

# Aggregate Optimization Chart

**PLANT #:** **P-101**

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1520	9.30	2.62	49.8
26A	71-47	Presque Isle	305	1.87	2.62	10.0
2NS	75-051	Mid Michigan	1230	7.41	2.66	40.3
<b>Total Wt</b>			<b>3055</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"	83.5	100.0	100.0	91.8	8.2	8.2
1/2"	35.2	94.0	100.0	67.2	24.6	32.8
3/8"	15.1	79.7	100.0	55.7	11.4	44.3
#4	1.8	19.1	98.6	42.5	13.2	57.5
#8	1.5	6.6	84.0	35.2	7.3	64.8
#16	1.4	4.0	68.6	28.7	6.5	71.3
#30	1.4	3.3	51.0	21.6	7.2	78.4
#50	1.4	3.0	23.2	10.3	11.2	89.7
#100	1.4	2.8	4.8	2.9	7.4	97.1
LBW	1.3	2.5	0.8	1.2	1.7	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.

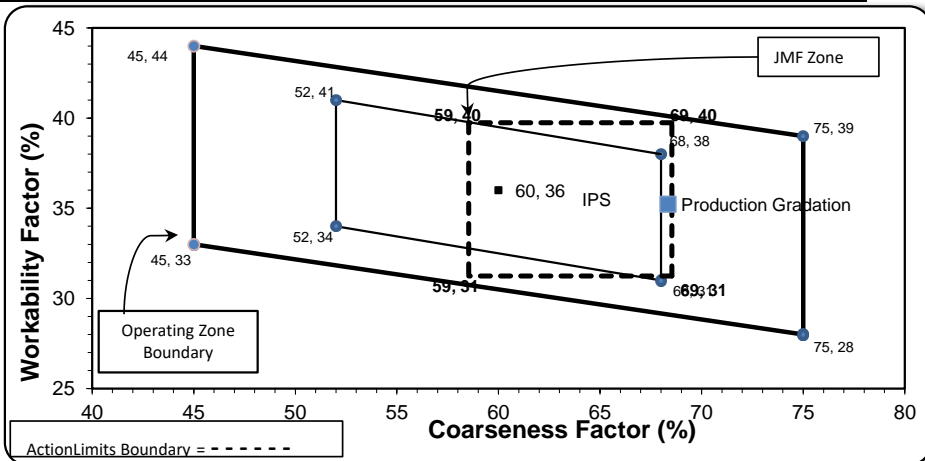
Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

<b>Coarseness Factor:</b>	<b>68</b>	<b>Workability Factor:</b>	<b>35</b>
---------------------------	-----------	----------------------------	-----------

Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>64</b>
<b>Workability Factor:</b>	<b>35</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"	93.9	6.1	6.1
1/2"	71.4	22.5	28.6
3/8"	59.0	12.4	41.0
#4	45.1	13.9	54.9
#8	35.5	9.6	64.5
#16	28.3	7.2	71.7
#30	21.3	6.9	78.7
#50	11.0	10.3	89.0
#100	3.4	7.6	96.6
LBW	1.1	2.3	98.9



PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	81-019	Pleasant Lake	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%



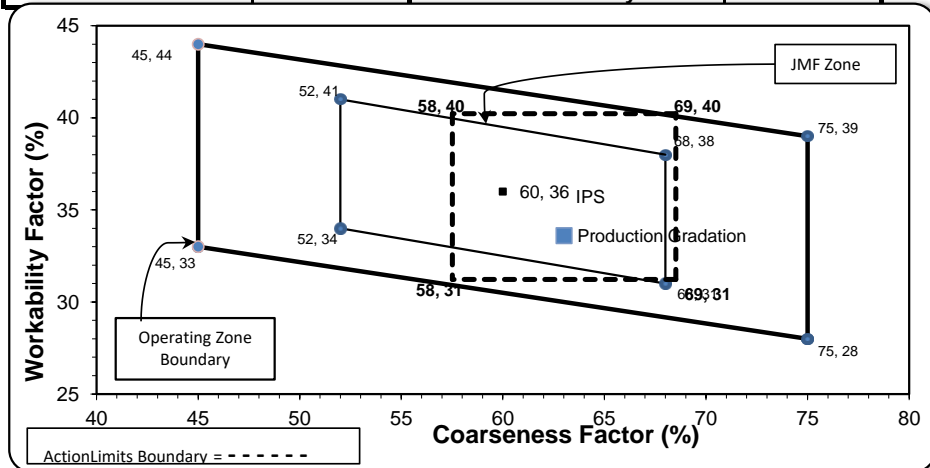
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	83.2	100.0	100.0	91.6	8.4	8.4
1/2"	44.2	99.8	100.0	72.1	19.5	27.9
3/8"	19.0	88.2	100.0	58.2	13.9	41.8
#4	3.0	10.3	97.5	40.4	17.8	59.6
#8	2.0	3.9	83.1	33.6	6.8	66.4
#16	2.2	3.5	67.2	27.5	6.1	72.5
#30	2.1	3.2	49.8	20.7	6.8	79.3
#50	1.9	3.0	25.0	11.0	9.7	89.0
#100	1.8	2.9	7.1	4.0	7.0	96.0
LBW	1.3	2.6	1.7	1.6	2.4	98.4

\*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

<b>Coarseness Factor:</b>	<b>63</b>	<b>Workability Factor:</b>	<b>34</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

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

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	81-019	Pleasant Lake	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%



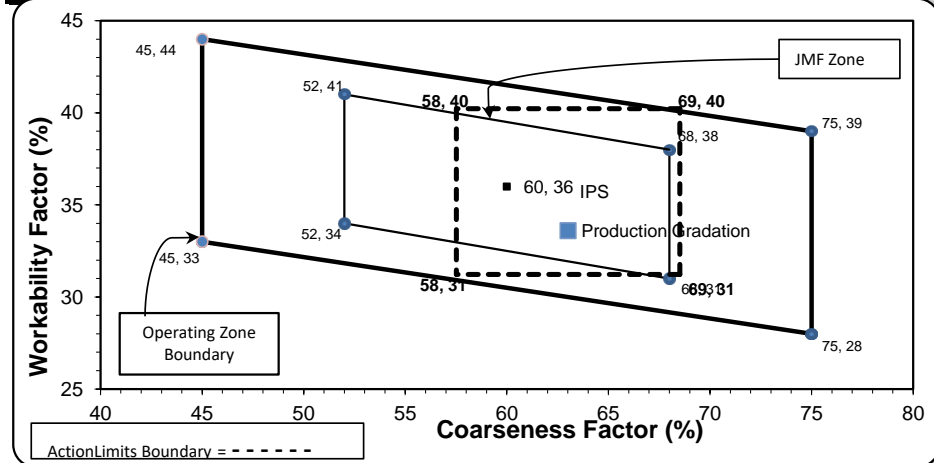
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	83.2	100.0	100.0	91.6	8.4	8.4
1/2"	44.2	99.8	100.0	72.1	19.5	27.9
3/8"	19.0	88.2	100.0	58.2	13.9	41.8
#4	3.0	10.3	97.5	40.4	17.8	59.6
#8	2.0	3.9	83.1	33.6	6.8	66.4
#16	2.2	3.5	67.2	27.5	6.1	72.5
#30	2.1	3.2	49.8	20.7	6.8	79.3
#50	1.9	3.0	25.0	11.0	9.7	89.0
#100	1.8	2.9	7.1	4.0	7.0	96.0
LBW	1.3	2.6	1.7	1.6	2.4	98.4

\*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

<b>Coarseness Factor:</b>	<b>63</b>	<b>Workability Factor:</b>	<b>34</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

**PLANT #:** **P-14**

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1480	8.82	2.69	47.6
26A	58-003	Stoneco	420	2.50	2.69	13.5
2NS	19-55	Schlegel	1210	7.26	2.67	38.9
<b>Total Wt</b>			<b>3110</b>	<b>18.58</b>		<b>100.0</b>

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



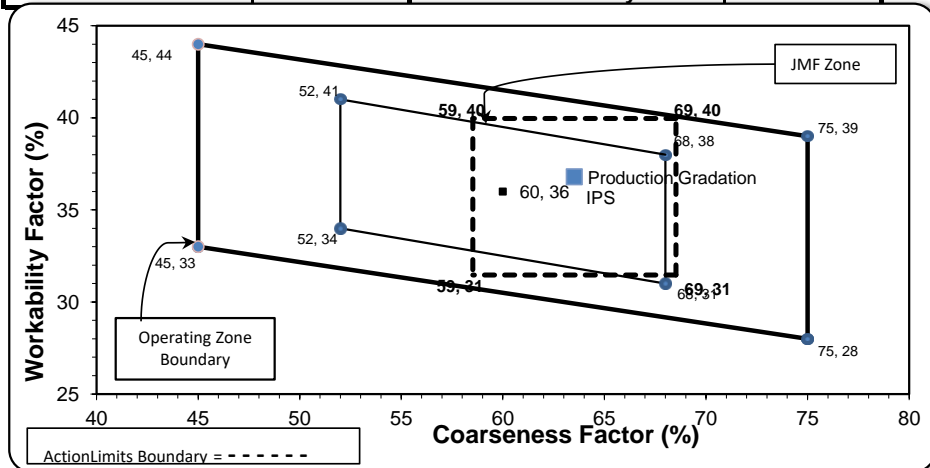
**Builders Redi-Mix**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	83.2	100.0	100.0	92.0	8.0	8.0
1/2"	44.2	99.8	100.0	73.4	18.6	26.6
3/8"	19.0	88.2	100.0	59.9	13.6	40.1
#4	3.0	10.3	100.0	41.7	18.1	58.3
#8	2.0	3.9	90.8	36.8	4.9	63.2
#16	2.2	3.5	71.2	29.2	7.6	70.8
#30	2.1	3.2	48.1	20.1	9.1	79.9
#50	1.9	3.0	16.9	7.9	12.3	92.1
#100	1.8	2.9	3.2	2.5	5.4	97.5
LBW	1.3	2.6	0.3	1.1	1.4	98.9

\*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:** **37**



Initial Production Sample (IPS)

**Coarseness Factor:** **64**  
**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"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.2	12.1	40.8
#4	41.5	17.7	58.5
#8	35.7	5.8	64.3
#16	27.9	7.9	72.1
#30	18.3	9.5	81.7
#50	7.3	11.0	92.7
#100	2.0	5.3	98.0
LBW	0.9	1.1	99.1

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** 11

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1470	8.99	2.62	48.2
26A	71-47	Presque Isle	350	2.14	2.62	11.5
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%



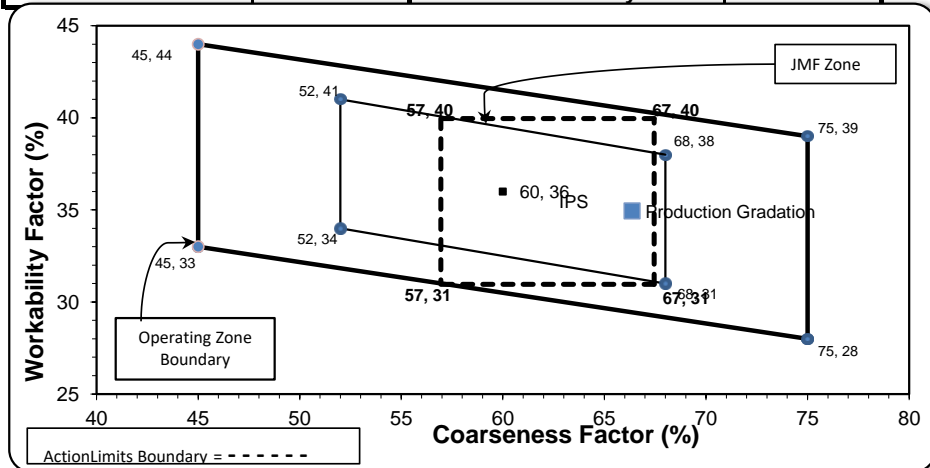
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	96.7	100.0	100.0	98.4	1.6	1.6
3/4"	74.4	100.0	100.0	87.7	10.7	12.3
1/2"	31.9	97.2	100.0	66.9	20.8	33.1
3/8"	14.7	82.0	100.0	56.8	10.0	43.2
#4	2.5	10.3	96.0	41.1	15.7	58.9
#8	1.9	2.7	83.6	34.9	6.2	65.1
#16	1.7	1.4	67.9	28.4	6.6	71.6
#30	1.5	1.1	49.2	20.7	7.7	79.3
#50	1.4	1.0	24.0	10.5	10.2	89.5
#100	1.3	0.9	6.6	3.4	7.1	96.6
LBW	0.9	0.7	1.2	1.0	2.4	99.0

\*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:** 66      **Workability Factor:** 35



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

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1470	8.99	2.62	48.2
26A	71-47	Presque Isle	350	2.14	2.62	11.5
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%



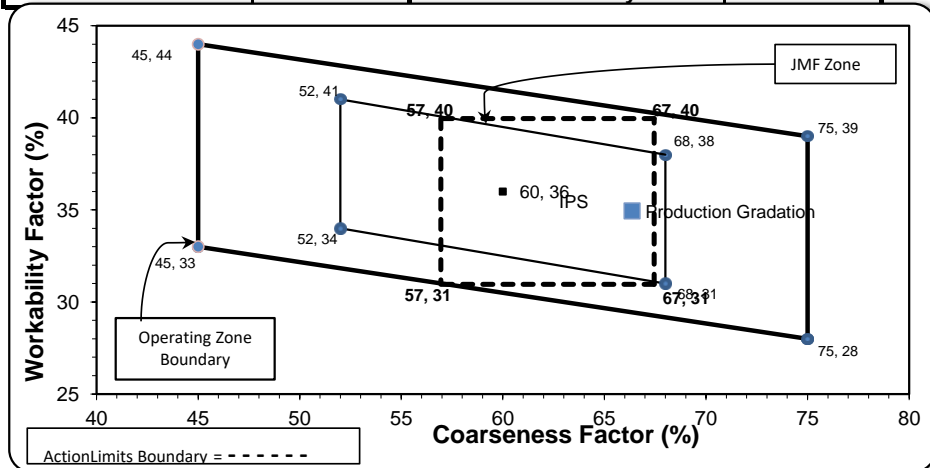
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	96.7	100.0	100.0	98.4	1.6	1.6
3/4"	74.4	100.0	100.0	87.7	10.7	12.3
1/2"	31.9	97.2	100.0	66.9	20.8	33.1
3/8"	14.7	82.0	100.0	56.8	10.0	43.2
#4	2.5	10.3	96.0	41.1	15.7	58.9
#8	1.9	2.7	83.6	34.9	6.2	65.1
#16	1.7	1.4	67.9	28.4	6.6	71.6
#30	1.5	1.1	49.2	20.7	7.7	79.3
#50	1.4	1.0	24.0	10.5	10.2	89.5
#100	1.3	0.9	6.6	3.4	7.1	96.6
LBW	0.9	0.7	1.2	1.0	2.4	99.0

\*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:** **66**      **Workability Factor:** **35**



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

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	81-019	Pleasant Lake	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%



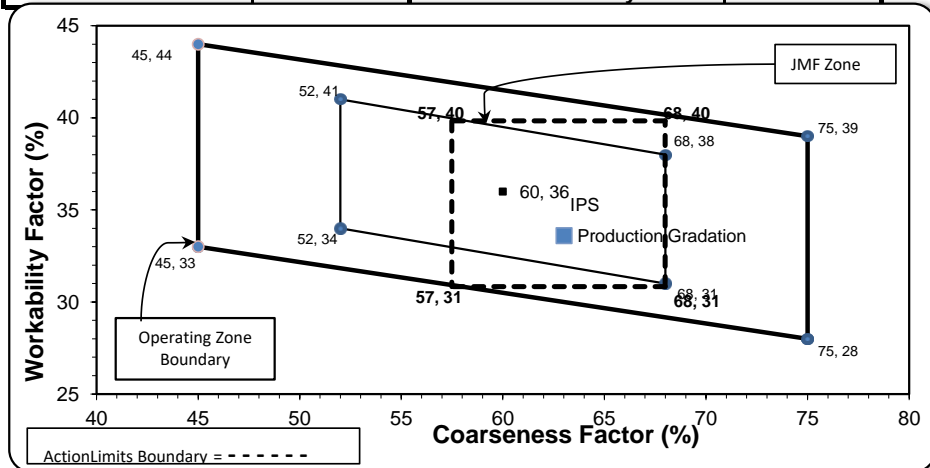
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	83.2	100.0	100.0	91.6	8.4	8.4
1/2"	44.2	99.8	100.0	72.1	19.5	27.9
3/8"	19.0	88.2	100.0	58.2	13.9	41.8
#4	3.0	10.3	97.5	40.4	17.8	59.6
#8	2.0	3.9	83.1	33.6	6.8	66.4
#16	2.2	3.5	67.2	27.5	6.1	72.5
#30	2.1	3.2	49.8	20.7	6.8	79.3
#50	1.9	3.0	25.0	11.0	9.7	89.0
#100	1.8	2.9	7.1	4.0	7.0	96.0
LBW	1.3	2.6	1.7	1.6	2.4	98.4

\*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

<b>Coarseness Factor:</b>	<b>63</b>	<b>Workability Factor:</b>	<b>34</b>
---------------------------	-----------	----------------------------	-----------



Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>63</b>		
<b>Workability Factor:</b>	<b>35</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"	59.4	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-36**

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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	350	2.14	2.62	11.5
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
<b>Total Wt</b>			<b>3050</b>	<b>18.57</b>		<b>100.0</b>

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



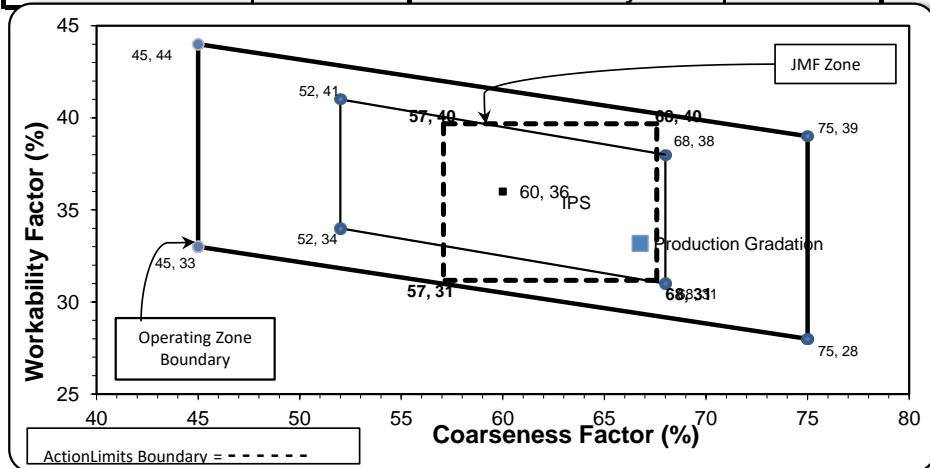
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	95.1	100.0	100.0	97.6	2.4	2.4
3/4"	71.4	100.0	100.0	85.9	11.7	14.1
1/2"	32.0	97.2	100.0	66.2	19.7	33.8
3/8"	13.5	82.0	100.0	55.4	10.8	44.6
#4	2.7	10.3	96.8	40.6	14.8	59.4
#8	1.8	2.7	81.3	33.2	7.4	66.8
#16	1.4	1.4	65.5	26.6	6.6	73.4
#30	1.3	1.1	45.3	18.6	8.0	81.4
#50	1.2	1.0	18.1	7.8	10.8	92.2
#100	1.2	0.9	2.7	1.8	6.1	98.2
LBW	0.9	0.7	0.7	0.8	1.0	99.2

\*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:** **67**      **Workability Factor:** **33**



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"	99.1	0.9	0.9
3/4"	90.5	8.6	9.5
1/2"	69.8	20.7	30.2
3/8"	59.8	10.0	40.2
#4	42.2	17.6	57.8
#8	35.4	6.7	64.6
#16	28.8	6.7	71.2
#30	21.4	7.4	78.6
#50	8.8	12.6	91.2
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

PREPARED BY:  
 SM, LLC Technical Service

Approved By:



# Aggregate Optimization Chart

**PLANT #:** **P-39**

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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	44-051	Krake Willis 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%



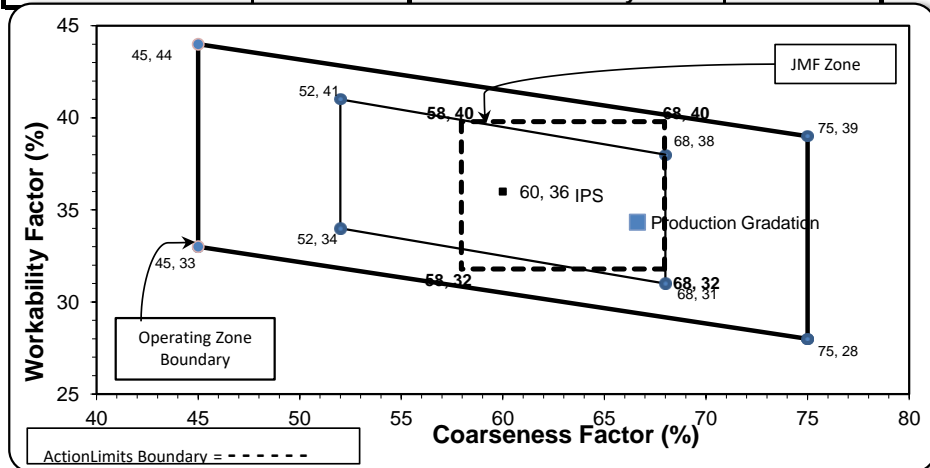
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	83.5	100.0	100.0	91.9	8.1	8.1
1/2"	35.2	94.0	100.0	67.5	24.3	32.5
3/8"	15.1	79.7	100.0	56.2	11.3	43.8
#4	1.8	19.1	96.2	42.2	14.1	57.8
#8	1.5	6.6	80.4	34.3	7.9	65.7
#16	1.4	4.0	65.2	27.8	6.5	72.2
#30	1.4	3.3	49.4	21.3	6.5	78.7
#50	1.4	3.0	24.3	10.9	10.3	89.1
#100	1.4	2.8	9.0	4.7	6.3	95.3
LBW	1.3	2.5	0.8	1.2	3.4	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:** **67**      **Workability Factor:** **34**



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"	89.8	10.2	10.2
1/2"	70.7	19.1	29.3
3/8"	59.6	11.1	40.4
#4	43.2	16.4	56.8
#8	35.8	7.4	64.2
#16	29.2	6.6	70.8
#30	21.4	7.8	78.6
#50	9.8	11.6	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** **P-O2**

Sample Date: 12/5/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 12/6/2022 through 12/12/2022

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1520	9.30	2.62	49.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	63-115	Ray Rd	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%



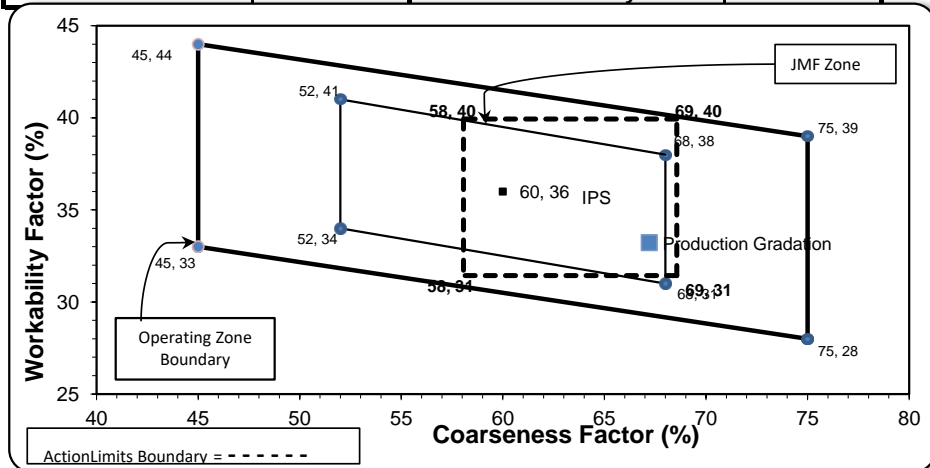
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	95.1	100.0	100.0	97.6	2.4	2.4
3/4"	71.4	100.0	100.0	85.7	11.8	14.3
1/2"	32.0	97.2	100.0	65.8	19.9	34.2
3/8"	13.5	82.0	100.0	55.1	10.7	44.9
#4	2.7	10.3	96.8	41.4	13.7	58.6
#8	1.8	2.7	79.5	33.2	8.2	66.8
#16	1.4	1.4	63.7	26.5	6.7	73.5
#30	1.3	1.1	48.4	20.3	6.2	79.7
#50	1.2	1.0	25.8	11.1	9.2	88.9
#100	1.2	0.9	4.3	2.4	8.7	97.6
LBW	0.9	0.7	0.6	0.8	1.7	99.2

\*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:** **67**      **Workability Factor:** **33**



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: