

# Aggregate Optimization Chart

**PLANT #:** **P-20**

Sample Date: 5/31/21

Concrete Grade: **S2M**

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

Dates Test Represents: 6/1/2021 through 6/7/2021

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	52.5
26A	71-47	Presque Isle	200	1.22	2.62	6.6
2NS	63-92	Grange Hall	1250	7.56	2.65	41.0
<b>Total Wt</b>			<b>3050</b>	<b>18.57</b>		<b>100.0</b>

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



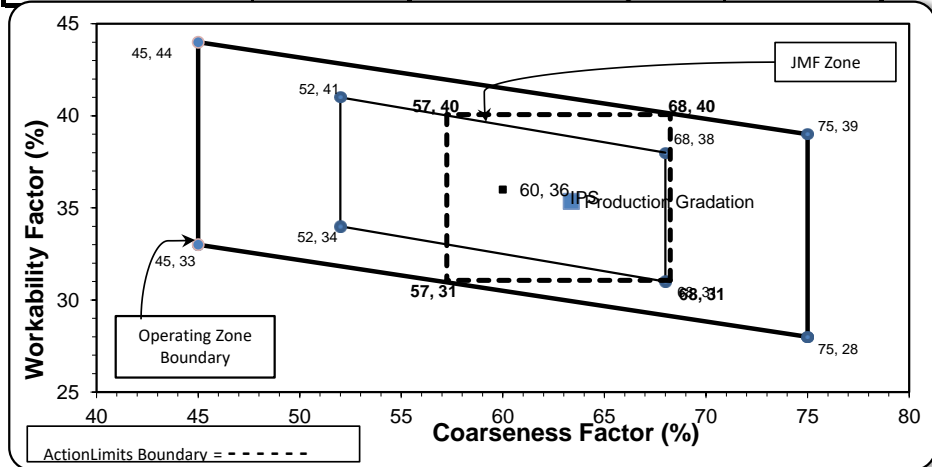
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	87.7	100.0	100.0	93.5	6.5	6.5
1/2"	42.7	97.4	100.0	69.8	23.8	30.2
3/8"	23.1	90.6	100.0	59.0	10.7	41.0
#4	2.8	22.4	97.5	42.9	16.1	57.1
#8	1.7	4.4	83.4	35.4	7.5	64.6
#16	1.4	2.4	68.0	28.8	6.6	71.2
#30	1.3	2.1	48.4	20.7	8.1	79.3
#50	1.2	2.0	22.0	9.8	10.9	90.2
#100	1.0	1.9	3.2	2.0	7.8	98.0
LBW	0.9	1.7	0.7	0.9	1.1	99.1

\*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:** **35**



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"	93.3	6.7	6.7
1/2"	70.6	22.6	29.4
3/8"	59.6	11.0	40.4
#4	43.9	15.7	56.1
#8	35.6	8.4	64.4
#16	28.4	7.2	71.6
#30	19.4	9.0	80.6
#50	7.5	11.9	92.5
#100	0.9	6.6	99.1
LBW	0.9	0.1	99.1

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** **P-32**

Sample Date: 5/31/21

Concrete Grade: **S2M**

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

Dates Test Represents: 6/1/2021 through 6/7/2021

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	49.2
26A	71-47	Presque Isle	320	1.96	2.62	10.5
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
<b>Total Wt</b>			<b>3050</b>	<b>18.57</b>		<b>100.0</b>

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



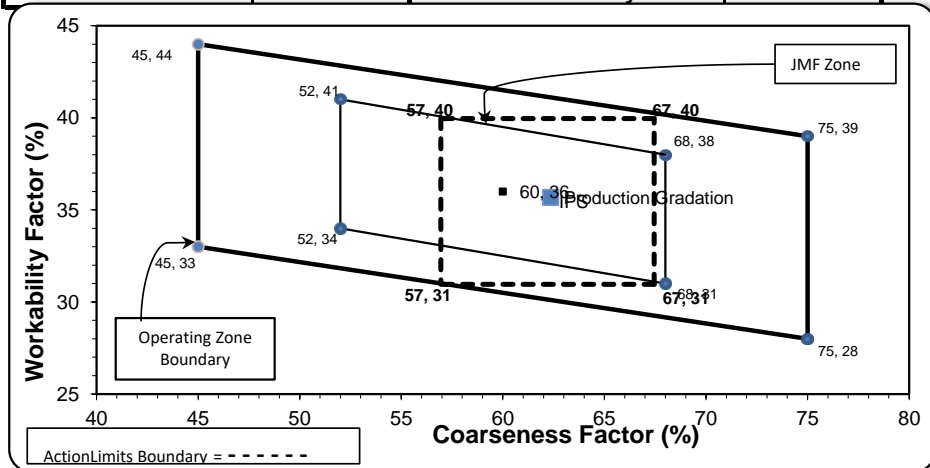
**Superior Materials, LLC**  
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 Farmington Hills, MI 48336

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"	96.9	100.0	100.0	98.5	1.5	1.5
3/4"	77.7	100.0	100.0	89.0	9.4	11.0
1/2"	41.1	96.5	100.0	70.7	18.4	29.3
3/8"	21.5	85.7	100.0	59.9	10.8	40.1
#4	3.1	28.6	96.7	43.5	16.4	56.5
#8	2.2	9.1	83.4	35.7	7.9	64.3
#16	2.1	4.7	67.0	28.5	7.1	71.5
#30	2.1	3.6	43.8	19.1	9.5	80.9
#50	2.0	3.1	19.0	9.0	10.1	91.0
#100	1.8	2.2	4.6	3.0	6.0	97.0
LBW	1.4	1.5	1.2	1.3	1.6	98.7

\*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)

**Coarseness Factor:** **62**  
**Workability Factor:** **35**

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"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

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 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** **P-35**

Sample Date: 5/31/21

Concrete Grade: **S2M**

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

Dates Test Represents: 6/1/2021 through 6/7/2021

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1700	10.13	2.69	54.8
26A	58-003	Stoneco	200	1.19	2.69	6.5
2NS	81-093	Burmeister	1200	7.26	2.65	38.7
<b>Total Wt</b>			<b>3100</b>	<b>18.58</b>		<b>100.0</b>

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



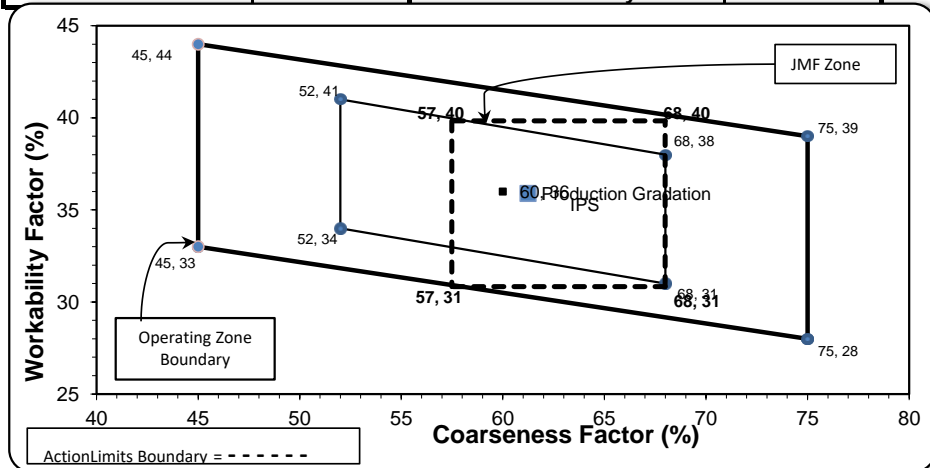
**Superior Materials, LLC**  
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 Farmington Hills, MI 48336

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"	91.9	100.0	100.0	95.6	4.4	4.4
1/2"	54.3	99.5	100.0	74.9	20.7	25.1
3/8"	29.6	89.9	100.0	60.7	14.2	39.3
#4	4.6	12.0	98.0	41.2	19.5	58.8
#8	1.4	3.2	90.2	35.9	5.3	64.1
#16	1.1	2.0	72.5	28.8	7.1	71.2
#30	0.9	1.6	52.2	20.8	8.0	79.2
#50	0.8	1.5	16.6	7.0	13.8	93.0
#100	0.8	1.5	2.9	1.7	5.3	98.3
LBW	0.6	1.3	0.6	0.6	1.0	99.4

\*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:** **61**      **Workability Factor:** **36**



Initial Production Sample (IPS)

**Coarseness Factor:** **63**  
**Workability Factor:** **35**

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"	59.4	11.9	40.6
#4	43.0	16.5	57.0
#8	35.3	7.6	64.7
#16	28.2	7.1	71.8
#30	21.6	6.6	78.4
#50	9.1	12.5	90.9
#100	1.7	7.4	98.3
LBW	1.1	0.6	98.9

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 5/31/21

Concrete Grade: **S2M**

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

Dates Test Represents: 6/1/2021 through 6/7/2021

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	49.2
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	63-115	Ray Rd	1250	7.56	2.65	41.0
<b>Total Wt</b>			<b>3050</b>	<b>18.57</b>		<b>100.0</b>

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



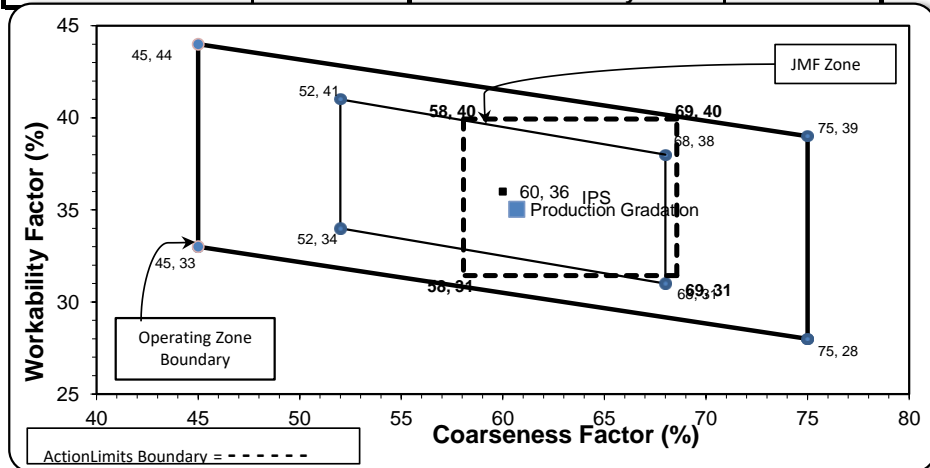
**Superior Materials, LLC**  
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.8	100.0	100.0	99.4	0.6	0.6
3/4"	78.8	100.0	100.0	89.6	9.8	10.4
1/2"	42.2	96.5	100.0	71.2	18.3	28.8
3/8"	22.7	85.7	100.0	60.6	10.7	39.4
#4	4.9	28.6	96.4	44.7	15.8	55.3
#8	3.0	9.1	79.7	35.0	9.7	65.0
#16	2.6	4.7	64.3	28.1	6.9	71.9
#30	2.4	3.6	48.1	21.2	6.8	78.8
#50	2.2	3.1	24.5	11.4	9.8	88.6
#100	2.0	2.2	5.2	3.3	8.1	96.7
LBW	1.6	1.5	0.6	1.2	2.2	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

<b>Coarseness Factor:</b>	<b>61</b>	<b>Workability Factor:</b>	<b>35</b>
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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"	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: