

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 10/11/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 10/12/2021 through 10/18/2021

MDOT No.: _____

| Agg. Class | Pit # | Source | Weight (SSD) | ft ³ | Specific Gravity | % Contribution |
|-----------------|--------|----------|--------------|-----------------|------------------|----------------|
| 6AA | 58-003 | Stoneco | 1600 | 9.53 | 2.69 | 51.6 |
| 26A | 58-003 | Stoneco | 290 | 1.73 | 2.69 | 9.4 |
| 2NS | 63-114 | Highland | 1210 | 7.32 | 2.65 | 39.0 |
| Total Wt | | | 3100 | 18.58 | | 100.0 |

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



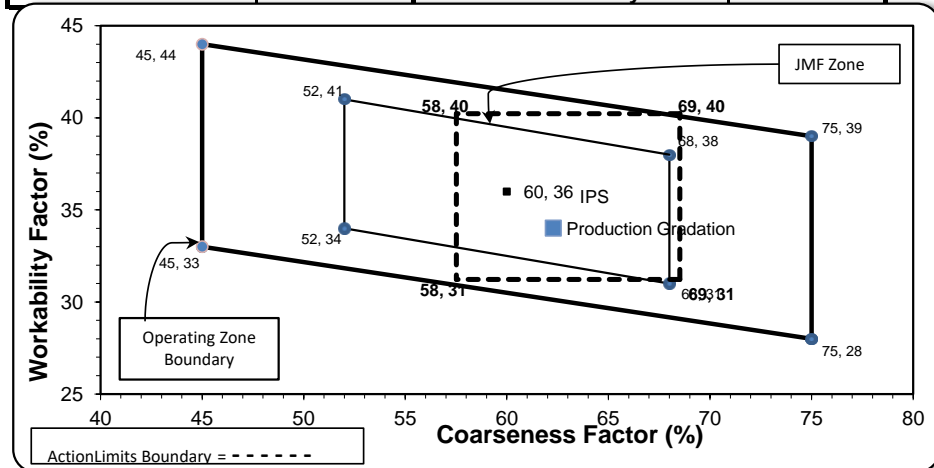
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

| 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" | 79.2 | 100.0 | 100.0 | 89.3 | 10.7 | 10.7 |
| 1/2" | 42.8 | 99.6 | 100.0 | 70.4 | 18.8 | 29.6 |
| 3/8" | 22.8 | 86.6 | 100.0 | 58.9 | 11.5 | 41.1 |
| #4 | 5.6 | 9.9 | 99.1 | 42.5 | 16.4 | 57.5 |
| #8 | 2.2 | 2.6 | 83.6 | 34.0 | 8.5 | 66.0 |
| #16 | 1.8 | 1.8 | 63.5 | 25.9 | 8.1 | 74.1 |
| #30 | 1.6 | 1.6 | 43.1 | 17.8 | 8.1 | 82.2 |
| #50 | 1.4 | 1.5 | 18.0 | 7.9 | 9.9 | 92.1 |
| #100 | 1.4 | 1.4 | 3.9 | 2.4 | 5.5 | 97.6 |
| LBW | 1.2 | 1.2 | 0.8 | 1.0 | 1.3 | 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: | 62 | 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" | 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-32**

Sample Date: 10/11/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 10/12/2021 through 10/18/2021

MDOT No.: _____

| Agg. Class | Pit # | Source | Weight (SSD) | ft ³ | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA | 71-47 | Presque Isle | 1250 | 7.65 | 2.62 | 41.0 |
| 26A | 71-47 | Presque Isle | 570 | 3.49 | 2.62 | 18.7 |
| 2NS | 95-013 | Smelter Bay | 1230 | 7.44 | 2.65 | 40.3 |
| Total Wt | | | 3050 | 18.57 | | 100.0 |

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



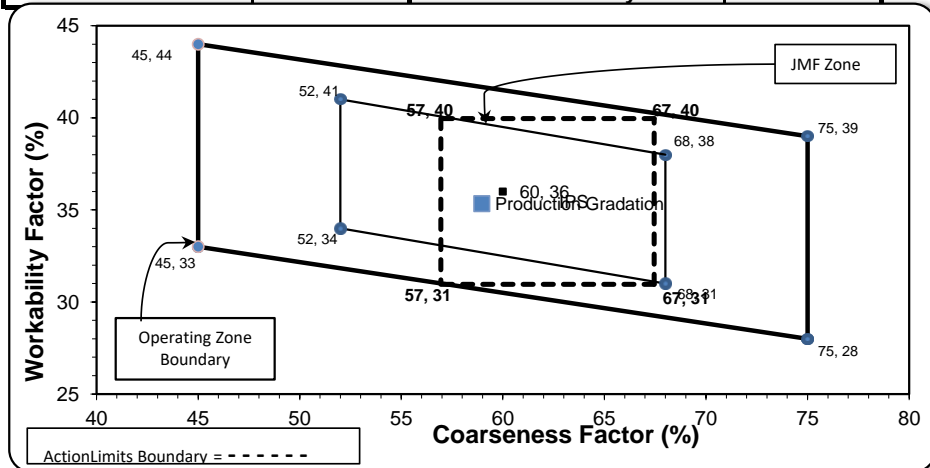
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

| 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" | 97.6 | 100.0 | 100.0 | 99.0 | 1.0 | 1.0 |
| 3/4" | 80.9 | 100.0 | 100.0 | 92.2 | 6.8 | 7.8 |
| 1/2" | 37.0 | 95.6 | 100.0 | 73.4 | 18.8 | 26.6 |
| 3/8" | 15.6 | 81.1 | 100.0 | 61.9 | 11.5 | 38.1 |
| #4 | 3.3 | 17.7 | 96.4 | 43.5 | 18.3 | 56.5 |
| #8 | 1.8 | 5.0 | 83.5 | 35.3 | 8.2 | 64.7 |
| #16 | 1.5 | 2.6 | 67.9 | 28.5 | 6.9 | 71.5 |
| #30 | 1.4 | 2.1 | 50.2 | 21.2 | 7.3 | 78.8 |
| #50 | 1.4 | 1.9 | 25.0 | 11.0 | 10.2 | 89.0 |
| #100 | 1.3 | 1.8 | 8.2 | 4.2 | 6.8 | 95.8 |
| LBW | 0.9 | 1.5 | 1.9 | 1.4 | 2.8 | 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 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: | 59 | 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: 10/11/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 10/12/2021 through 10/18/2021

MDOT No.: _____

| Agg. Class | Pit # | Source | Weight (SSD) | ft ³ | Specific Gravity | % Contribution |
|-----------------|--------|------------|--------------|-----------------|------------------|----------------|
| 6AA | 58-003 | Stoneco | 1600 | 9.53 | 2.69 | 51.6 |
| 26A | 58-003 | Stoneco | 300 | 1.79 | 2.69 | 9.7 |
| 2NS | 81-093 | Burmeister | 1200 | 7.26 | 2.65 | 38.7 |
| Total Wt | | | 3100 | 18.58 | | 100.0 |

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



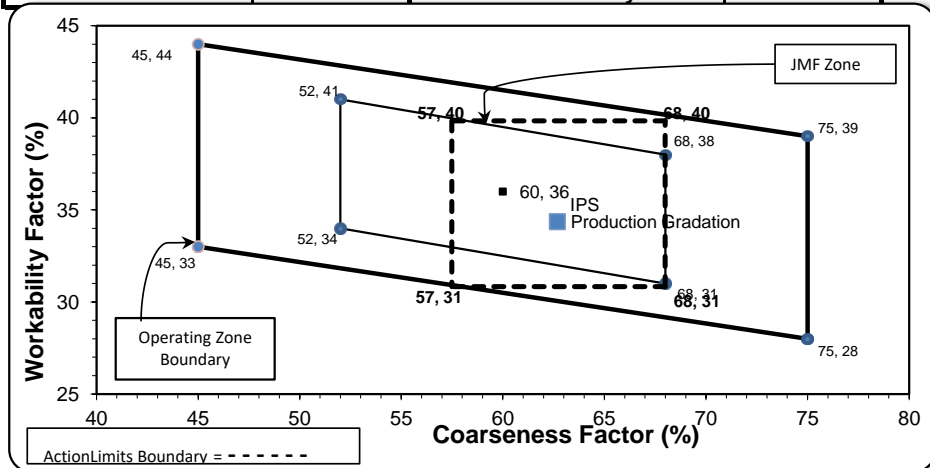
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

| 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" | 79.2 | 100.0 | 100.0 | 89.3 | 10.7 | 10.7 |
| 1/2" | 42.8 | 99.6 | 100.0 | 70.4 | 18.8 | 29.6 |
| 3/8" | 22.8 | 86.6 | 100.0 | 58.9 | 11.6 | 41.1 |
| #4 | 5.6 | 9.9 | 98.9 | 42.1 | 16.7 | 57.9 |
| #8 | 2.2 | 2.6 | 85.2 | 34.4 | 7.8 | 65.6 |
| #16 | 1.8 | 1.8 | 66.7 | 26.9 | 7.4 | 73.1 |
| #30 | 1.6 | 1.6 | 46.9 | 19.1 | 7.8 | 80.9 |
| #50 | 1.4 | 1.5 | 15.8 | 7.0 | 12.2 | 93.0 |
| #100 | 1.4 | 1.4 | 2.1 | 1.7 | 5.3 | 98.3 |
| LBW | 1.2 | 1.2 | 0.6 | 1.0 | 0.7 | 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: 63 **Workability Factor:** 34



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: 10/11/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 10/12/2021 through 10/18/2021

MDOT No.: _____

| Agg. Class | Pit # | Source | Weight (SSD) | ft ³ | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA | 71-47 | Presque Isle | 1550 | 9.48 | 2.62 | 50.8 |
| 26A | 71-47 | Presque Isle | 250 | 1.53 | 2.62 | 8.2 |
| 2NS | 63-115 | Ray Rd | 1250 | 7.56 | 2.65 | 41.0 |
| Total Wt | | | 3050 | 18.57 | | 100.0 |

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



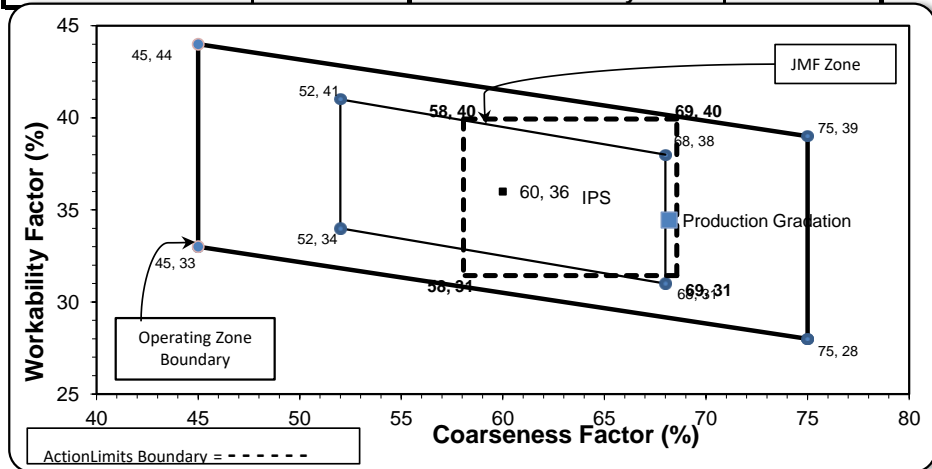
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

| 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" | 98.8 | 100.0 | 100.0 | 99.4 | 0.6 | 0.6 |
| 3/4" | 73.1 | 100.0 | 100.0 | 86.3 | 13.1 | 13.7 |
| 1/2" | 31.5 | 95.6 | 100.0 | 64.8 | 21.5 | 35.2 |
| 3/8" | 15.1 | 81.1 | 100.0 | 55.3 | 9.5 | 44.7 |
| #4 | 3.3 | 17.7 | 96.7 | 42.8 | 12.5 | 57.2 |
| #8 | 1.9 | 5.0 | 80.7 | 34.4 | 8.3 | 65.6 |
| #16 | 1.7 | 2.6 | 66.3 | 28.2 | 6.2 | 71.8 |
| #30 | 1.6 | 2.1 | 51.3 | 22.0 | 6.2 | 78.0 |
| #50 | 1.5 | 1.9 | 28.2 | 12.5 | 9.5 | 87.5 |
| #100 | 1.4 | 1.8 | 6.3 | 3.4 | 9.0 | 96.6 |
| LBW | 1.1 | 1.5 | 1.0 | 1.1 | 2.3 | 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: | 68 | 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" | 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: