COFFEE LABORATORY

COFFEE PRO CERTIFIED GRIND ANALYSIS KIT QUICK START GUIDE

Included in your Grind Analysis Kit are the following:

(1) Endecotts M100 Laboratory Sieve Shaker plus instruction booklet

(1) A&D 500 gm capacity miniature balance and calibration weight plus instruction booklet

(6) Endecotts Certified Inspection Grade Sieves with inspection certificates
(Aperture sizes selected are the original aperture sizes used in the 1958 Report; Coffee Grinds II Classification and Analysis Ernest E Lockhart Coffee Brewing Institute)*

Sizes 1.70	mm	ASTM	# **12**
1.18	mm	ASTM	# **16**
.850	mm	ASTM	# **20**
.600	mm	ASTM	# **30**
.425	mm	ASTM	# **40**
.300	mm	ASTM	# **50**

Receiving pan for fines
Lid.

*Many of the earlier studies utilized Tyler Sieve Designations (Numerical Values), which were common place prior to the inception of ASTM Standard E-11 (US), and ISO Standard 3310 (International). Because some of the designations arevery similar, it is important to verify that ASTM or ISO Designations are being utilized.

TO RUN A TEST

1) Assemble the sieve shaker by screwing the two rods in to the threaded holes provided on the base plate.

2) Place the sieve shaker on a stable, (Does not vibrate) level surface.

3) Calibrate the balance using the calibration weight provided (Read balance instruction leaflet for directions)

4) Weigh the pan, and each sieve individually, and record tare (Empty) weights

5) Arrange the sieves in a stack, with the receiving pan at the bottom, followed by the sieve with the smallest aperture, and then followed by the next smallest aperture. Proceed stacking the remainder of the sieves so that the top sieve has the largest aperture.

6) Weigh out approximately 1/3 cup of representative coffee grind sample, and record the weight. The larger the sample, the easier and more accurate the results will be. However, too much sample will create binding (blocked apertures) in the sieves, especially if the majority of the particles are retained on the top sieve. The amount of sample you use is relative to the size distribution of the particles for the particlular sample, so there is no rule, only guidelines. Start out small, and go as big as you can without binding. The adjustable amplituide control helps facilitate separation by increasing the the amount of vibration, however too much vibration causes the particles to ,'float', preventing effective separation

7) Pour the sample in to the middle of the siieve, and place lid on top.

8) Remove the wingnuts from the rods, and slide the the rectangular top plate down the rods (Rubber side down), and rest on top of the lid. Screw wing nuts back on rods, and tighten to secure sieve stack.

9) Turn on sieve shaker by selecting desired timer and amplitude settings. As a rule, start out at half an hour, at medium amplitude. Then cut the time in half, and compare the results.

10) When you reach the endpoint (The amount retained on any one sievechanges less than 1% with one additiona minute of sieving or.1% for audits if required) remove the lid, and then carefully remove each sieve, one by one, and weigh each sieve as well as the receiving pan, with the contents in place.

11) Subtract previously recorded tare weights from filled sieve weights to obtain the weight of grinds retained on each sieve.

12) Divide the individual amount retained on each sieve by the original total sample weight, to obtain percentage amounts retained on each sieve, and compare to relevant grind type on industry trends chart.

NOTE: The industry trends chart was formulated using a report published by the Coffee Brewing Instsitute, in the late 1950's, and later revised by MPE, a grinder manufacturer in Chicago . Sieve analysis is a means of determiming the particle size distribution of coffee grinds, based on the premise that the smaller the grind size, the more surface area, the less contact time with hot water, to produce the desired amount of dissolved solids. There isn't any official chart to follow. Instead, many roasters develop their own standards. Initially the chart can be used effectively to ensure your grinder burrs are functioning correctly, (Perform a test on a sample ground with new burrs, and save as the standard, then run occassional comparative tests as a QC Checkat regular intervals) TDS Analysis and tasteanalysis tests can be conducted on different grinder settings to help find optimal extraction rates, relative to grind size distribution, water contact time, and even water temperature. The results may also be used as a means of communicating specifications to satellite facilities.

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ORIGINAL CBC SPECIFICATIONS										
GRIND		E.P.	REGULAR	ADC	DRIP	FINE	VENDING	EUROPEAN		
								COARSE	MEDIUM	FINE
OTHER NAMES		Regular	Um	Autodrip Silex	All-Purpose Universal	Silex Food Service	Single Cup Vend	NS	NS	Espresso
CONVERSION CHART		ASTM #12 =TYLER #10 =1.70mm	ASTM #16 =TYLER #14 =1.18mm	ASTM #20 =TYLER #20 =.850mm	ASTM #30 =TYLER #28 =.600mm	ASTM #40 =TYLER #35 =.425mm	ASTM #50 =TYLER #48 =.300mm			
MESH SIZES										
TYLER	ASTM									
No (s) 10/14 Sieves	ASTM No(s) 12/16 Sieves	NS	33%	NS	7%	0%	NS	NS	NS	NS
No (s) 20/28 Sieves	ASTM No(s) 20/30 Sieves	NS	55%	NS	73%	70%	NS	NS	NS	NS
Pan	Pan	NS	12%	NS	20%	30%	NS	NS	NS	NS
Particle size (u)*	Particle size (u)*	NS	1020	NS	840	720	NS	NS	NS	NS
Avg. Sieve Mesh (Opening)	Avg. Sieve Mesh (Opening)	NS	16 (0.0390")	NS	20 (0.300")	24 (0.278")	NS	NS	NS	NS
Avg. Particle Dia. (cells) +	Avg. Particle Dia. (cells) +	NS	26	NS	21	18	NS	NS	NS	NS
Avg. Particle per gram	Avg. Particle per gram	NS	1200	NS	2200	3500	NS	NS	NS	NS
Exposed Granule Area (CM2)	Exposed Granule Area (CM2)	NS	46	NS	57	67	NS	NS	NS	NS
NORTH AMERICAN INDUSTRY NORMS										
GRIND		E.P.	REGULAR	ADC	DRIP	FINE	VENDING	EUROPEAN		
								COARSE	MEDIUM	FINE
OTHER NAMES		Regular	Um	Autodrip Silex	All-Purpose Universal	Silex Food Service	Single Cup Vend	NS	NS	Espresso
CONVERSION CHART		ASTM #12 =TYLER #10 =1.70mm	ASTM #16 =TYLER #14 =1.18mm	ASTM #20 =TYLER #20 =.850mm	ASTM #30 =TYLER #28 =.600mm	ASTM #40 =TYLER #35 =.425mm	ASTM #50 =TYLER #48 =.300mm			
MESH SIZES										
TYLER	ASTM									
No (s) 10/14 Sieves	ASTM No(s) 12/16 Sieves	35%	27%	17%	8%	2%	NS	NS	NS	NS
No (s) 20/28 Sieves	ASTM No(s) 20/30 Sieves	42%	60%	65%	65%	62%	10%	NS	NS	NS
No. 35 Sieves	ASTM No(s) 40 Sieve	N/A	N/A	N/A	N/A	N/A	35%	N/A	50%	65%
No. 48 Sieves	ASTM No(s) 50 Sieve	N/A	N/A	N/A	N/A	N/A	35%	N/A		
Pan	Pan	13%	13%	18%	27%	36%	20%	52%	20%	32%
Particle size (u)*	Particle size (u)*	1050	925	825	775	645	400	600	480	360
Avg. Sieve Mesh (Opening)	Avg. Sieve Mesh (Opening)	16 (0.0390")	18 (0.278")	20 (0.0328")	22 (0.0300")	26 (0.0242")	40 (0.0165")	28 (0.0232")	32 (0.0195")	42 (0.0138")
Avg. Particle Dia. (cells) +	Avg. Particle Dia. (cells) +	26	23	21	19	16	10	15	12	9
Avg. Particle per gram	Avg. Particle per gram	1,100	1,600	2,300	2,800	4,800	20,000	NS	12,000	28,000
Exposed Granule Area (CM2)	Exposed Granule Area (CM2)	45	50	58	62	74	118	80	102	134
		SOURCES: Modern Processing Equipment Chicago Ill. ASTM E-11								

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