

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** **P-102**

Sample Date: 11/25/24

Concrete Grade: DM, 4500HP

Contractor: \_\_\_\_\_

Dates Test Represents: 11/26/2024 through 12/2/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1425	8.49	2.69	48.3
26A	58-003	Stoneco	375	2.23	2.69	12.7
2NS	63-114	Highland	1150	6.95	2.65	39.0
<b>Total Wt</b>			<b>2950</b>	<b>17.68</b>		<b>100.0</b>

<----- Verify this number is 100%



**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	76.4	100.0	100.0	88.6	11.4	11.4
1/2"	31.8	100.0	100.0	67.1	21.5	32.9
3/8"	14.4	88.2	100.0	57.2	9.9	42.8
#4	1.7	10.6	99.1	40.8	16.4	59.2
#8	1.0	2.4	84.9	33.9	6.9	66.1
#16	1.0	1.6	65.8	26.3	7.5	73.7
#30	0.9	1.2	44.5	17.9	8.4	82.1
#50	0.9	1.2	21.4	8.9	9.0	91.1
#100	0.8	1.1	4.4	2.2	6.7	97.8
LBW	0.6	1.0	0.2	0.5	1.7	99.5

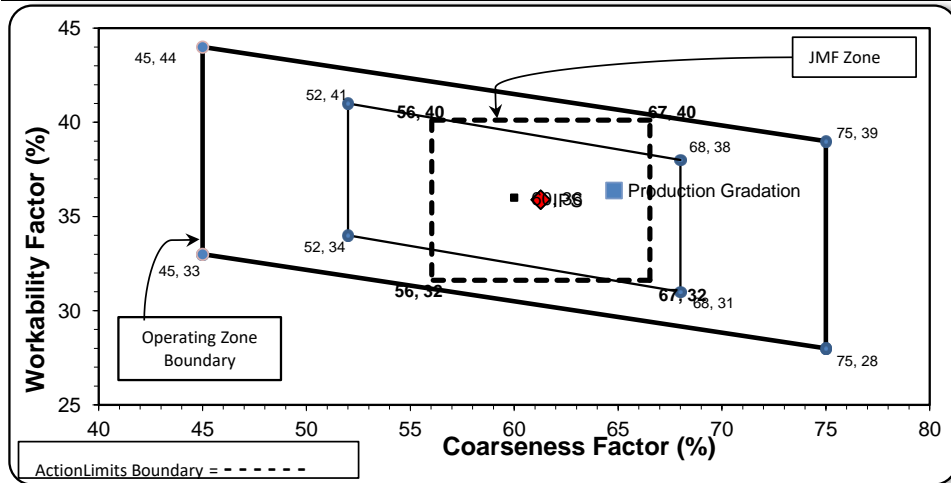
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>65</b>	<b>Workability Factor:</b>	<b>34</b>	<b>36.4</b>
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<b>Coarseness Factor:</b>	<b>61</b>
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<b>Workability Factor:</b>	<b>36</b>
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Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** **P-103**

Sample Date: 11/25/24

Concrete Grade: DM, 4500HP

Contractor: \_\_\_\_\_

Dates Test Represents: 11/26/2024 through 12/2/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1425	8.49	2.69	48.3
26A	58-003	Stoneco	375	2.23	2.69	12.7
2NS	63-114	Highland	1150	6.95	2.65	39.0
<b>Total Wt</b>			<b>2950</b>	<b>17.68</b>		<b>100.0</b>

<----- Verify this number is 100%



**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	76.4	100.0	100.0	88.6	11.4	11.4
1/2"	31.8	100.0	100.0	67.1	21.5	32.9
3/8"	14.4	88.2	100.0	57.2	9.9	42.8
#4	1.7	10.6	99.1	40.8	16.4	59.2
#8	1.0	2.4	84.9	33.9	6.9	66.1
#16	1.0	1.6	65.8	26.3	7.5	73.7
#30	0.9	1.2	44.5	17.9	8.4	82.1
#50	0.9	1.2	21.4	8.9	9.0	91.1
#100	0.8	1.1	4.4	2.2	6.7	97.8
LBW	0.6	1.0	0.2	0.5	1.7	99.5

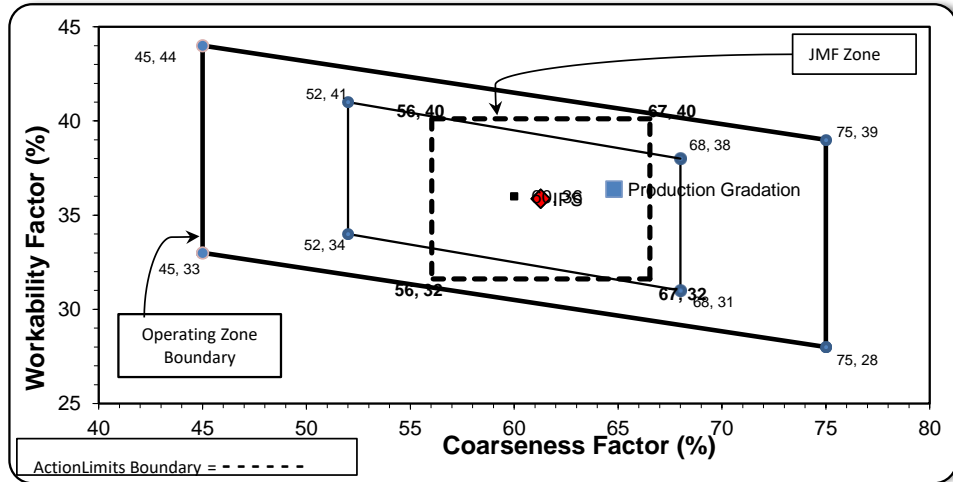
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>65</b>	<b>Workability Factor:</b>	<b>34</b>	<b>36.4</b>
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<b>Coarseness Factor:</b>	<b>61</b>
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<b>Workability Factor:</b>	<b>36</b>
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Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:  
 SM, LLC Technical Service

Approved BY:

# Aggregate Optimization Chart

**PLANT #:** 12

Sample Date: 11/25/24

Concrete Grade: DM, 4500HP

Contractor: \_\_\_\_\_

Dates Test Represents: 11/26/2024 through 12/2/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1600	9.79	2.62	55.1
26A	71-47	Presque Isle	155	0.95	2.62	5.3
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

<----- Verify this number is 100%



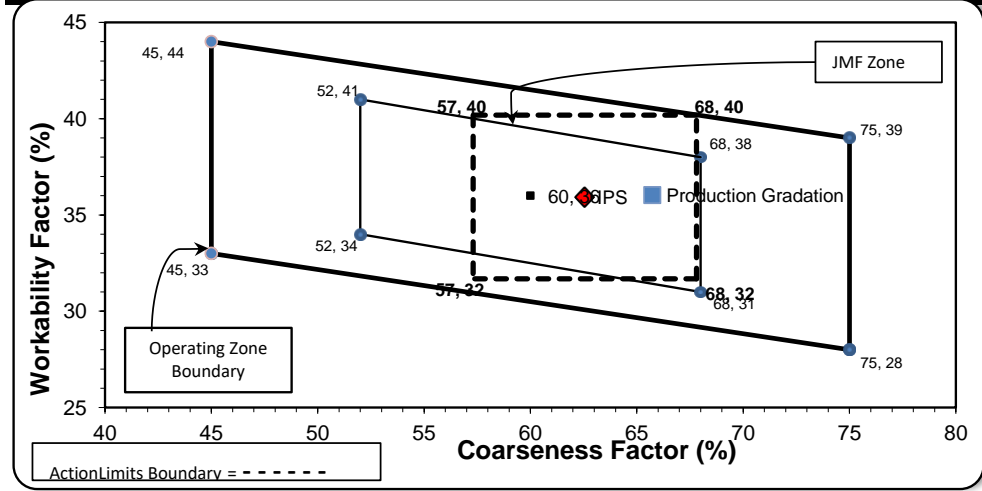
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	79.3	100.0	100.0	88.6	10.4	11.4
1/2"	43.2	95.5	100.0	68.5	20.1	31.5
3/8"	22.3	83.3	100.0	56.3	12.2	43.7
#4	5.4	19.1	98.1	42.8	13.5	57.2
#8	2.6	5.2	80.4	33.5	9.3	66.5
#16	2.1	3.1	62.6	26.1	7.4	73.9
#30	2.1	2.9	46.2	19.6	6.5	80.4
#50	2.0	2.7	24.2	10.8	8.8	89.2
#100	2.0	2.6	5.6	3.5	7.4	96.5
LBW	1.7	2.4	0.8	1.4	2.1	98.6

\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>66</b>	<b>Workability Factor:</b>	<b>34</b>	<b>Adjusted WF</b>	<b>36.0</b>	<b>Coarseness Factor:</b>	<b>63</b>
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<b>Workability Factor:</b>				<b>36</b>
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
2"	100.0	0.0	0.0	
1.5"	100.0	0.0	0.0	
1"	99.3	0.7	0.7	
3/4"	89.0	10.3	11.0	
1/2"	70.3	18.7	29.7	
3/8"	59.9	10.4	40.1	
#4	41.9	18.0	58.1	
#8	35.9	6.0	64.1	
#16	27.8	8.2	72.2	
#30	18.9	8.8	81.1	
#50	6.3	12.6	93.7	
#100	1.7	4.6	98.3	
LBW	1.0	0.7	99.0	

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** p11

Contractor: \_\_\_\_\_

Sample Date: 11/25/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 11/26/2024 through 12/2/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1600	9.79	2.62	55.1
26A	71-47	Presque Isle	155	0.95	2.62	5.3
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

<----- Verify this number is 100%



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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	79.3	100.0	100.0	88.6	10.4	11.4
1/2"	43.2	95.5	100.0	68.5	20.1	31.5
3/8"	22.3	83.3	100.0	56.3	12.2	43.7
#4	5.4	19.1	98.1	42.8	13.5	57.2
#8	2.6	5.2	80.4	33.5	9.3	66.5
#16	2.1	3.1	62.6	26.1	7.4	73.9
#30	2.1	2.9	46.2	19.6	6.5	80.4
#50	2.0	2.7	24.2	10.8	8.8	89.2
#100	2.0	2.6	5.6	3.5	7.4	96.5
LBW	1.7	2.4	0.8	1.4	2.1	98.6

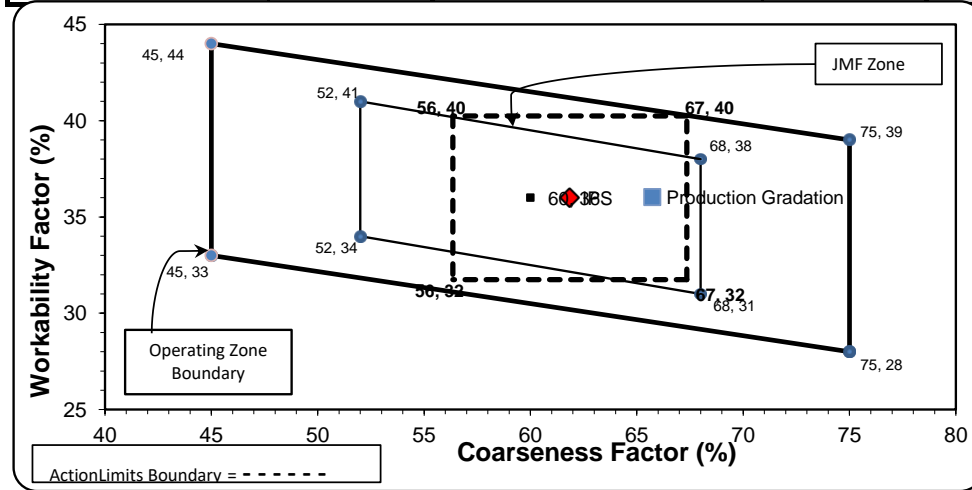
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>66</b>	<b>Workability Factor:</b>	<b>34</b>
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<b>Coarseness Factor:</b>	<b>62</b>
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<b>Workability Factor:</b>	<b>36</b>
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Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	95.0	5.0	5.0
1/2"	72.3	22.8	27.7
3/8"	60.4	11.8	39.6
#4	42.6	17.8	57.4
#8	36.0	6.6	64.0
#16	29.5	6.5	70.5
#30	20.3	9.2	79.7
#50	9.5	10.8	90.5
#100	3.4	6.1	96.6
LBW	1.3	2.1	98.7

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** **P-02**

Sample Date: 11/25/24

Concrete Grade: DM, 4500HP

Contractor: \_\_\_\_\_

Dates Test Represents: 11/26/2024 through 12/2/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1600	9.79	2.62	55.1
26A	71-47	Presque Isle	155	0.95	2.62	5.3
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

<----- Verify this number is 100%



**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	79.3	100.0	100.0	88.6	10.4	11.4
1/2"	43.2	95.5	100.0	68.5	20.1	31.5
3/8"	22.3	83.3	100.0	56.3	12.2	43.7
#4	5.4	19.1	98.1	42.8	13.5	57.2
#8	2.6	5.2	80.4	33.5	9.3	66.5
#16	2.1	3.1	62.6	26.1	7.4	73.9
#30	2.1	2.9	46.2	19.6	6.5	80.4
#50	2.0	2.7	24.2	10.8	8.8	89.2
#100	2.0	2.6	5.6	3.5	7.4	96.5
LBW	1.7	2.4	0.8	1.4	2.1	98.6

\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

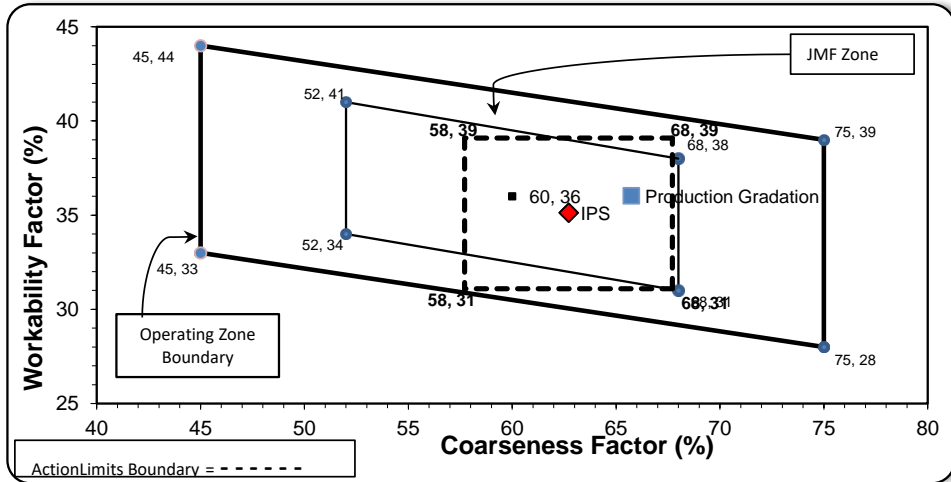
Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b> <b>66</b>	<b>Workability Factor:</b> <b>34</b>	<b>36.0</b>
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<b>Coarseness Factor:</b> <b>63</b>
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<b>Workability Factor:</b> <b>35</b>
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Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	95.1	4.9	4.9
1/2"	74.6	20.5	25.4
3/8"	59.3	15.3	40.7
#4	42.1	17.2	57.9
#8	35.1	7.1	64.9
#16	29.2	5.9	70.8
#30	21.9	7.3	78.1
#50	9.6	12.4	90.4
#100	2.4	7.2	97.6
LBW	0.9	1.5	99.1



PREPARED BY:  
 SM, LLC Technical Service

Approved By: