

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

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

Sample Date: 5/28/18

Concrete Grade: **S2M**

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

Dates Test Represents: 5/29/2018 to 6/4/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1450	8.64	2.69	45.9
26A	58-003	Stoneco	450	2.68	2.69	14.2
2NS	38-046	Chelsea	1260	7.62	2.65	39.9
<b>Total Wt</b>			<b>3160</b>	<b>18.94</b>		<b>100.0</b>

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

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	85.3	100.0	100.0	93.3	6.7	6.7
1/2"	38.1	99.7	100.0	71.6	21.7	28.4
3/8"	15.2	87.5	100.0	59.3	12.2	40.7
#4	1.2	13.4	100.0	42.3	17.0	57.7
#8	0.6	2.4	89.0	36.1	6.2	63.9
#16	0.6	1.0	67.0	27.1	9.0	72.9
#30	0.5	0.8	46.0	18.7	8.4	81.3
#50	0.4	0.7	23.0	9.5	9.2	90.5
#100	0.4	0.6	3.0	1.5	8.0	98.5
LBW	0.3	0.4	0.8	0.5	1.0	99.5

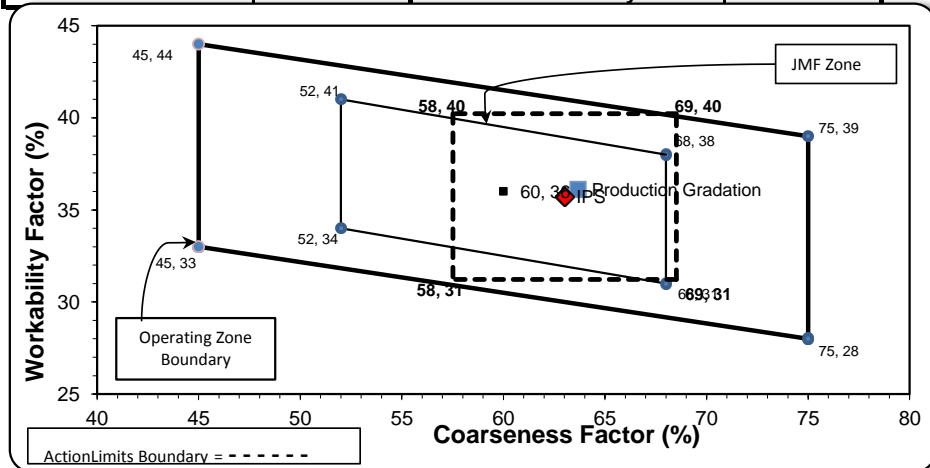


**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

\*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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **64**      Workability Factor: **36**



Initial Production Sample (IPS)

Coarseness Factor: <b>63</b>		Workability Factor: <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"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:

Approved By:

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

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

Sample Date: 5/28/18

Concrete Grade: **S2M**

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

Dates Test Represents: 5/29/2018 to 6/4/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1450	8.64	2.69	45.9
26A	58-003	Stoneco	450	2.68	2.69	14.2
2NS	38-046	Chelsea	1260	7.62	2.65	39.9
<b>Total Wt</b>			<b>3160</b>	<b>18.94</b>		<b>100.0</b>

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



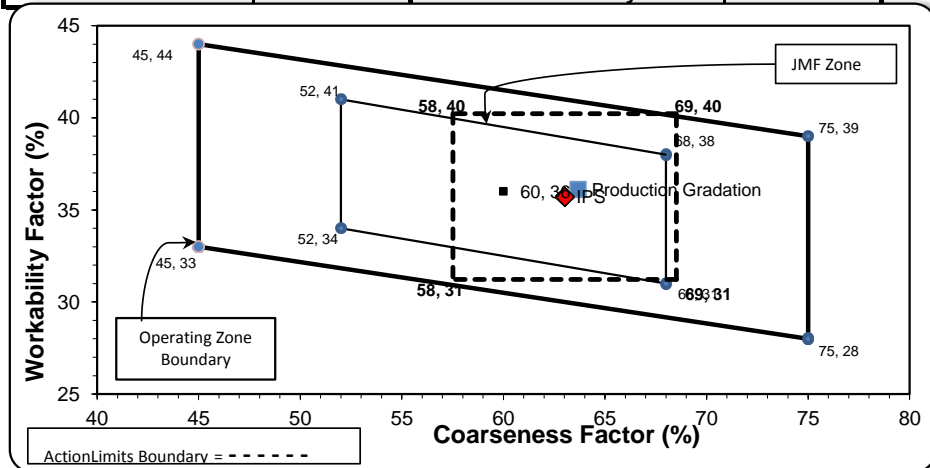
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	85.3	100.0	100.0	93.3	6.7	6.7
1/2"	38.1	99.7	100.0	71.6	21.7	28.4
3/8"	15.2	87.5	100.0	59.3	12.2	40.7
#4	1.2	13.4	100.0	42.3	17.0	57.7
#8	0.6	2.4	89.0	36.1	6.2	63.9
#16	0.6	1.0	67.0	27.1	9.0	72.9
#30	0.5	0.8	46.0	18.7	8.4	81.3
#50	0.4	0.7	23.0	9.5	9.2	90.5
#100	0.4	0.6	3.0	1.5	8.0	98.5
LBW	0.3	0.4	0.8	0.5	1.0	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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

<b>Coarseness Factor:</b>	<b>64</b>	<b>Workability Factor:</b>	<b>36</b>
---------------------------	-----------	----------------------------	-----------



Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>63</b>		
<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"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:  
 SM, LLC Technical Service

Approved BY:

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

**PLANT #:** **P-36**

Sample Date: 5/28/18

Concrete Grade: \_\_\_\_\_

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

Dates Test Represents: 5/29/2018 to 6/4/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1830	11.19	2.62	58.8
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-92	AA Grange Hall	1280	7.74	2.65	41.2
<b>Total Wt</b>			<b>3110</b>	<b>18.93</b>		<b>100.0</b>

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

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"	92.6	100.0	100.0	95.6	4.4	4.4
1/2"	54.2	97.3	100.0	73.1	22.6	26.9
3/8"	30.8	80.1	100.0	59.3	13.8	40.7
#4	4.6	9.3	97.3	42.8	16.5	57.2
#8	2.1	2.7	83.7	35.7	7.1	64.3
#16	1.8	1.8	67.7	28.9	6.8	71.1
#30	1.7	1.6	47.8	20.7	8.2	79.3
#50	1.7	1.5	21.6	9.9	10.8	90.1
#100	1.6	1.4	2.8	2.1	7.8	97.9
LBW	1.4	1.2	0.2	0.9	1.2	99.1

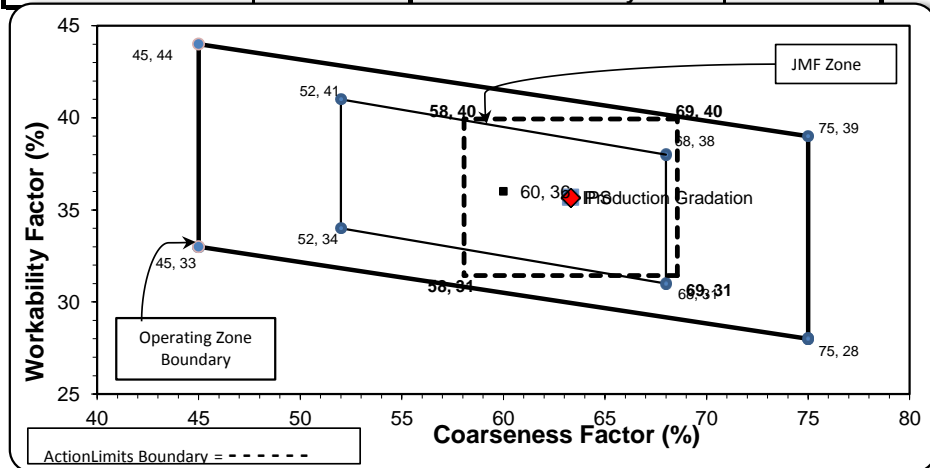


**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

\*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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **63**      Workability Factor: **36**



