

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

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

Sample Date: 6/11/18

Concrete Grade: **S2M**

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

Dates Test Represents: 6/12/2018 through 6/18/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1650	9.83	2.69	52.2
26A	58-003	Stoneco	250	1.49	2.69	7.9
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"	99.9	100.0	100.0	99.9	0.1	0.1
3/4"	84.3	100.0	100.0	91.8	8.1	8.2
1/2"	47.2	99.6	100.0	72.4	19.4	27.6
3/8"	25.1	82.7	100.0	59.5	12.9	40.5
#4	3.8	20.8	100.0	43.5	16.0	56.5
#8	1.2	7.0	87.0	35.9	7.6	64.1
#16	0.8	3.2	64.0	26.2	9.7	73.8
#30	0.7	2.0	40.0	16.5	9.7	83.5
#50	0.6	1.8	19.0	8.0	8.4	92.0
#100	0.6	1.6	3.0	1.6	6.4	98.4
LBW	0.5	1.4	0.9	0.7	0.9	99.3

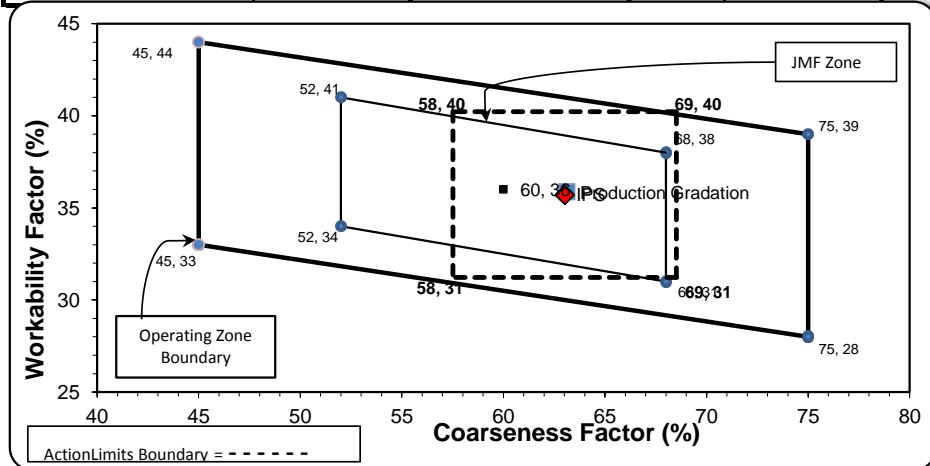


**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

\*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"	99.9	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-103**

Sample Date: 6/11/18

Concrete Grade: **S2M**

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

Dates Test Represents: 6/12/2018 through 6/18/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1650	9.83	2.69	52.2
26A	58-003	Stoneco	250	1.49	2.69	7.9
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%



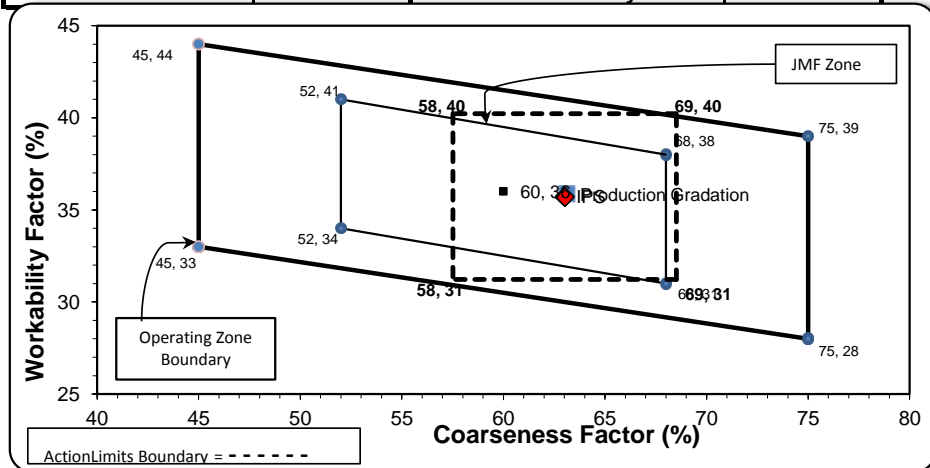
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.9	100.0	100.0	99.9	0.1	0.1
3/4"	84.3	100.0	100.0	91.8	8.1	8.2
1/2"	47.2	99.6	100.0	72.4	19.4	27.6
3/8"	25.1	82.7	100.0	59.5	12.9	40.5
#4	3.8	20.8	100.0	43.5	16.0	56.5
#8	1.2	7.0	87.0	35.9	7.6	64.1
#16	0.8	3.2	64.0	26.2	9.7	73.8
#30	0.7	2.0	40.0	16.5	9.7	83.5
#50	0.6	1.8	19.0	8.0	8.4	92.0
#100	0.6	1.6	3.0	1.6	6.4	98.4
LBW	0.5	1.4	0.9	0.7	0.9	99.3

\*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)

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.9	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: 6/11/18

Concrete Grade: **S2M**

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

Dates Test Represents: 6/12/2018 through 6/18/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1730	10.58	2.62	55.6
26A	71-47	Presque Isle	100	0.61	2.62	3.2
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"	92.1	100.0	100.0	95.6	4.4	4.4
1/2"	51.2	96.5	100.0	72.7	22.9	27.3
3/8"	27.2	85.6	100.0	59.0	13.7	41.0
#4	4.8	24.6	97.1	43.4	15.6	56.6
#8	2.6	8.4	83.5	36.1	7.3	63.9
#16	2.2	4.7	68.0	29.4	6.7	70.6
#30	2.1	3.7	49.6	21.7	7.7	78.3
#50	2.0	3.3	22.5	10.5	11.2	89.5
#100	2.0	3.1	2.9	2.4	8.1	97.6
LBW	1.6	2.5	0.3	1.1	1.3	98.9

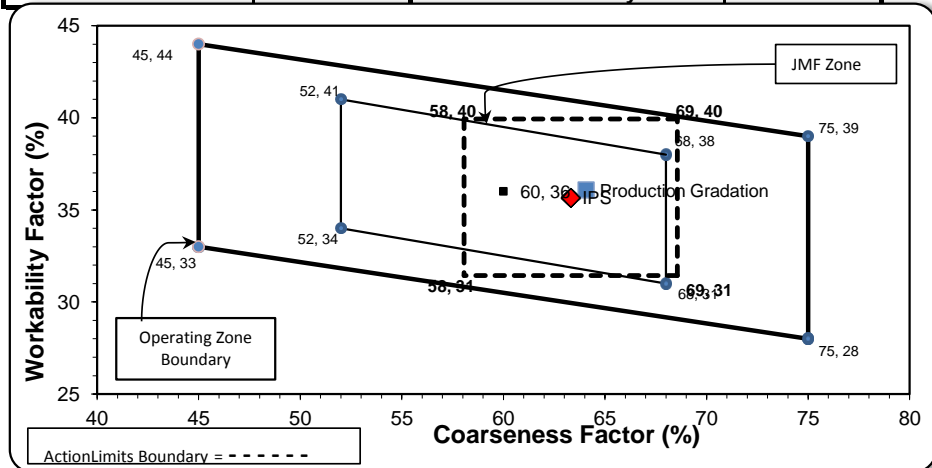


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\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained 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: 63		Workability Factor: 36	
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: 6/11/18

Concrete Grade: S2M

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

Dates Test Represents: 6/12/2018 through 6/18/2018

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1700	10.40	2.62	54.7
26A	71-47	Presque Isle	150	0.92	2.62	4.8
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%



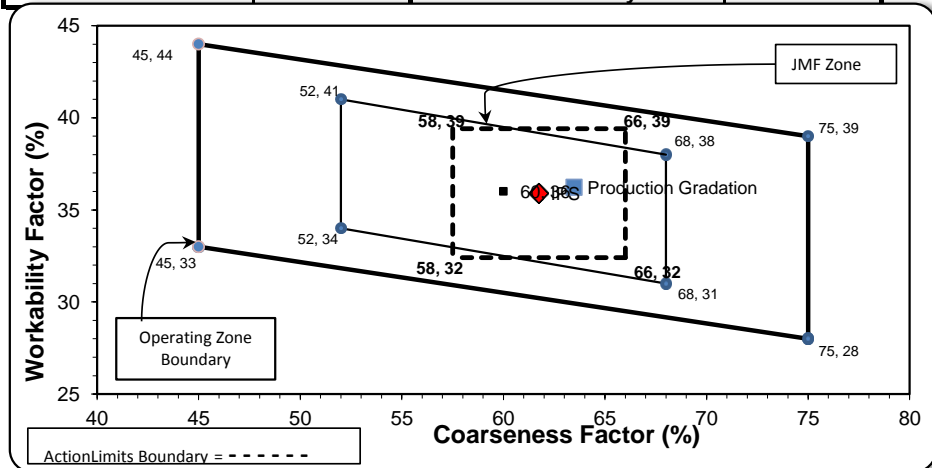
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	92.1	100.0	100.0	95.7	4.3	4.3
1/2"	51.2	96.5	100.0	73.2	22.5	26.8
3/8"	27.2	85.6	100.0	59.5	13.6	40.5
#4	4.8	24.6	95.6	42.5	17.0	57.5
#8	2.6	8.4	84.9	36.2	6.3	63.8
#16	2.2	4.7	71.9	30.6	5.7	69.4
#30	2.1	3.7	53.1	22.8	7.7	77.2
#50	2.0	3.3	19.1	9.0	13.8	91.0
#100	2.0	3.1	2.3	2.2	6.8	97.8
LBW	1.6	2.5	0.5	1.2	1.0	98.8

\*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:		62	
Workability Factor:		36	
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: