GROUND COFFEE SPECIFICATIONS ANALYSIS

The table below is our analysis and summary of the coffee industry's grinding practices.

The upper chart of the table refers to the CBC (Coffee Brewing Center) historical standards, which were

Developed as a result of an industry survey in the 1940's. The lower portion is our distillation of current industry standards and reflects a certain adaptation to modern brewing methodology.

GRIND		E.P.	REGULAR	ADC	DRIP	FINE	VENDING	"EUROPEAN"		
GK	GRIND		REGULAR					COARSE	MEDIUM	FINE
Other Names		Regular	Um	Autodrip Silex	All-Purpose Universal	Silex Food Service	Single Cup Vend	NS	NS	Espresso
ns	No(s) 10/14 Sieves	NS	33%	NS	7%	0%	NS	NS	NS	NS
atio	No(s) 20/28 Sieves	NS	55%	NS	73%	70%	NS	NS	NS	NS
ij E	Pan	NS	12%	NS	20%	30%	NS	NS	NS	NS
oeci	Particle Size (µ) *	NS	1020	NS	840	720	NS	NS	NS	NS
Historical CBC Specifications	Avg. Sieve Mesh (Opening)	NS	16 (0.0390")	NS	20 (0.300°)	(0.278°)	NS	NS	NS	NS
al CE	Avg. Particle Dia. (Cells) ‡	NS	26	NS	21	18	NS	NS	NS	NS
toric	Avg. Particle per gram	NS	1200	NS	2200	3500	NS	NS	NS	NS
His	Exposed Granule Area (CM*)	NS	46	NS	57	67	NS	NS	NS	NS
	No (s) 10/14 Sieves	35%	27%	17%	8%	2%	N/A	N/A	N/A	N/A
	No (s) 20/28 Sieves	42%	60%	65%	65%	62%	10%	48%	22%	3%
can	No. 35 Sieves	N/A	N/A	N/A	N/A	N/A	35%	N/A	58%	65%
American try Norms	No. 48 Sieves	N/A	N/A	N/A	N/A	N/A	35%	N/A	50%	05%
AM	Pan	13%	13%	18%	27%	38%	20%	52%	20%	32%
th /	Particle Size (µ) *	1050	925	825	775	645	400	600	480	360
A ctual North American Coffee Industry Norms	Avg. Sieve Mesh (Opening)	16 (0.0390°)	18 (0.0360")	20 (0.0328")	(0.0300°)	26 (0.0242*)	40 (0.0165")	28 (0.0232")	32 (0.0195*)	42 (0.0138°)
A ctual Coffee	Avg. Particle Size (Cells) ‡	28	23	21	19	18	10	15	12	9
Ac	Avg. Particle per gram	1,100	1,600	2,300	2,800	4,800	20,000	6,000	12,000	28,000
	Exposed Granule Area (Cm²)	45	50	58	62	74	118	80	102	134

Notes: All sieve mesh sizes refer to Tyler screens.

* μ = Micron = 0.001 mm ‡ 40 Micron per Cell NS No Specification N/A Not Applicable (screen not used)

MODERN PROCESS EQUIPMENT, INC.

3125 South Kolin Ave. Chicago, IL 60623 USA ph: 773.254.3929 fx: 773.254.3935 e:solutions@mpechicago.com web:mpechicago.com/coffee

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SIZE CONVERSION TABLE						
U.S. Mesh	Tyler Mesh	Inches	Microns			
4	4	0.1850	4699			
5	5	0.1560	3962			
6	6	0.1310	3327			
7	7	0.1100	2794			
8	8	0.0930	2362			
10	9	0.0780	1981			
12	10	0.0650	1651			
14	12	0.0550	1397			
16	14	0.0460	1168			
18	16	0.0390	991			
20	20	0.0328	833			
25	24	0.0276	701			
30	28	0.0232	589			
35	32	0.0195	495			
40	35	0.0164	417			
45	42	0.0138	351			
50	48	0.0116	295			
60	60	0.0097	246			
70	65	0.0082	208			
80	80	0.0069	175			
100	100	0.0058	147			
120	115	0.0049	124			
140	150	0.0041	104			
170	170	0.0035	89			
200	200	0.0029	74			
230	250	0.0024	61			
270	270	0.0021	53			
325	325	0.0017	43			
400	400	0.0015	38			
Moder	n Process	Equipme	nt, Inc.			

Performing a Grind Analysis Utilizing the Ro-Tap Method Modern Process Equipment, Inc. • Chicago, Illinois

I. Supplies Required:

A) 600 g. x 0.1g. scale (typical)



B) Ro-Tap screens required:

Regular/Drip Grinds (800 micron average)

line.		V	T
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Tyler	U.S.
10	12
14	16
20	20

Pan

Fine Grin	ds (600	micron	average)	
			7	

Tyler	U.S.
20	20
28	30
35	40
48	50
60	60
Pan	Pan

- C) Sample pans
- D) Ro-Tap screen shaker Model No. RX-29.



Note: Equipment for (B) and (D) above may be purchased at: W.S. Tyler 8570 Tyler Blvd., Mentor OH 44060 Telephone No.: 800.321.6188

II. Procedure:

A) Insure the screens are clean. This should be accomplished by using an oil cutting solution and allowing the screen(s) to dry properly.

Note: On grind tests at 800 micron-type grinds, screens should be cleaned every four (4) tests. On grind tests at 600 micron-type grinds, screens should be cleaned after every test.

- B) Weigh approximately 100 g. of ground coffee into the sample pan and pour into top screen of stacked pans.
- C) Allow to shake on Ro-Tap shaker for five (5) minutes.



Performing a Grind Analysis Utilizing the Ro-Tap Method Modern Process Equipment, Inc. • Chicago, Illinois

D) Starting with top scre	en, weigh out each s	screen, and record r	result.					
E) Calculate the percent of the total using one	t of each screen base of the following meth	ed on that screen's nods: (See attached	percent I worksheets).					
I. If 100 g. is the total sample size, the result, in grams, on each pan will equal the same in percent.								
2. Calculate the result	for each pan by divi	ding that pan's weig	ht by the sample to	otal.				
Utilize the attached In this case, the rest automatically, regard	ults are merely insert	ed in the indicated	iloaded at: www.mp column and the res	echicago.com/coffee. ults are calculated				
III. Analyze the results:								
A) Compare the sample the MPE Grind Refer	results to your stand ence Sheet (attache	dards or other target d).	ts such as					
IV. Notes:								
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Ground Coffee Excel Spreadsheet Rotap Methodology

TEST #	-	1	2		3	
DATE:	4-Ma	y-07	4-May-07		4-May-07	
N O T E S	Coarse Dri Sample	p Grind	Fine Drip Grind Sample		Filter Fine Grind Sample (Also illustrated by Test #4)	
MESH	Weight	%	Weight	%	Weight	%
(Tyler)	(grams)	Retained	(grams)	Retained	(grams)	Retained
10	0.6	0.6%	0.0	0.0%	0.0	0.0%
14	5.1	4.4%	2.3	2.2%	0.0	0.0%
20	34.6	28.9%	28.4	24.9%	15.2	15.0%
28	77.6	42.2%	67.0	36.8%	39.2	23.8%
PAN	102.0	23.9%	105.0	36.2%	101.2	61.3%

TEST #	4		5		6	
DATE:	4-Ma	y-07	Sample		4-May-07	
N O T E S	Filter Fin Sample (Also illu Test #3)	e Grind strated by				
MESH	Weight	%	Weight	%	Weight	8
(Tyler)	(grams)	Retained	(grams)	Retained	(grams)	Retained
20	15.2	15.0%	0.0	0.0%		
28	39.2	23.8%	3.2	2.9%		
35	66.4	26.9%	33.8	27.8%		
48	87.9	21.3%	75.1	37.6%		
PAN	101.2	13.1%	110.0	31.7%		