Initial Production Sample (IPS)

Coarseness Factor: <b>63</b>		Workability Factor: <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"	100.0	0.0	0.0
3/4"	95.6	4.4	4.4
1/2"	73.1	22.6	26.9
3/8"	59.3	13.8	40.7
#4	42.8	16.5	57.2
#8	35.7	7.1	64.3
#16	28.9	6.8	71.1
#30	20.7	8.2	79.3
#50	9.9	10.8	90.1
#100	2.1	7.8	97.9
LBW	0.9	1.2	99.1

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

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

Sample Date: 5/28/18

Concrete Grade: **S2M**

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

Dates Test Represents: 5/29/2018 to 6/4/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1750	10.70	2.62	56.3
26A	71-47	Presque Isle	100	0.61	2.62	3.2
2NS	47-16	Buno Road	1260	7.62	2.65	40.5
<b>Total Wt</b>			<b>3110</b>	<b>18.94</b>		<b>100.0</b>

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

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"	92.6	100.0	100.0	95.8	4.2	4.2
1/2"	54.2	97.3	100.0	74.1	21.7	25.9
3/8"	30.8	80.1	100.0	60.4	13.7	39.6
#4	4.6	9.3	95.7	41.7	18.8	58.3
#8	2.1	2.7	85.5	35.9	5.8	64.1
#16	1.8	1.8	73.0	30.6	5.3	69.4
#30	1.7	1.6	54.3	23.0	7.6	77.0
#50	1.7	1.5	20.9	9.5	13.5	90.5
#100	1.6	1.4	3.0	2.2	7.3	97.8
LBW	1.4	1.2	0.3	0.9	1.2	99.1

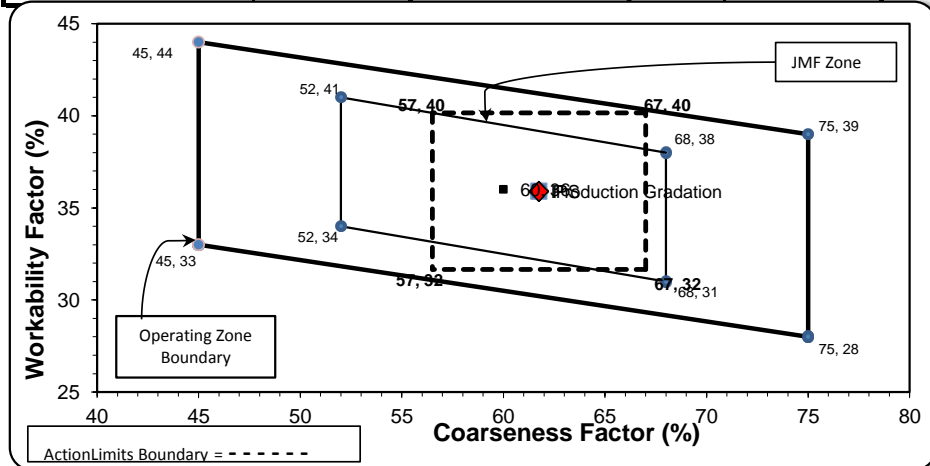


**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

\*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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

**Coarseness Factor: 62**      **Workability Factor: 36**



Initial Production Sample (IPS)

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"	95.8	4.2	4.2
1/2"	74.1	21.7	25.9
3/8"	60.4	13.7	39.6
#4	41.7	18.8	58.3
#8	35.9	5.8	64.1
#16	30.6	5.3	69.4
#30	23.0	7.6	77.0
#50	9.5	13.5	90.5
#100	2.2	7.3	97.8
LBW	0.9	1.2	99.1

PREPARED BY:  
 SM, LLC Technical Service

Approved By: