

# 2006 Roofing Asphalt Proficiency Program Report

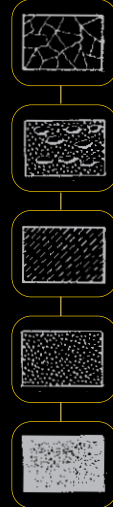


Proficiency Samples 03 and 04

AUGUST 2006

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*Shay C. Emmons*

# Asphalt Institute



AI Research and Laboratory Services





August 2006

To: Participants in the June 2006 Proficiency Sample Program for Roofing Asphalts

Re: Final Report for Proficiency Samples 03 and 04

Enclosed is information on the analysis of data from Roofing Asphalt Binder Proficiency Samples 03 and 04 distributed in May 2006. The first page of the report is a summary that indicates your laboratory's data compared to the average results for all participating labs, after discarding data that is three or more standard deviations from the mean. The information in the last two columns show a rating based on how closely your laboratory's data matches the average result for the sample/test. The best rating is a "5" indicating results that are within one standard deviation of the mean. The worst rating is a "0" indicating results that are three or more standard deviations from the mean. A negative sign before the rating means that the lab result is lower than the average; otherwise the lab result is higher than the average.

The next two pages of the report are summary tables showing statistical data for each test. The standard deviation and the acceptable range of two test results (multi-laboratory d2s) are calculated for each sample/test.

The following four pages of the report are scatter diagrams. For each test, Sample 03 results are plotted against Sample 04 results. Dashed vertical and horizontal lines represent the average value for each sample. It is desirable to be near the intersection of these two lines indicating that your laboratory's test results match the average results for all participating labs. It is also desirable that your laboratory's data point is close to the diagonal from the bottom left of the graph to the top right. Data points far from this diagonal may indicate a problem with test repeatability within the lab.

In the future, a set of performance charts will also be added to the report to allow you a look at the performance trend on a particular test over a period of time. In this manner a consistent bias can be identified leading to potential changes in equipment or laboratory procedures.

We appreciate your interest in the 2006 Proficiency Sample Program for Roofing Asphalts. Please contact me (859-288-4984 or [manderson@asphaltinstitute.org](mailto:manderson@asphaltinstitute.org)) or our program coordinator, Shay Emmons (859-288-4982 or [semmons@asphaltinstitute.org](mailto:semmons@asphaltinstitute.org)) if you have any questions about the report or suggestions for improvement.

Sincerely,

Mike Anderson, P.E.  
Director of Research and Laboratory Services - Asphalt Institute

# May 2006 Roofing Asphalt Proficiency Sample Program Report Results for Laboratory

## Sample Program Numbers 03 and 04

Test	Lab Data		Averages		Ratings	
	03	04	03	04	03	04
<i>ASTM D92</i>						
Flash Point by Cleveland Open Cup (F)			542.6	537.3		
<i>ASTM D36</i>						
Ring & Ball Softening Point (F)			221.6	222.2		
<i>ASTM D5</i>						
Penetration at 32F, 200g, 60s (0.1 mm)			10.1	11.5		
Penetration at 77F, 100g, 5s (0.1 mm)			17.6	18.0		
Penetration at 115F, 50g, 5s (0.1 mm)			32.2	31.8		
<i>ASTM D113</i>						
Ductility at 77F (cm)			3.1	3.1		
<i>ASTM D4402</i>						
Rotational Viscosity at 400F (cP)			445.0	466.6		
<i>ASTM D2746</i>						
Stain Index			7.4	7.5		

### Notes:

Ratings shown were calculated from computed standard deviations. A negative number is an indication that the lab result is lower than the average. A positive ranking means that the lab result is higher than the average. Ratings are as follows:

- "5" data within 1.0 standard deviations of the mean.
- "4" data within 1.5 standard deviations of the mean.
- "3" data within 2.0 standard deviations of the mean.
- "2" data within 2.5 standard deviations of the mean.
- "1" data within 3.0 standard deviations of the mean.
- "0" data that is 3.0 or more standard deviations from the mean.

A blank result means that no data was supplied by the laboratory. Data resulting in a "0" rating is 3.0 or more standard deviations from the mean, and was therefore excluded from the statistical analysis.

Labs are cautioned that a single low rating, or pair of ratings, may not be cause for concern. However, a continuing trend of low ratings on several pairs of proficiency samples suggests that the laboratory should re-examine its test procedures and equipment to ascertain potential sources of error.

## May 2006 Roofing Asphalt Proficiency Sample Program Report Summary Table

### Sample 03

Test Result	No. Labs	Avg.	Standard Deviation (1s)	Coefficient of Variation (1s%)	Acceptable Range of Two Results	
					d2s	d2s%
ASTM D92	16	542.6	33.6	6.2%	95.1	17.5%
Flash Point by Cleveland Open Cup (F)	16	542.6	33.6	6.2%	95.1	17.5%
ASTM D36	17	221.6	6.2	2.8%	17.4	7.9%
Ring & Ball Softening Point (F)	17	221.6	6.2	2.8%	17.4	7.9%
ASTM D5	12	10.1	3.1	30.7%	8.8	86.8%
Penetration at 32F, 200g, 60s (0.1 mm)	12	10.1	3.1	30.7%	8.8	86.8%
ASTM D5	18	18.8	6.1	32.5%	17.3	92.1%
Penetration at 77F, 100g, 5s (0.1 mm)	17	17.6	3.5	20.1%	10.0	56.9%
ASTM D5	15	32.2	6.6	20.6%	18.8	58.4%
Penetration at 115F, 50g, 5s (0.1 mm)	15	32.2	6.6	20.6%	18.8	58.4%
ASTM D113	12	4.0	2.9	72.2%	8.1	204.3%
Ductility at 77F (cm)	11	3.1	0.3	8.0%	0.7	22.7%
ASTM D4402	17	462.1	82.7	17.9%	234.0	50.6%
Rotational Viscosity at 400F (cP)	16	445.0	44.5	10.0%	126.0	28.3%
ASTM D2746	9	7.4	2.4	32.7%	6.8	92.4%
Stain Index	9	7.4	2.4	32.7%	6.8	92.4%

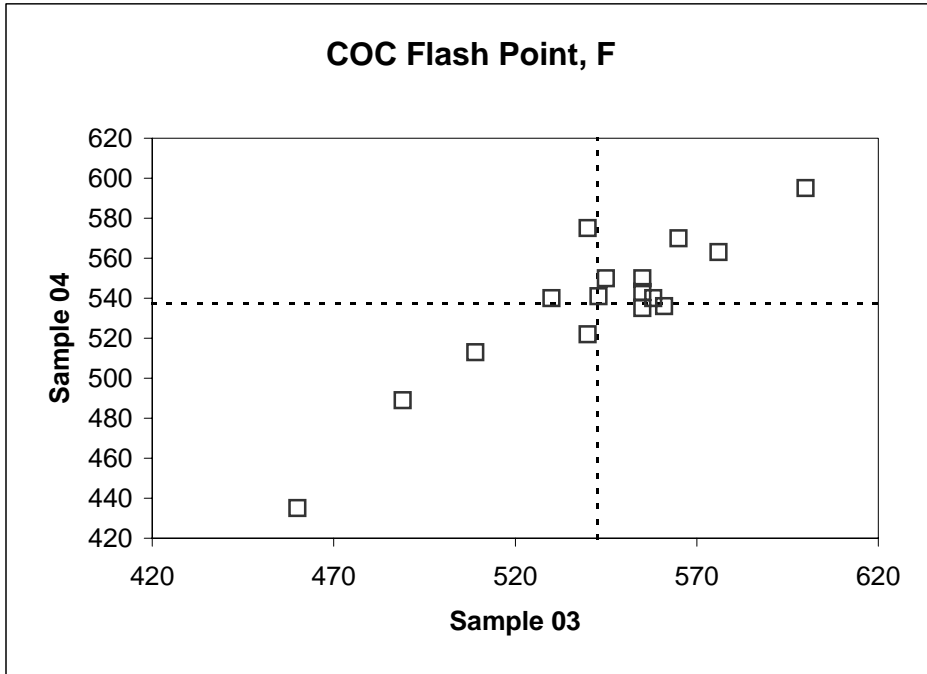
Note: Shaded cells show results after removing outlying data (3 or more standard deviations from the mean).

## May 2006 Roofing Asphalt Proficiency Sample Program Report Summary Table

### Sample 04

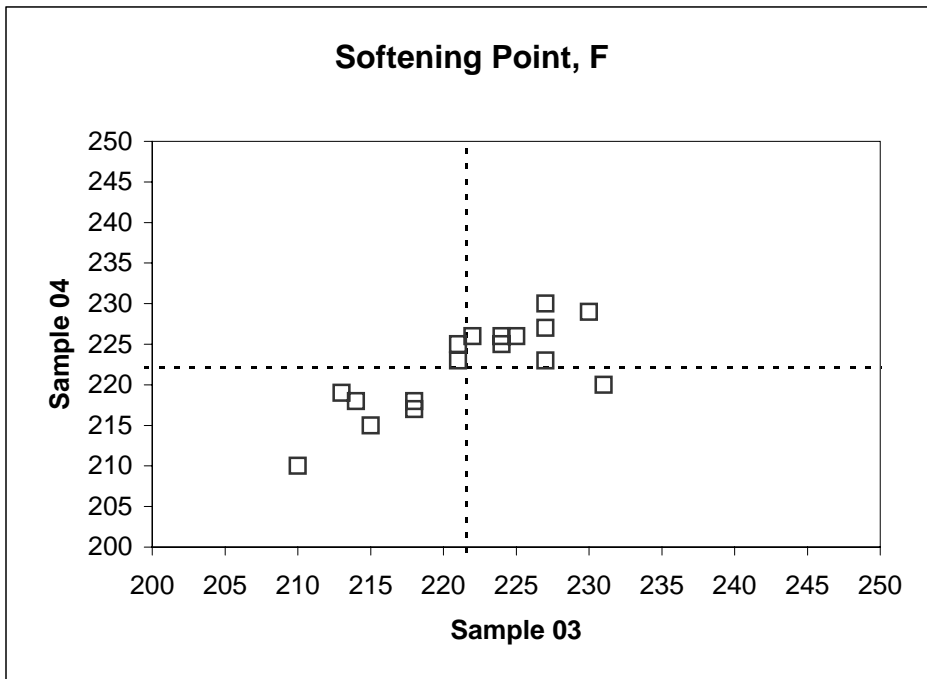
Test Result	No. Labs	Avg.	Standard Deviation (1s)	Coefficient of Variation (1s%)	Acceptable Range of Two Results	
					d2s	d2s%
ASTM D92	16	537.3	37.0	6.9%	104.6	19.5%
Flash Point by Cleveland Open Cup (F)	16	537.3	37.0	6.9%	104.6	19.5%
ASTM D36	17	222.2	5.4	2.4%	15.3	6.9%
Ring & Ball Softening Point (F)	17	222.2	5.4	2.4%	15.3	6.9%
ASTM D5	12	11.5	7.6	65.7%	21.5	186.0%
Penetration at 32F, 200g, 60s (0.1 mm)	12	11.5	7.6	65.7%	21.5	186.0%
ASTM D5	18	18.0	4.1	22.9%	11.6	64.8%
Penetration at 77F, 100g, 5s (0.1 mm)	18	18.0	4.1	22.9%	11.6	64.8%
ASTM D5	15	31.8	6.5	20.5%	18.4	57.9%
Penetration at 115F, 50g, 5s (0.1 mm)	15	31.8	6.5	20.5%	18.4	57.9%
ASTM D113	12	3.9	2.6	66.8%	7.3	189.1%
Ductility at 77F (cm)	11	3.1	0.3	9.1%	0.8	25.9%
ASTM D4402	17	466.6	75.0	16.1%	212.3	45.5%
Rotational Viscosity at 400F (cP)	17	466.6	75.0	16.1%	212.3	45.5%
ASTM D2746	9	7.5	2.7	36.2%	7.7	102.5%
Stain Index	9	7.5	2.7	36.2%	7.7	102.5%

Note: Shaded cells show results after removing outlying data (3 or more standard deviations from the mean).



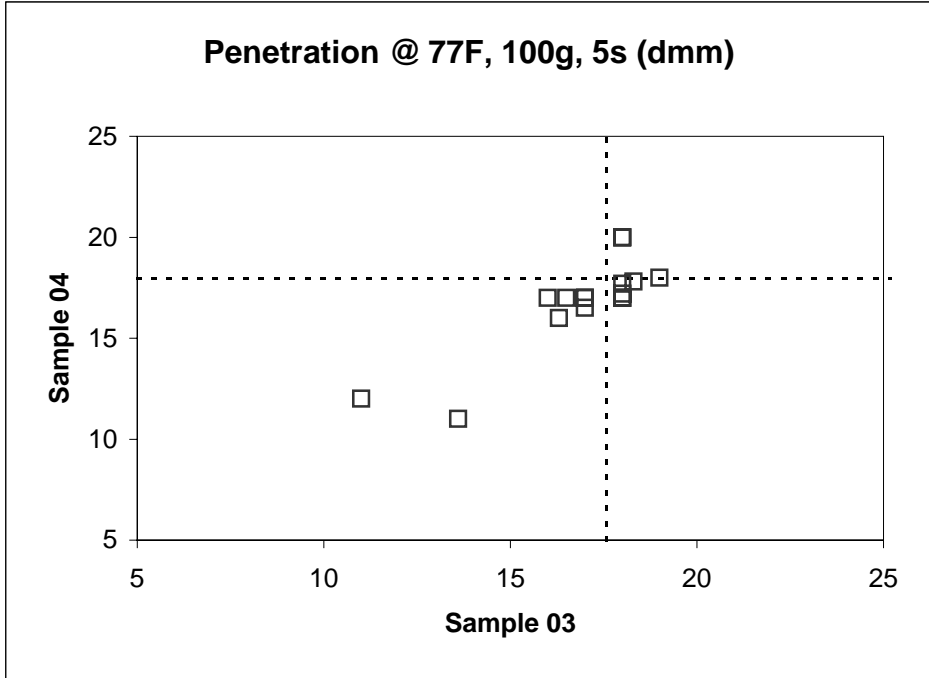
Sample 03	Average	542.6	Std. Dev.	33.6
Sample 04	Average	537.3	Std. Dev.	37.0

Lab #'s Excluded: None



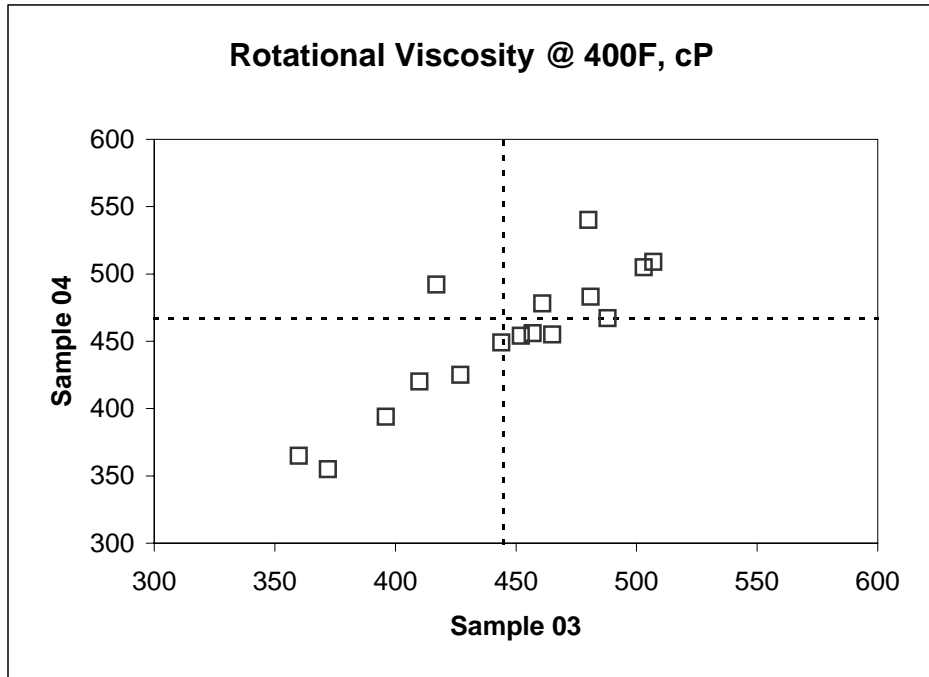
Sample 03	Average	221.6	Std. Dev.	6.2
Sample 04	Average	222.2	Std. Dev.	5.4

Lab #'s Excluded: None



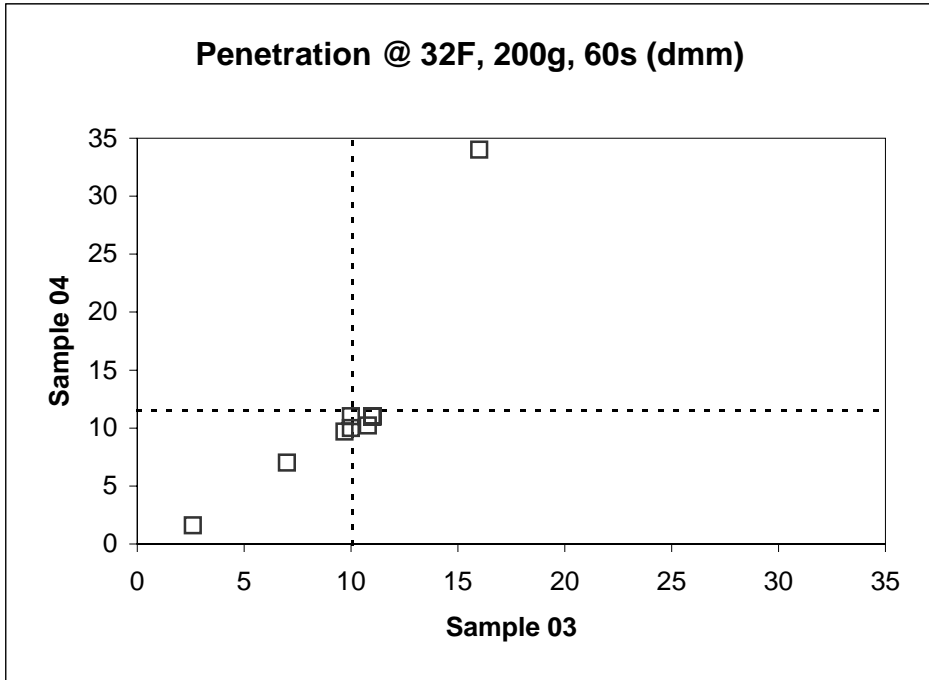
Sample 03	Average	17.6	Std. Dev.	3.5
Sample 04	Average	18.0	Std. Dev.	4.1

Lab #'s Excluded: 15



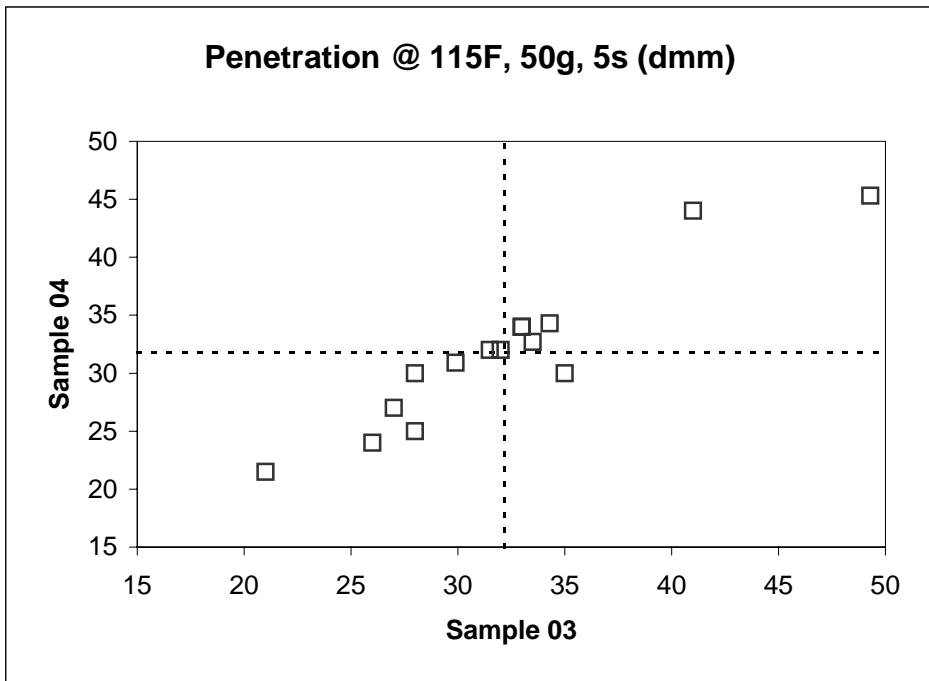
Sample 03	Average	445.0	Std. Dev.	44.5
Sample 04	Average	466.6	Std. Dev.	75.0

Lab #'s Excluded: 24



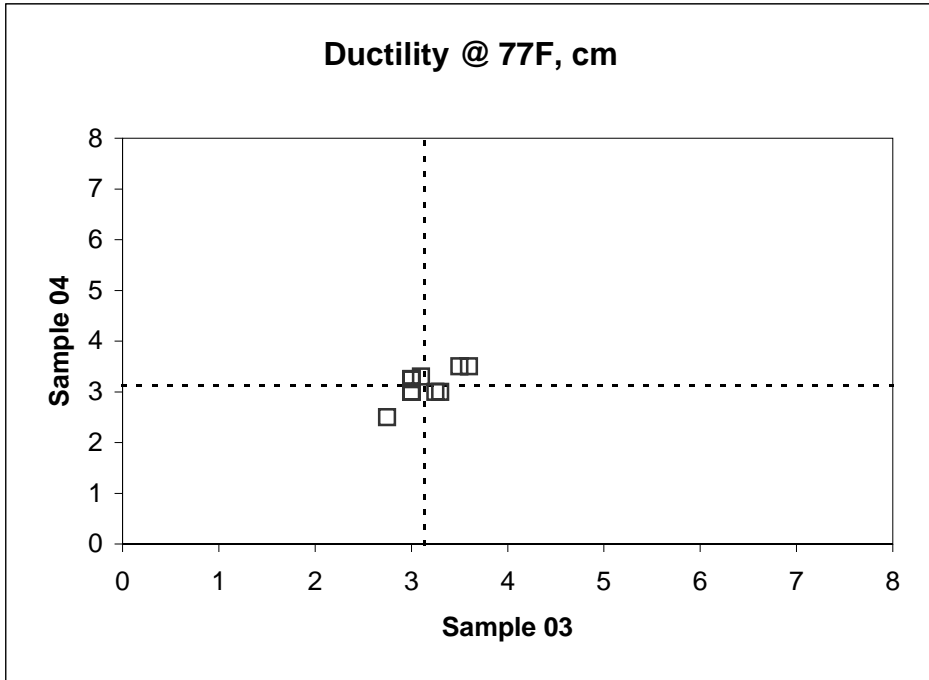
Sample 03	Average	10.1	Std. Dev.	3.1
Sample 04	Average	11.5	Std. Dev.	7.6

Lab #'s Excluded: None



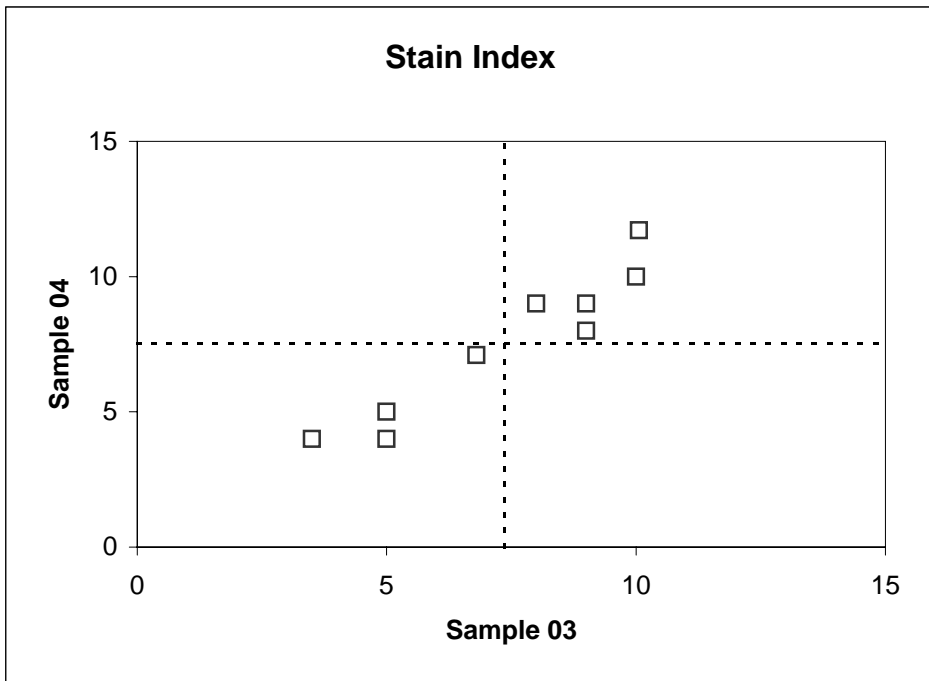
Sample 03	Average	32.2	Std. Dev.	6.6
Sample 04	Average	31.8	Std. Dev.	6.5

Lab #'s Excluded: None



Sample 03	Average	3.1	Std. Dev.	0.3
Sample 04	Average	3.1	Std. Dev.	0.3

Lab #'s Excluded: 7



Sample 03	Average	7.4	Std. Dev.	2.4
Sample 04	Average	7.5	Std. Dev.	2.7

Lab #'s Excluded: None



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