

# J.M. Canty Inc.

6100 Donner Road  
Lockport, NY 14094

Phone (716) 625-4227

Fax (716) 625-4228

email: [sales@jmcanty.com](mailto:sales@jmcanty.com)

---

## Cereal Particle Size

### Sample consisting of:

- |   |                                    |
|---|------------------------------------|
| 1 | ~5 pound cereal loops, 1           |
| 2 | ~5 pound cereal loops, 2           |
| 3 | ~5 pound cereal loops, '3          |
| 4 | partial of 5 pound cereal loops, 4 |
| 5 | partial of 5 pound cereal loops, 5 |

**Purpose of test** – To establish a measurement method to characterize the pellet form of the cereal loops supplied in these samples. The activity reported here details a measurement of the outside diameter (OD) and hole size for the loops as the product passes through the Canty SolidSizer TS.

**General** – Each of the five product samples was examined as detailed in *section 2* following. The measurements reported there were made under the same conditions and thus serve to characterize each sample for comparison with the others. A small number of pellets were measured with a caliper to verify results and to perform a reality check.

SECTION 2

**Test Setup Description** – Each sample is examined individually as follows:

Loops are loaded into the feed hopper of the SolidSizer and conveyed past the camera system.

Light is supplied from the top as is view – this is the Black Speck configuration of the unit.

**DETAILS** – Numerical results are shown for each sample, averaged for 3000 measurements

Sample Number	OD, mm	OD Std Dev	Hole Diameter, mm	Hole Std Dev
1	8.269	0.735	2.575	0.479
2	8.297	0.821	2.464	0.484
3	8.335	0.747	2.377	0.490
4	8.201	0.995	2.370	0.501
5	8.189	0.940	2.385	0.489

Screen images of Lab Test, typical for each sample is shown in the following figures.

