvolumen simultan kompensiert, sodass die nominelle Eintauchtief mit der tatsächlichen identisch ist; die Kurven sind deshalb praktisch deckungsgleich.
Weiterhin zeigt das Diagramm noch Werte zu *negativen Eintauchtiefen*. Diese Wertepaare gehören der *Kapillarbrücke (cb = capillary bridge)* an, die sich beim Herausziehen der Probe über das Flüssigkeitsniveau deutlich ausbilden kann; besonders, wenn das Probenende scharfkantig ist.

5. ===== Table of raw data and results ======

The table below provides the data for each contact angle measuring position in this experiment (n=229). - Within a row the column ***t*** lists the time of the CA-measurement. $t_{eq.}$ is the duration reach the equilibrated force after positioning (static measurement). The nominal distance between the sample bottom flatface and the liquid surface is given by h_0, whilst $h_{corr.}$ shows the corrected immersion depth- *due to CLT the values are the same*. With W_{RAW} the final total weight of the sample, sample holder, wetting force and buoyancy is printed. The $W_{corr.}$-values* are former weighing values when the weight of the sample and its holder is subtracted. After buoyancy- correction, ${}^{a}F$ is the force excerted on the triple line. The Energy of Adhesion ${}^{a}E_{A,R} = {}^{a}F/p$ is the force of adhesion per meter of the circumference (p) of the sample. Θ is the Contact Angle. The last column indicates by **chr** the **a**dvancing resp. **r**eceding state; **cb** tags values of a '**c**apillary **b**ridge' above the surface-level.

(Resolving static force of wetting from ${}^{a}F = (W_{Raw}\text{-}W_0\text{-}W_{Buoy.})\cdot g + F_{Buoy.air}$) *$W_{corr.} = W_{Raw}\text{-}W_0$ (with W_0= 6,6497 g).*

Tabelle 3.5: Data table

N°	*t* [min]	$t_{eq.}$ [sec]	h_0 [mm]	$h_{corr.}$ [mm]	W_{RAW} [g]	$W_{corr.}$ [g]	${}^{a}F$ [mN]	${}^{a}E_{A,R}$ [mN/m]	Θ [°deg]	chr --
1.	0,00	3,0	0,200	0,200	6,7505	0,1008	1,0123	19,33	0	a
2.	0,06	2,5	0,400	0,400	6,7480	0,0983	1,0113	19,31	0	a
3.	0,12	3,6	0,600	0,600	6,7457	0,0960	1,0124	19,33	0	a
4.	0,19	3,9	0,800	0,800	6,7433	0,0936	1,0124	19,33	0	a
5.	0,27	2,9	1,000	1,000	6,7409	0,0912	1,0124	19,33	0	a
6.	0,34	3,0	1,200	1,200	6,7385	0,0888	1,0125	19,33	0	a
7.	0,40	3,0	1,400	1,400	6,7361	0,0864	1,0125	19,34	0	a
8.	0,47	3,0	1,600	1,600	6,7337	0,0840	1,0126	19,34	0	a
9.	0,53	2,9	1,800	1,800	6,7314	0,0817	1,0136	19,36	0	a
10.	0,59	2,9	2,000	2,000	6,7290	0,0793	1,0136	19,36	0	a
11.	0,66	3,9	2,200	2,200	6,7266	0,0769	1,0137	19,36	0	a
12.	0,74	3,0	2,400	2,400	6,7242	0,0745	1,0137	19,36	0	a
13.	0,80	2,5	2,600	2,600	6,7217	0,0720	1,0128	19,34	0	a
14.	0,86	4,9	2,800	2,800	6,7193	0,0696	1,0128	19,34	0	a
15.	0,95	3,3	3,000	3,000	6,7169	0,0672	1,0129	19,34	0	a
16.	1,02	3,0	3,200	3,200	6,7144	0,0647	1,0119	19,32	0	a
17.	1,08	2,5	3,400	3,400	6,7122	0,0625	1,0139	19,36	0	a
18.	1,14	3,0	3,600	3,600	6,7097	0,0600	1,0130	19,34	0	a
19.	1,20	2,9	3,800	3,800	6,7073	0,0576	1,0130	19,34	0	a
20.	1,27	2,9	4,000	4,000	6,7049	0,0552	1,0131	19,35	0	a
21.	1,33	3,0	4,200	4,200	6,7025	0,0528	1,0131	19,35	0	a
22.	1,40	2,9	4,400	4,400	6,7002	0,0505	1,0141	19,37	0	a
23.	1,46	3,0	4,600	4,600	6,6977	0,0480	1,0132	19,35	0	a
24.	1,52	3,0	4,800	4,800	6,6954	0,0457	1,0142	19,37	0	a
25.	1,59	2,9	5,000	5,000	6,6929	0,0432	1,0133	19,35	0	a
26.	1,65	2,9	5,200	5,200	6,6905	0,0408	1,0133	19,35	0	a
27.	1,71	2,9	5,400	5,400	6,6881	0,0384	1,0133	19,35	0	a
28.	1,77	3,0	5,600	5,600	6,6857	0,0360	1,0134	19,35	0	a
29.	1,84	3,0	5,800	5,800	6,6833	0,0336	1,0134	19,35	0	a
30.	1,90	3,0	6,000	6,000	6,6810	0,0313	1,0144	19,37	0	a

31.	1,97	6,4	6,200	6,200	6,6786	0,0289	1,0145	19,37	0	a
32.	2,09	2,5	6,400	6,400	6,6761	0,0264	1,0135	19,35	0	a
33.	2,15	3,0	6,600	6,600	6,6737	0,0240	1,0136	19,36	0	a
34.	2,21	3,0	6,800	6,800	6,6713	0,0216	1,0136	19,36	0	a
35.	2,27	2,5	7,000	7,000	6,6688	0,0191	1,0127	19,34	0	a
36.	2,33	2,5	7,200	7,200	6,6664	0,0167	1,0127	19,34	0	a
37.	2,39	3,4	7,400	7,400	6,6640	0,0143	1,0128	19,34	0	a
38.	2,46	3,0	7,600	7,600	6,6616	0,0119	1,0128	19,34	0	a
39.	2,52	2,9	7,800	7,800	6,6592	0,0095	1,0128	19,34	0	a
40.	2,59	4,9	8,000	8,000	6,6568	0,0071	1,0129	19,34	0	a
41.	2,68	3,0	8,200	8,200	6,6544	0,0047	1,0129	19,34	0	a
42.	2,75	2,9	8,400	8,400	6,6520	0,0023	1,0130	19,34	0	a
43.	2,81	3,9	8,600	8,600	6,6496	-0,0001	1,0130	19,34	0	a
44.	2,89	3,0	8,800	8,800	6,6472	-0,0025	1,0130	19,35	0	a
45.	2,95	3,4	9,000	9,000	6,6447	-0,0050	1,0121	19,33	0	a
46.	3,03	3,4	9,200	9,200	6,6423	-0,0074	1,0121	19,33	0	a
47.	3,10	2,9	9,400	9,400	6,6398	-0,0099	1,0112	19,31	0	a
48.	3,16	3,0	9,600	9,600	6,6375	-0,0122	1,0122	19,33	0	a
49.	3,23	2,9	9,800	9,800	6,6352	-0,0145	1,0132	19,35	0	a
50.	3,29	2,9	10,000	10,000	6,6328	-0,0169	1,0133	19,35	0	a
51.	3,35	2,9	10,200	10,200	6,6303	-0,0194	1,0123	19,33	0	a
52.	3,41	2,9	10,400	10,400	6,6278	-0,0219	1,0114	19,31	0	a
53.	3,48	2,9	10,600	10,600	6,6254	-0,0243	1,0114	19,31	0	a
54.	3,54	3,9	10,800	10,800	6,6230	-0,0267	1,0115	19,32	0	a
55.	3,62	3,0	11,000	11,000	6,6206	-0,0291	1,0115	19,32	0	a
56.	3,68	2,5	11,200	11,200	6,6182	-0,0315	1,0116	19,32	0	a
57.	3,74	2,9	11,400	11,400	6,6158	-0,0339	1,0116	19,32	0	a
58.	3,80	3,5	11,600	11,600	6,6135	-0,0362	1,0126	19,34	0	a
59.	3,88	4,8	11,800	11,800	6,6111	-0,0386	1,0127	19,34	0	a
60.	3,97	3,8	12,000	12,000	6,6086	-0,0411	1,0117	19,32	0	a
61.	4,05	2,9	12,200	12,200	6,6063	-0,0434	1,0128	19,34	0	a
62.	4,11	3,0	12,400	12,400	6,6039	-0,0458	1,0128	19,34	0	a
63.	4,18	3,7	12,600	12,600	6,6016	-0,0481	1,0138	19,36	0	a
64.	4,26	3,0	12,800	12,800	6,5991	-0,0506	1,0129	19,34	0	a
65.	4,32	2,9	13,000	13,000	6,5967	-0,0530	1,0129	19,34	0	a
66.	4,38	3,4	13,200	13,200	6,5943	-0,0554	1,0130	19,34	0	a
67.	4,45	2,9	13,400	13,400	6,5919	-0,0578	1,0130	19,34	0	a
68.	4,52	2,8	13,600	13,600	6,5896	-0,0601	1,0140	19,36	0	a
69.	4,58	4,9	13,800	13,800	6,5871	-0,0626	1,0131	19,35	0	a
70.	4,67	2,9	14,000	14,000	6,5847	-0,0650	1,0131	19,35	0	a
71.	4,73	2,5	14,200	14,200	6,5823	-0,0674	1,0132	19,35	0	a
72.	4,79	4,4	14,400	14,400	6,5799	-0,0698	1,0132	19,35	0	a
73.	4,88	2,9	14,600	14,600	6,5774	-0,0723	1,0122	19,33	0	a
74.	4,94	3,0	14,800	14,800	6,5750	-0,0747	1,0123	19,33	0	a
75.	5,00	3,0	15,000	15,000	6,5726	-0,0771	1,0123	19,33	0	a
76.	5,07	3,0	15,200	15,200	6,5703	-0,0794	1,0133	19,35	0	a
77.	5,13	2,9	15,400	15,400	6,5679	-0,0818	1,0134	19,35	0	a
78.	5,20	2,9	15,600	15,600	6,5654	-0,0843	1,0125	19,33	0	a
79.	5,26	3,0	15,800	15,800	6,5630	-0,0867	1,0125	19,33	0	a
80.	5,32	3,0	16,000	16,000	6,5606	-0,0891	1,0125	19,34	0	a
81.	5,39	3,0	16,200	16,200	6,5582	-0,0915	1,0126	19,34	0	a
82.	5,45	3,0	16,400	16,400	6,5558	-0,0939	1,0126	19,34	0	a
83.	5,51	3,1	16,600	16,600	6,5534	-0,0963	1,0127	19,34	0	a
84.	5,58	2,9	16,800	16,800	6,5510	-0,0987	1,0127	19,34	0	a
85.	5,64	2,5	17,000	17,000	6,5487	-0,1010	1,0137	19,36	0	a
86.	5,70	3,0	17,200	17,200	6,5462	-0,1035	1,0128	19,34	0	a
87.	5,76	2,9	17,400	17,400	6,5439	-0,1058	1,0138	19,36	0	a
88.	5,83	3,0	17,600	17,600	6,5414	-0,1083	1,0129	19,34	0	a
89.	5,89	3,5	17,800	17,800	6,5390	-0,1107	1,0129	19,34	0	a
90.	5,96	3,0	18,000	18,000	6,5366	-0,1131	1,0129	19,34	0	a
91.	6,02	3,0	18,200	18,200	6,5342	-0,1155	1,0130	19,34	0	a
92.	6,09	3,0	18,400	18,400	6,5318	-0,1179	1,0130	19,34	0	a
93.	6,15	3,5	18,600	18,600	6,5294	-0,1203	1,0131	19,35	0	a
94.	6,23	2,6	18,800	18,800	6,5270	-0,1227	1,0131	19,35	0	a
95.	6,28	3,0	19,000	19,000	6,5245	-0,1252	1,0122	19,33	0	a
96.	6,35	2,9	19,200	19,200	6,5220	-0,1277	1,0112	19,31	0	a
97.	6,41	3,0	19,400	19,400	6,5197	-0,1300	1,0122	19,33	0	a
98.	6,47	2,9	19,600	19,600	6,5173	-0,1324	1,0123	19,33	0	a
99.	6,54	3,1	19,801	19,801	6,5150	-0,1347	1,0133	19,35	0	a
100.	6,60	2,9	20,001	20,001	6,5125	-0,1372	1,0124	19,33	0	a
101.	*6,66*	*3,4*	*19,951*	*19,951*	*6,5132*	*-0,1365*	*1,0133*	*19,35*	*0*	*r*
102.	*6,73*	*2,5*	*19,901*	*19,901*	*6,5137*	*-0,1360*	*1,0123*	*19,33*	*0*	*r*
103.	6,78	3,0	19,851	19,851	6,5143	-0,1354	1,0123	19,33	0	r
104.	6,84	2,5	19,801	19,801	6,5150	-0,1347	1,0133	19,35	0	r
105.	6,89	2,9	19,751	19,751	6,5155	-0,1342	1,0123	19,33	0	r
106.	6,95	3,0	19,701	19,701	6,5162	-0,1335	1,0133	19,35	0	r
107.	7,01	3,0	19,651	19,651	6,5168	-0,1329	1,0133	19,35	0	r
108.	7,07	4,8	19,601	19,601	6,5174	-0,1323	1,0133	19,35	0	r
109.	7,16	2,5	19,551	19,551	6,5180	-0,1317	1,0133	19,35	0	r
110.	7,21	2,9	19,501	19,501	6,5185	-0,1312	1,0123	19,33	0	r
111.	7,27	2,9	19,451	19,451	6,5192	-0,1305	1,0132	19,35	0	r
112.	7,33	3,0	19,401	19,401	6,5198	-0,1299	1,0132	19,35	0	r
113.	7,39	3,0	19,351	19,351	6,5204	-0,1293	1,0132	19,35	0	r
114.	7,44	2,5	19,301	19,301	6,5209	-0,1288	1,0122	19,33	0	r
115.	7,50	2,5	19,251	19,251	6,5215	-0,1282	1,0122	19,33	0	r
116.	7,55	2,7	19,201	19,201	6,5222	-0,1275	1,0132	19,35	0	r
117.	7,61	3,1	19,001	19,001	6,5246	-0,1251	1,0132	19,35	0	r
118.	7,67	2,9	18,801	18,801	6,5270	-0,1227	1,0131	19,35	0	r
119.	7,74	3,0	18,601	18,601	6,5294	-0,1203	1,0131	19,35	0	r
120.	7,80	4,4	18,401	18,401	6,5318	-0,1179	1,0130	19,34	0	r
121.	7,89	2,9	18,201	18,201	6,5343	-0,1154	1,0140	19,36	0	r
122.	7,95	3,0	18,001	18,001	6,5367	-0,1130	1,0139	19,36	0	r
123.	8,02	3,3	17,801	17,801	6,5390	-0,1107	1,0129	19,34	0	r
124.	8,09	3,0	17,601	17,601	6,5414	-0,1083	1,0129	19,34	0	r
125.	8,15	3,0	17,401	17,401	6,5439	-0,1058	1,0138	19,36	0	r
126.	8,21	3,0	17,201	17,201	6,5463	-0,1034	1,0138	19,36	0	r
127.	8,28	3,0	17,001	17,001	6,5487	-0,1010	1,0137	19,36	0	r
128.	8,34	2,5	16,801	16,801	6,5510	-0,0987	1,0127	19,34	0	r
129.	8,40	3,0	16,601	16,601	6,5534	-0,0963	1,0127	19,34	0	r
130.	8,46	2,5	16,401	16,401	6,5558	-0,0939	1,0126	19,34	0	r
131.	8,52	3,2	16,201	16,201	6,5582	-0,0915	1,0126	19,34	0	r
132.	8,59	3,0	16,001	16,001	6,5607	-0,0890	1,0135	19,35	0	r
133.	8,65	3,0	15,801	15,801	6,5630	-0,0867	1,0125	19,33	0	r

134.	**8,72**	**3,0**	**15,601**	**15,601**	**6,5654**	**-0,0843**	**1,0125**	**19,33**	**0**	**r**
135.	**8,78**	**3,0**	**15,401**	**15,401**	**6,5678**	**-0,0819**	**1,0124**	**19,33**	**0**	**r**
136.	**8,84**	**2,5**	**15,201**	**15,201**	**6,5702**	**-0,0795**	**1,0124**	**19,33**	**0**	**r**
137.	**8,90**	**3,0**	**15,001**	**15,001**	**6,5726**	**-0,0771**	**1,0124**	**19,33**	**0**	**r**
138.	**8,97**	**3,1**	**14,801**	**14,801**	**6,5750**	**-0,0747**	**1,0123**	**19,33**	**0**	**r**
139.	**9,03**	**3,5**	**14,600**	**14,600**	**6,5775**	**-0,0722**	**1,0132**	**19,35**	**0**	**r**
140.	**9,10**	**4,1**	**14,400**	**14,400**	**6,5799**	**-0,0698**	**1,0132**	**19,35**	**0**	**r**
141.	**9,19**	**2,6**	**14,200**	**14,200**	**6,5823**	**-0,0674**	**1,0132**	**19,35**	**0**	**r**
142.	**9,24**	**3,4**	**14,000**	**14,000**	**6,5847**	**-0,0650**	**1,0131**	**19,35**	**0**	**r**
143.	**9,32**	**2,5**	**13,800**	**13,800**	**6,5872**	**-0,0625**	**1,0141**	**19,36**	**0**	**r**
144.	**9,37**	**2,5**	**13,600**	**13,600**	**6,5895**	**-0,0602**	**1,0130**	**19,35**	**0**	**r**
145.	**9,43**	**3,0**	**13,400**	**13,400**	**6,5920**	**-0,0577**	**1,0140**	**19,36**	**0**	**r**
146.	**9,50**	**2,5**	**13,200**	**13,200**	**6,5943**	**-0,0554**	**1,0130**	**19,34**	**0**	**r**
147.	**9,55**	**3,0**	**13,000**	**13,000**	**6,5967**	**-0,0530**	**1,0129**	**19,34**	**0**	**r**
148.	**9,62**	**2,4**	**12,800**	**12,800**	**6,5991**	**-0,0506**	**1,0129**	**19,34**	**0**	**r**
149.	**9,67**	**2,9**	**12,600**	**12,600**	**6,6015**	**-0,0482**	**1,0128**	**19,34**	**0**	**r**
150.	**9,74**	**3,0**	**12,400**	**12,400**	**6,6039**	**-0,0458**	**1,0128**	**19,34**	**0**	**r**
151.	**9,80**	**2,9**	**12,200**	**12,200**	**6,6062**	**-0,0435**	**1,0118**	**19,32**	**0**	**r**
152.	**9,86**	**3,1**	**12,000**	**12,000**	**6,6087**	**-0,0410**	**1,0127**	**19,34**	**0**	**r**
153.	**9,93**	**4,0**	**11,800**	**11,800**	**6,6111**	**-0,0386**	**1,0127**	**19,34**	**0**	**r**
154.	**10,01**	**3,0**	**11,600**	**11,600**	**6,6134**	**-0,0363**	**1,0117**	**19,32**	**0**	**r**
155.	**10,08**	**2,5**	**11,400**	**11,400**	**6,6158**	**-0,0339**	**1,0116**	**19,32**	**0**	**r**
156.	**10,14**	**3,0**	**11,200**	**11,200**	**6,6182**	**-0,0315**	**1,0116**	**19,32**	**0**	**r**
157.	**10,21**	**3,0**	**11,000**	**11,000**	**6,6207**	**-0,0290**	**1,0125**	**19,33**	**0**	**r**
158.	**10,27**	**3,0**	**10,800**	**10,800**	**6,6231**	**-0,0266**	**1,0125**	**19,33**	**0**	**r**
159.	**10,33**	**2,5**	**10,600**	**10,600**	**6,6255**	**-0,0242**	**1,0124**	**19,33**	**0**	**r**
160.	**10,39**	**3,0**	**10,400**	**10,400**	**6,6280**	**-0,0217**	**1,0134**	**19,35**	**0**	**r**
161.	**10,46**	**2,5**	**10,200**	**10,200**	**6,6304**	**-0,0193**	**1,0133**	**19,35**	**0**	**r**
162.	**10,51**	**3,0**	**10,000**	**10,000**	**6,6328**	**-0,0169**	**1,0133**	**19,35**	**0**	**r**
163.	**10,58**	**3,1**	**9,800**	**9,800**	**6,6351**	**-0,0146**	**1,0123**	**19,33**	**0**	**r**
164.	**10,64**	**3,0**	**9,600**	**9,600**	**6,6375**	**-0,0122**	**1,0122**	**19,33**	**0**	**r**
165.	**10,71**	**2,5**	**9,400**	**9,400**	**6,6400**	**-0,0097**	**1,0132**	**19,35**	**0**	**r**
166.	**10,76**	**3,0**	**9,200**	**9,200**	**6,6424**	**-0,0073**	**1,0131**	**19,35**	**0**	**r**
167.	**10,83**	**2,5**	**9,000**	**9,000**	**6,6448**	**-0,0049**	**1,0131**	**19,35**	**0**	**r**
168.	**10,89**	**3,5**	**8,800**	**8,800**	**6,6472**	**-0,0025**	**1,0131**	**19,35**	**0**	**r**
169.	**10,96**	**2,5**	**8,600**	**8,600**	**6,6497**	**0,0000**	**1,0140**	**19,36**	**0**	**r**
170.	**11,02**	**3,0**	**8,400**	**8,400**	**6,6520**	**0,0023**	**1,0130**	**19,34**	**0**	**r**
171.	**11,10**	**2,5**	**8,200**	**8,200**	**6,6545**	**0,0048**	**1,0139**	**19,36**	**0**	**r**
172.	**11,15**	**3,0**	**8,000**	**8,000**	**6,6569**	**0,0072**	**1,0139**	**19,36**	**0**	**r**
173.	**11,22**	**2,5**	**7,800**	**7,800**	**6,6593**	**0,0096**	**1,0138**	**19,36**	**0**	**r**
174.	**11,27**	**2,6**	**7,600**	**7,600**	**6,6616**	**0,0119**	**1,0128**	**19,34**	**0**	**r**
175.	**11,33**	**2,9**	**7,400**	**7,400**	**6,6640**	**0,0143**	**1,0128**	**19,34**	**0**	**r**
176.	**11,40**	**3,0**	**7,200**	**7,200**	**6,6665**	**0,0168**	**1,0137**	**19,36**	**0**	**r**
177.	**11,46**	**2,9**	**7,000**	**7,000**	**6,6689**	**0,0192**	**1,0137**	**19,36**	**0**	**r**
178.	**11,52**	**3,0**	**6,800**	**6,800**	**6,6714**	**0,0217**	**1,0146**	**19,37**	**0**	**r**
179.	**11,59**	**3,0**	**6,600**	**6,600**	**6,6737**	**0,0240**	**1,0136**	**19,36**	**0**	**r**
180.	**11,65**	**3,0**	**6,400**	**6,400**	**6,6760**	**0,0263**	**1,0126**	**19,34**	**0**	**r**
181.	**11,72**	**3,0**	**6,200**	**6,200**	**6,6786**	**0,0289**	**1,0145**	**19,37**	**0**	**r**
182.	**11,78**	**2,6**	**6,000**	**6,000**	**6,6810**	**0,0313**	**1,0144**	**19,37**	**0**	**r**
183.	**11,84**	**2,5**	**5,800**	**5,800**	**6,6834**	**0,0337**	**1,0144**	**19,37**	**0**	**r**
184.	**11,90**	**3,0**	**5,600**	**5,600**	**6,6858**	**0,0361**	**1,0144**	**19,37**	**0**	**r**
185.	**11,96**	**3,0**	**5,400**	**5,400**	**6,6882**	**0,0385**	**1,0143**	**19,37**	**0**	**r**
186.	**12,02**	**3,0**	**5,200**	**5,200**	**6,6906**	**0,0409**	**1,0143**	**19,37**	**0**	**r**
187.	**12,10**	**4,0**	**5,000**	**5,000**	**6,6931**	**0,0434**	**1,0152**	**19,39**	**0**	**r**
188.	**12,18**	**3,1**	**4,800**	**4,800**	**6,6956**	**0,0459**	**1,0162**	**19,40**	**0**	**r**
189.	**12,25**	**3,0**	**4,600**	**4,600**	**6,6978**	**0,0481**	**1,0142**	**19,37**	**0**	**r**
190.	**12,31**	**4,4**	**4,400**	**4,400**	**6,7003**	**0,0506**	**1,0151**	**19,38**	**0**	**r**
191.	**12,40**	**3,0**	**4,200**	**4,200**	**6,7026**	**0,0529**	**1,0141**	**19,37**	**0**	**r**
192.	**12,46**	**2,5**	**4,000**	**4,000**	**6,7050**	**0,0553**	**1,0140**	**19,36**	**0**	**r**
193.	**12,52**	**3,0**	**3,800**	**3,800**	**6,7074**	**0,0577**	**1,0140**	**19,36**	**0**	**r**
194.	**12,59**	**3,8**	**3,600**	**3,600**	**6,7098**	**0,0601**	**1,0140**	**19,36**	**0**	**r**
195.	**12,66**	**3,0**	**3,400**	**3,400**	**6,7123**	**0,0626**	**1,0149**	**19,38**	**0**	**r**
196.	**12,73**	**2,6**	**3,200**	**3,200**	**6,7146**	**0,0649**	**1,0139**	**19,36**	**0**	**r**
197.	**12,78**	**4,8**	**3,000**	**3,000**	**6,7170**	**0,0673**	**1,0139**	**19,36**	**0**	**r**
198.	**12,88**	**3,0**	**2,800**	**2,800**	**6,7195**	**0,0698**	**1,0148**	**19,38**	**0**	**r**
199.	**12,94**	**3,0**	**2,600**	**2,600**	**6,7219**	**0,0722**	**1,0148**	**19,38**	**0**	**r**
200.	**13,01**	**4,0**	**2,400**	**2,400**	**6,7243**	**0,0746**	**1,0147**	**19,38**	**0**	**r**
201.	**13,09**	**3,0**	**2,200**	**2,200**	**6,7266**	**0,0769**	**1,0137**	**19,36**	**0**	**r**
202.	**13,15**	**2,6**	**2,000**	**2,000**	**6,7290**	**0,0793**	**1,0136**	**19,36**	**0**	**r**
203.	**13,21**	**3,0**	**1,800**	**1,800**	**6,7314**	**0,0817**	**1,0136**	**19,36**	**0**	**r**
204.	**13,27**	**3,5**	**1,600**	**1,600**	**6,7338**	**0,0841**	**1,0136**	**19,35**	**0**	**r**
205.	**13,35**	**3,0**	**1,400**	**1,400**	**6,7362**	**0,0865**	**1,0135**	**19,35**	**0**	**r**
206.	**13,41**	**3,0**	**1,200**	**1,200**	**6,7386**	**0,0889**	**1,0135**	**19,35**	**0**	**r**
207.	**13,48**	**3,0**	**1,000**	**1,000**	**6,7411**	**0,0914**	**1,0144**	**19,37**	**0**	**r**
208.	**13,54**	**3,5**	**0,800**	**0,800**	**6,7434**	**0,0937**	**1,0134**	**19,35**	**0**	**r**
209.	**13,61**	**2,9**	**0,600**	**0,600**	**6,7458**	**0,0961**	**1,0134**	**19,35**	**0**	**r**
210.	**13,68**	**2,5**	**0,400**	**0,400**	**6,7481**	**0,0984**	**1,0123**	**19,33**	**0**	**r**
211.	**13,73**	**7,9**	**0,200**	**0,200**	**6,7506**	**0,1009**	**1,0133**	**19,35**	**0**	**r**
212.	**13,88**	**1,6**	**0,000**	**0,000**	**6,7530**	**0,1033**	**1,0128**	**19,34**	**0**	**r**
213.	**13,92**	**1,6**	**-0,050**	**-0,050**	**6,7535**	**0,1038**	**1,0121**	**19,33**	**0**	**cb**
214.	13,96	2,0	-0,100	-0,100	6,7540	0,1043	1,0111	19,31	0	cb
215.	14,01	1,6	-0,150	-0,150	6,7546	0,1049	1,0111	19,31	0	cb
216.	14,05	1,6	-0,200	-0,200	6,7552	0,1055	1,0107	19,30	0	cb
217.	14,09	2,5	-0,250	-0,250	6,7557	0,1060	1,0101	19,29	0	cb
218.	14,15	3,6	-0,300	-0,300	6,7563	0,1066	1,0101	19,29	0	cb
219.	14,22	1,6	-0,350	-0,350	6,7569	0,1072	1,0101	19,29	0	cb
220.	14,27	1,7	-0,400	-0,400	6,7574	0,1077	1,0091	19,27	0	cb
221.	14,31	1,6	-0,450	-0,450	6,7580	0,1083	1,0091	19,27	0	cb
222.	14,35	1,6	-0,500	-0,500	6,7585	0,1088	1,0081	19,25	0	cb
223.	14,39	1,6	-0,550	-0,550	6,7590	0,1093	1,0071	19,23	0	cb
224.	14,43	1,7	-0,600	-0,600	6,7595	0,1098	1,0061	19,21	0	cb
225.	14,47	1,6	-0,650	-0,650	6,7601	0,1104	1,0060	19,21	0	cb
226.	14,51	1,6	-0,700	-0,700	6,7605	0,1108	1,0041	19,17	0	cb
227.	14,55	1,7	-0,750	-0,750	6,7610	0,1113	1,0031	19,15	0	cb
228.	14,60	1,7	-0,800	-0,800	6,7614	0,1117	1,0011	19,12	0	cb
229.	14,64	3,8	-0,850	-0,850	6,7616	0,1119	0,9971	19,04	0	cb

Meldungen

Die Rückzugs- bzw. Receding- Bewegung ist aus 3 Zügen zusammengesetzt.

__Temperaturangaben__ beziehen sich auf die Skala der ITS-90. __Standardabweichungen:__ Verschiedentlich werden Regressionsfunktionen mit Standardabweichungen bzw. Varianzen qualifiziert. Diese Angaben werden berechnet aus der Summe der Quadrate der Abweichungen der Einzelwerte zu jeweils berechneten Funktionswerten dividiert durch die Anzahl der Werte weniger 1. Sofern nicht anders bezeichnet, werden für ±(Standardmess-)Unsicherheiten einfache Standardabweichungen - ohne Erweiterungsfaktoren - angegeben, d.h. die Überdeckung betrifft 67% der Werte.

IMPro Execution & Audit-Trail

Data created during execution of the IMPro *"ContactAngle_atConstantLevel, 24.05.23, 104997"*, type 4/4. Time Period of the Accomplishment: Mai., 24. 2023 between 21:23:12 and 21:38:48, elapsed time: 20 minutes. Automatic self-repetition of the IMPro - the 20. Repetition. IMPro finished as projected. The complete Report first was presented on Mai., 24.23 at 21:54. Original data was changed as reported to Audit-Log:

Start of this IMPro 21:23:44, - **Backup of the IMPro configuration:**
Time **Variables**: Abs. Positions/Way: Immersion_Depth 20mm, Platform_StartPosition 85mm.
Rel. Positions/Way: FeedRateAdv 0,2mm, FeedRateRec -0,2mm, FeedRate_for_adv_rec_turn -0,050mm.
Others: Determin_0_at_Repetition -1 [Y/N].StirringTime 0s. Stirrer-Speed 0rps. Record_Air_Density -1, Temperature-Outside-Warning 0, Automatic_Thermostat_available -1.
ab 8. Wdh mit Entnahme und Abtupfung ....*
#Wilhelmy-Plate-Sequence (erstes statisch, dann speed-up dyn): 1x stat, dann v=v'*1.5 ... mm/s dyn, Beschl.g = 48 [%]: Sequ.N° 21/21: _Equi_Time: 0,350s, _Equi_Crit: 0,0001g, _Equi_loops: 5s, _Equi_loopsRepeater: 2 [n]×. Immersion_Depth: 20mm, ConditioningTime: 10s.$v_{0,42}$=149µL,
Measurement : CLT STATIC, PumpN°1 [n], Vol. 2,50 [cm^3], FüllVolumen 0,5 [cm^3], FreiVolumen 2 [cm^3], VolBilanz 0,3505, PFlussRate 8,73µL/s, DichteDerFlüssigkeit 0,691906 [g/cm^3].
$v_{0,57}$=-3,49µL,$v_{0,64}$=-3,49µL,$v_{0,69}$=-3,49µL,$v_{0,77}$=-3,49µL,$v_{0,85}$=-3,49µL,$v_{0,91}$=-3,49µL,$v_{0,97}$=-3,49µL,$v_{1,04}$=-3,49µL,$v_{1,10}$=-3,49µL,$v_{1,17}$=-3,49µL,$v_{1,23}$=-3,49µL,$v_{1,31}$=-3,49µL,$v_{1,37}$=-3,49µL,$v_{1,43}$=-3,49µL,$v_{1,52}$=-3,49µL,$v_{1,59}$=-3,49µL,$v_{1,66}$=-3,49µL,$v_{1,71}$=-3,49µL,$v_{1,78}$=-3,49µL,$v_{1,84}$=-3,49µL,$v_{1,91}$=-3,49µL,$v_{1,97}$=-3,49µL,$v_{2,03}$=-3,49µL,$v_{2,10}$=-3,49µL,$v_{2,16}$=-3,49µL,$v_{2,22}$=-3,49µL,$v_{2,28}$=-3,49µL,$v_{2,35}$=-3,49µL,$v_{2,41}$=-3,49µL,$v_{2,48}$=-3,49µL,$v_{2,54}$=-3,49µL,$v_{2,66}$=-3,49µL,$v_{2,72}$=-3,49µL,$v_{2,78}$=-3,49µL,$v_{2,85}$=-3,49µL,$v_{2,90}$=-3,49µL,$v_{2,96}$=-3,49µL,$v_{3,03}$=-3,49µL,$v_{3,10}$=-3,49µL,$v_{3,16}$=-3,49µL,$v_{3,26}$=-3,49µL,$v_{3,32}$=-3,49µL,$v_{3,38}$=-3,49µL,$v_{3,46}$=-3,49µL,$v_{3,53}$=-3,49µL,$v_{3,60}$=-3,49µL,$v_{3,67}$=-3,49µL,$v_{3,73}$=-3,49µL,$v_{3,80}$=-3,49µL,$v_{3,86}$=-3,49µL,$v_{3,92}$=-3,49µL,$v_{3,99}$=-3,49µL,$v_{4,05}$=-3,49µL,$v_{4,11}$=-3,49µL,$v_{4,19}$=-3,49µL,$v_{4,26}$=-3,49µL,$v_{4,31}$=-3,49µL,$v_{4,38}$=-3,49µL,$v_{4,45}$=-3,49µL,$v_{4,55}$=-3,49µL,$v_{4,62}$=-3,49µL,$v_{4,69}$=-3,49µL,$v_{4,75}$=-3,49µL,$v_{4,83}$=-3,49µL,$v_{4,89}$=-3,49µL,$v_{4,96}$=-3,49µL,$v_{5,03}$=-3,49µL,$v_{5,09}$=-3,49µL,$v_{5,15}$=-3,49µL,$v_{5,25}$=-3,49µL,$v_{5,31}$=-3,49µL,$v_{5,36}$=-3,49µL,$v_{5,45}$=-3,49µL,$v_{5,51}$=-3,49µL,$v_{5,58}$=-3,49µL,$v_{5,64}$=-3,49µL,$v_{5,71}$=-3,49µL,$v_{5,77}$=-3,49µL,$v_{5,83}$=-3,49µL,$v_{5,90}$=-3,49µL,$v_{5,96}$=-3,49µL,$v_{6,02}$=-3,49µL,$v_{6,09}$=-3,49µL,$v_{6,15}$=-3,49µL,$v_{6,22}$=-3,49µL,$v_{6,27}$=-3,49µL,$v_{6,34}$=-3,49µL,$v_{6,40}$=-3,49µL,$v_{6,46}$=-3,49µL,$v_{6,53}$=-3,49µL,$v_{6,60}$=-3,49µL,$v_{6,66}$=-3,49µL,$v_{6,73}$=-3,49µL,$v_{6,80}$=-3,49µL,$v_{6,86}$=-3,49µL,$v_{6,92}$=-3,49µL,$v_{6,99}$=-3,49µL,$v_{7,05}$=-3,49µL,$v_{7,11}$=-3,49µL,$v_{7,18}$=-3,49µL,$v_{7,24}$=0,873µL,$v_{7,31}$=0,873µL,$v_{7,36}$=0,873µL,$v_{7,41}$=0,873µL,$v_{7,47}$=0,873µL,$v_{7,53}$=0,873µL,$v_{7,59}$=0,873µL,$v_{7,65}$=0,873µL,$v_{7,74}$=0,873µL,$v_{7,79}$=0,873µL,$v_{7,85}$=0,873µL,$v_{7,90}$=0,873µL,$v_{7,96}$=0,873µL,$v_{8,02}$=0,873µL,$v_{8,08}$=0,873µL,$v_{8,13}$=0,873µL,$v_{8,18}$=3,49µL,$v_{8,25}$=3,49µL,$v_{8,31}$=3,49µL,$v_{8,38}$=3,49µL,$v_{8,46}$=3,49µL,$v_{8,53}$=3,49µL,$v_{8,59}$=3,49µL,$v_{8,66}$=3,49µL,$v_{8,73}$=3,49µL,$v_{8,79}$=3,49µL,$v_{8,85}$=3,49µL,$v_{8,92}$=3,49µL,$v_{8,97}$=3,49µL,$v_{9,04}$=3,49µL,$v_{9,09}$=3,49µL,$v_{9,16}$=3,49µL,$v_{9,23}$=3,49µL,$v_{9,29}$=3,49µL,$v_{9,35}$=3,49µL,$v_{9,42}$=3,49µL,$v_{9,48}$=3,49µL,$v_{9,54}$=3,49µL,$v_{9,61}$=3,49µL,$v_{9,68}$=3,49µL,$v_{9,76}$=3,49µL,$v_{9,82}$=3,49µL,$v_{9,89}$=3,49µL,$v_{9,95}$=3,49µL,$v_{10,00}$=3,49µL,$v_{10,07}$=3,49µL,$v_{10,13}$=3,49µL,$v_{10,19}$=3,49µL,$v_{10,25}$=3,49µL,$v_{10,31}$=3,49µL,$v_{10,37}$=3,49µL,$v_{10,44}$=3,49µL,$v_{10,50}$=3,49µL,$v_{10,58}$=3,49µL,$v_{10,66}$=3,49µL,$v_{10,72}$=3,49µL,$v_{10,78}$=3,49µL,$v_{10,84}$=3,49µL,$v_{10,91}$=3,49µL,$v_{10,96}$=3,49µL,$v_{11,03}$=3,49µL,$v_{11,09}$=3,49µL,$v_{11,15}$=3,49µL,$v_{11,22}$=3,49µL,$v_{11,28}$=3,49µL,$v_{11,34}$=3,49µL,$v_{11,40}$=3,49µL,$v_{11,46}$=3,49µL,$v_{11,53}$=3,49µL,$v_{11,59}$=3,49µL,$v_{11,67}$=3,49µL,$v_{11,73}$=3,49µL,$v_{11,79}$=3,49µL,$v_{11,85}$=3,49µL,$v_{11,91}$=3,49µL,$v_{11,97}$=3,49µL,$v_{12,03}$=3,49µL,$v_{12,10}$=3,49µL,$v_{12,16}$=3,49µL,$v_{12,23}$=3,49µL,$v_{12,29}$=3,49µL,$v_{12,35}$=3,49µL,$v_{12,41}$=3,49µL,$v_{12,47}$=3,49µL,$v_{12,53}$=3,49µL,$v_{12,60}$=3,49µL,$v_{12,67}$=3,49µL,$v_{12,76}$=3,49µL,$v_{12,82}$=3,49µL,$v_{12,89}$=3,49µL,$v_{12,97}$=3,49µL,$v_{13,04}$=3,49µL,$v_{13,10}$=3,49µL,$v_{13,16}$=3,49µL,$v_{13,24}$=3,49µL,$v_{13,30}$=3,49µL,$v_{13,36}$=3,49µL,$v_{13,45}$=3,49µL,$v_{13,52}$=3,49µL,$v_{13,58}$=3,49µL,$v_{13,66}$=3,49µL,$v_{13,73}$=3,49µL,$v_{13,78}$=3,49µL,$v_{13,85}$=3,49µL,$v_{13,92}$=3,49µL,$v_{13,99}$=3,49µL,$v_{14,05}$=3,49µL,$v_{14,11}$=3,49µL,$v_{14,19}$=3,49µL,$v_{14,25}$=3,49µL,$v_{14,31}$=3,49µL,$v_{14,45}$=3,49µL,$v_{14,50}$=0,231µL,$v_{14,54}$=0,78µL,$v_{14,59}$=0,723µL,$v_{14,63}$=0,867µL,$v_{14,67}$=0,809µL,$v_{14,73}$=0,78µL,$v_{14,80}$=0,867µL,$v_{14,84}$=0,867µL,$v_{14,89}$=0,723µL,$v_{14,93}$=0,867µL,$v_{14,97}$=0,723µL,$v_{15,01}$=0,723µL,$v_{15,05}$=0,723µL,$v_{15,09}$=0,867µL,$v_{15,13}$=0,578µL,$v_{15,17}$=0,723µL,$v_{15,22}$=0,578µL,$v_{15,29}$=0,289µL,
**** CHANGE(ES) IN DATA SHEET - by user M. Breitwieser **** Day/Time: 26.05.2026 18:34:14 ****
Thickness : from] '0,685' [to] '0,684'
-- Reasons given for the change in the Dataset: ''
****

**** CHANGE(ES) IN DATA SHEET - by user M. Breitwieser **** Day/Time: 26.05.2026 18:35:31 ****
Thickness : from] '0,684' [to] '0,6835'
-- Reasons given for the change in the Dataset: 'noch ein 1/2 µm dünner'
****

The Number **22737** refers to the Recordset in the Database ***'imeterData39'*** where all Information can be retrieved at any time.

Prüfmittel

Die Wägeeinheit (WZA224) wurde um 15:00, am Vortag dieser Messung von Augsburg-Lab justiert. Die letzte vollständige Prüfung der Positioniervorrichtung von ***IMETER*** (ID23903733) erfolgte am 26.08.18. Technische Daten: Auflösung des Wägesystems 0,1 mg, Messunsicherheit (Linearität) 0,2 mg, Dichte der Justiermasse ρ_{cal} 8,00 g/cm^3, Luftdichte ρ_{air} 1,12279 kg/m^3; Schwerebeschleunigung g 9,80769 m/s^2. Pt100-Temperaturmessung: Auflösung 0,001 K, Messunsicherheit ±0,01 K, R° 100.0056 Ω, Kalibrierintervall 30 min (BN°1, -41/200°C, 3S, FS15,8, Korrekturfunktion: -0,0054 +0,997591·ϑ+2,20165E-05·ϑ^2-4,78431E-08·ϑ^3). Akquisitions-Softwareversion IMETER 7.4.20, LizenzN° *3037-4759*, W. 6.2,9200- Betriebssystem auf PC Ser.N°6995684 (C, SSD).