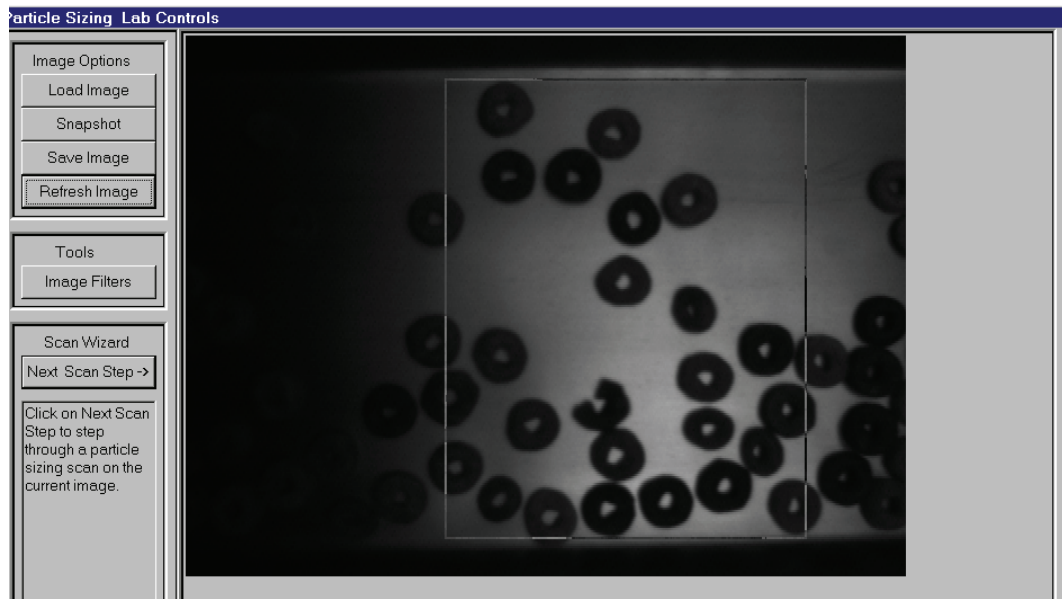


Figure 1, Lab Test, sample -1 on feeder

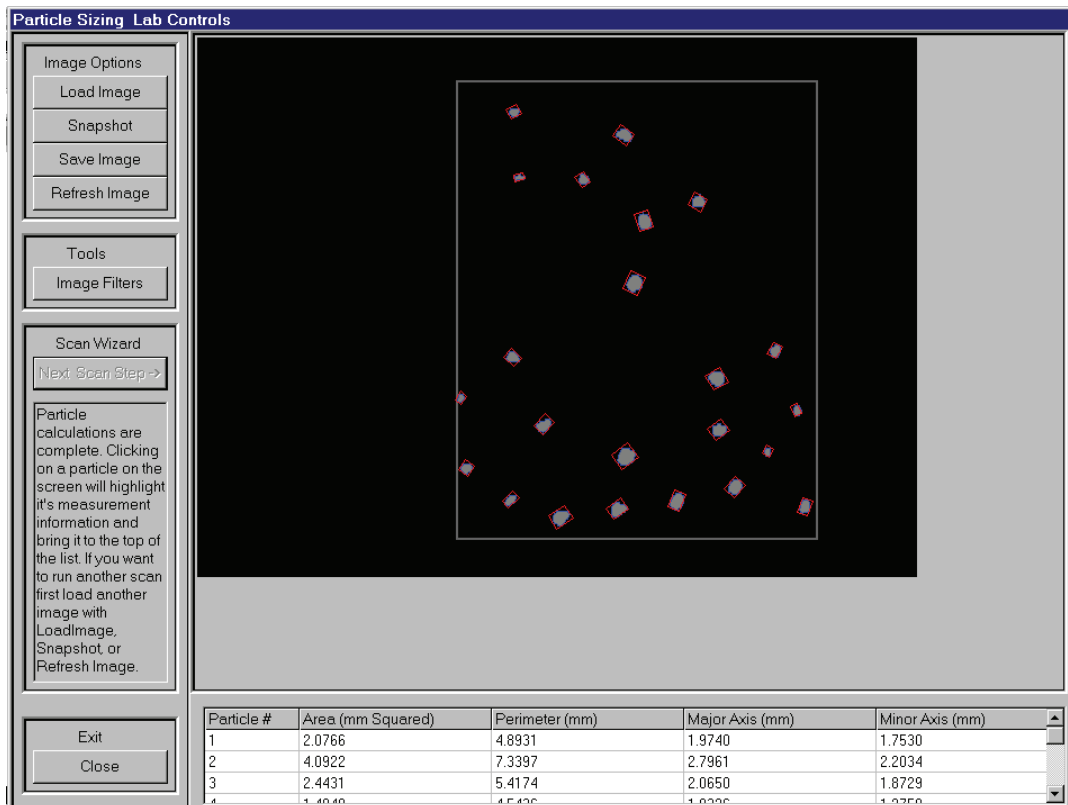


Figure 2, Lab Test Results, Hole Size, Sample -1

Numerical display of all detected holes for Figure 2:

Time (h:m:s:ms),	Area (mm squared),	Perimeter (mm),	Major Axis (mm),	Minor Axis (mm)
11:17:55:99,	2.077,	4.893,	1.974,	1.753
11:17:55:99,	4.092,	7.34,	2.796,	2.203
11:17:55:99,	2.443,	5.417,	2.065,	1.873
11:17:55:99,	1.405,	4.544,	1.833,	1.276
11:17:55:99,	3.42,	6.641,	2.453,	2.305
11:17:55:99,	4.581,	7.514,	2.938,	2.273
11:17:55:99,	5.497,	8.213,	3.067,	2.614
11:17:55:99,	2.932,	5.767,	2.364,	1.854
11:17:55:99,	3.054,	6.116,	2.399,	2.028
11:17:55:99,	5.131,	8.039,	2.842,	2.713
11:17:55:99,	1.405,	4.019,	1.678,	1.395
11:17:55:99,	2.016,	4.718,	1.896,	1.506
11:17:55:99,	3.848,	7.165,	2.773,	2.188
11:17:55:99,	3.909,	7.165,	2.658,	2.387
11:17:55:99,	6.352,	8.912,	3.286,	2.933
11:17:55:99,	1.344,	3.845,	1.584,	1.392
11:17:55:99,	2.626,	5.592,	2.065,	1.967
11:17:55:99,	4.337,	7.165,	2.773,	2.266
11:17:55:99,	4.764,	7.689,	2.998,	2.185
11:17:55:99,	2.382,	5.417,	2.399,	1.534
11:17:55:99,	3.115,	6.116,	2.609,	1.793
11:17:55:99,	4.642,	8.039,	2.938,	2.365
11:17:55:99,	5.008,	8.039,	3.083,	2.556

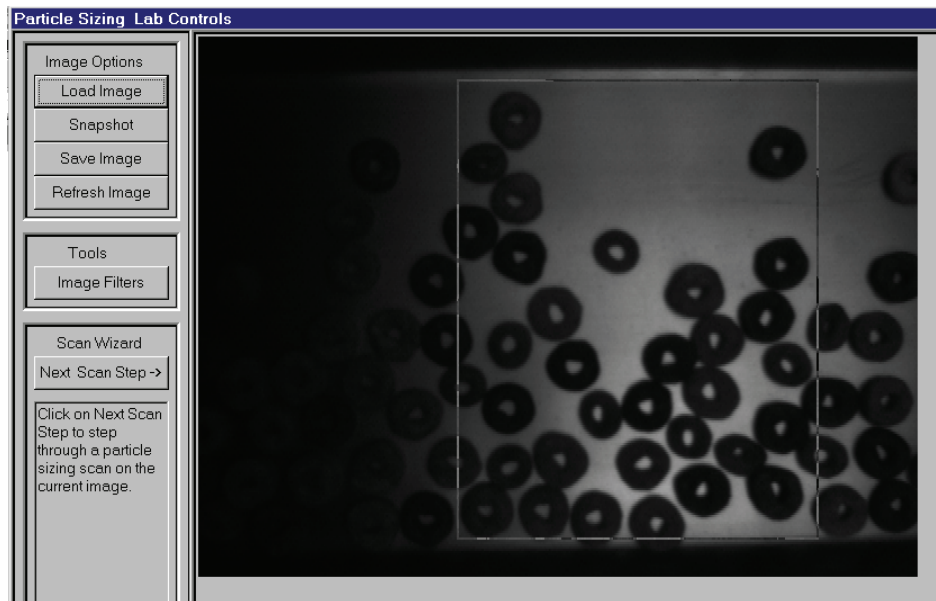


Figure 3, OD Measurement Sample -1, Lab Test

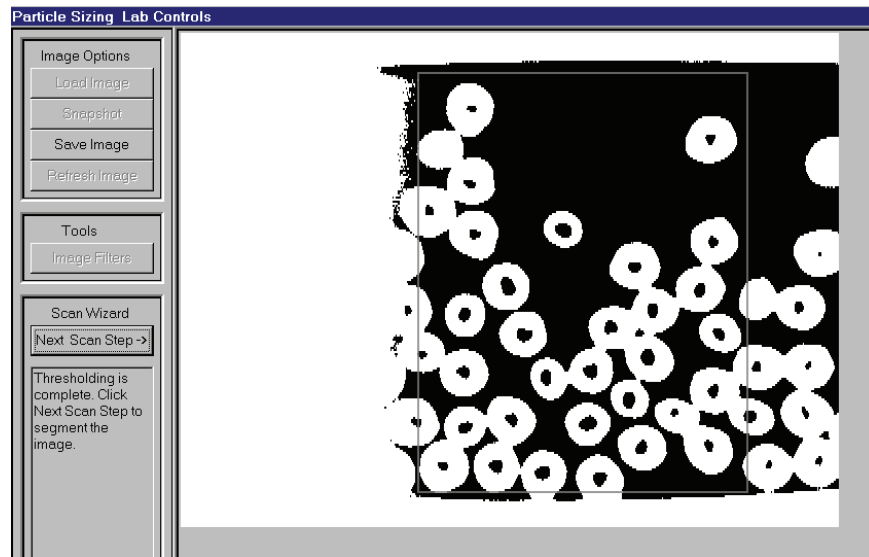


Figure 4, lab test after threshold with value 33

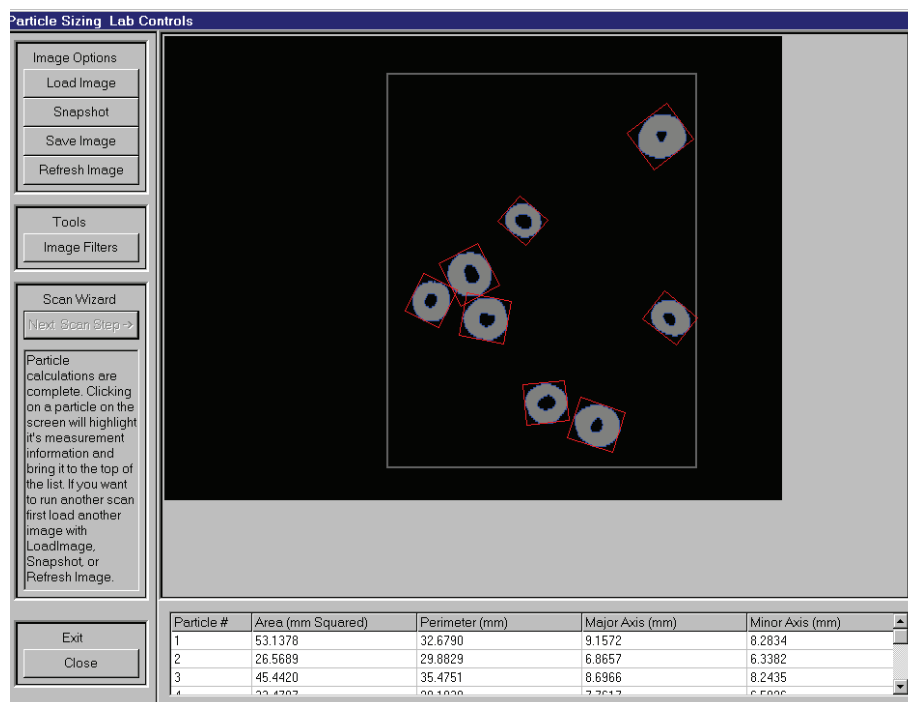


Figure 5, Sample -1 OD, Lab Test

Lab data produced from above test is shown below:

Time (h:m:s:ms), Area (mm squared), Perimeter (mm), Major Axis (mm), Minor Axis (mm)

11:25:30:253,	53.14,	32.68,	9.157,	8.283
11:25:30:253,	26.57,	29.88,	6.866,	6.338
11:25:30:253,	45.44,	35.48,	8.697,	8.243
11:25:30:253,	33.47,	29.18,	7.762,	6.583
11:25:30:253,	36.77,	30.93,	7.756,	7.135
11:25:30:253,	44.53,	34.43,	8.366,	8.018
11:25:30:253,	38.17,	33.9,	7.913,	7.52
11:25:30:253,	46.79,	33.38,	8.796,	7.915

A quarter cup of the pellets the mixed sample of material found in the shipping container were taken from the feeder bin and physically measured with a digital caliper, Mitutoyo, set to mm.

item #	major OD, mm	major ID, mm	color		
1	8.44	2.64	red		
2	8.69	3.06	blue		
3	8.7	3.1	green		
4	8.93	2.87	red		
5	8.82	2.98	orange		
6	8.45	2.5	orange		
7	8.1	2.67	green		
8	8.46	2.96	blue		
9	7.71	2.88	yellow/red		
10	7.43	1.96	yellow/red		
11	7.78	2.13	yellow/red		
12	9.23	2.74	blue		
13	8.92	2.23	orange		
14	8.93	3.19	green		
15	8.67	2.72	red		
16	8.32	2.98	blue		
17	8.41	2.03	green		
18	8.38	1.91	orange		
19	8.79	2.82	green	OD	ID
20	8.97	2.27	green	8.5065	2.632
21				average for 20	units

A comparison between the mechanical manual measurement above and the Vector measurement of 3000 OD and hole measurements is shown:

Vector OD	9.136 mm	hole	3.231 mm
SD	2.477		0.687

The measurements made manually are an indicator of system accuracy. The vector software generally tends to find the largest diameter around the entire circumference whereas the manual measurement is more subjective. Still the results, though slightly different, are consistent for both methods and thus the system can provide repeatable, accurate data.