

Aggregate Optimization Chart

PLANT #: **P-32**

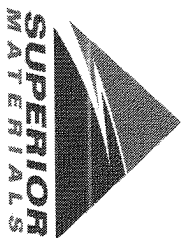
Sample Date: 1/25/21

Dates Test Represents: 1/26/2021 through 2/11/2021

Concrete Grade: **P1M**

Contractor: _____

MDOT No.: _____



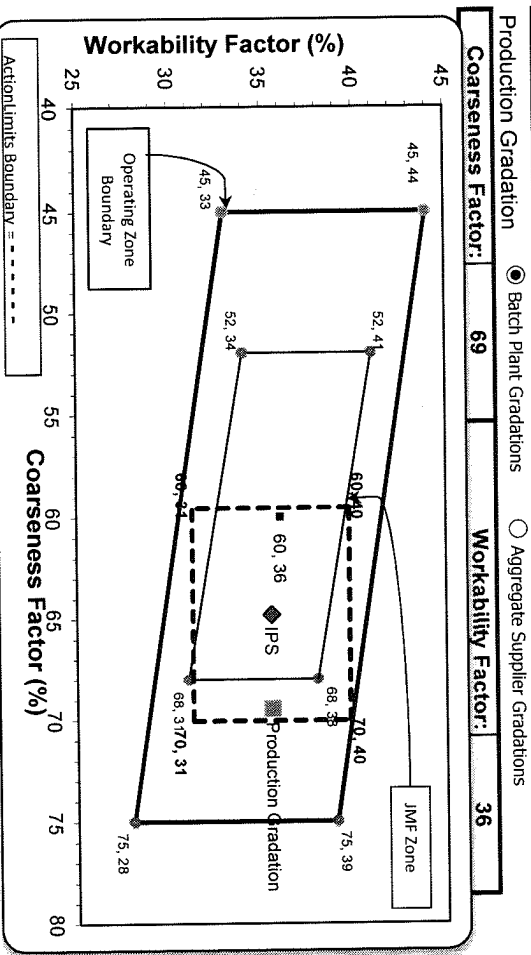
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

| Aggr. Class | Pit # | Source | Weight (ssd) | ft ³ | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| CA | 71-47 | Presque Isle | 1000 | 6.12 | 2.62 | 32.6 |
| IA | 71-47 | Presque Isle | 820 | 5.02 | 2.62 | 26.7 |
| 2NS | 95-013 | Smelter Bay | 1250 | 7.56 | 2.65 | 40.7 |
| Total Wt | | | 3070 | 18.69 | | 100.0 |

| Sieve | CA | IA | 2NS | Cumulative % Passing | % Retained | Cumulative % Retained |
|-------|-------|-------|-------|----------------------|------------|-----------------------|
| 2" | 100.0 | 100.0 | 100.0 | 100.0 | 0.0 | 0.0 |
| 1.5" | 88.3 | 100.0 | 100.0 | 96.2 | 3.8 | 3.8 |
| 1" | 27.4 | 100.0 | 100.0 | 76.4 | 19.8 | 23.6 |
| 3/4" | 5.8 | 98.9 | 100.0 | 69.0 | 7.3 | 31.0 |
| 1/2" | 3.2 | 75.3 | 100.0 | 61.9 | 7.2 | 38.1 |
| 3/8" | 3.1 | 50.5 | 100.0 | 55.2 | 6.7 | 44.8 |
| #4 | 3.1 | 9.4 | 95.1 | 42.2 | 13.0 | 57.8 |
| #8 | 3.1 | 3.9 | 82.2 | 35.5 | 6.7 | 64.5 |
| #16 | 3.1 | 3.1 | 66.9 | 29.1 | 6.4 | 70.9 |
| #30 | 3.0 | 2.9 | 42.6 | 19.1 | 10.0 | 80.9 |
| #50 | 2.7 | 2.7 | 18.5 | 9.1 | 10.0 | 90.9 |
| #100 | 2.3 | 2.4 | 4.6 | 3.3 | 5.9 | 96.7 |
| LBW | 1.6 | 1.7 | 1.2 | 1.5 | 1.8 | 98.5 |

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

*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: **69** Workability Factor: **36**

| Sieve | % Retained | Cumulative % Retained |
|-------|------------|-----------------------|
| 2" | 0.0 | 0.0 |
| 1.5" | 0.6 | 0.6 |
| 1" | 15.3 | 16.0 |
| 3/4" | 10.5 | 26.5 |
| 1/2" | 8.2 | 34.8 |
| 3/8" | 7.1 | 41.8 |
| #4 | 14.1 | 55.9 |
| #8 | 8.6 | 64.5 |
| #16 | 6.4 | 70.9 |
| #30 | 7.3 | 78.1 |
| #50 | 12.2 | 90.4 |
| #100 | 7.1 | 97.4 |
| LBW | 1.6 | 99.0 |

Initial Production Sample (IPS) Coarseness Factor: **65** Workability Factor: **36**

PREPARED BY:
SM, LLC Technical Service

Approved By: _____

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 7919-COARSE AGG P1M LS PI
Specification Coarse Agg P1M LS PI Target
Period 01/24/2021 - 01/30/2021

| Sieve/Test | Tests | Average | St Dev | Target | Specification |
|-----------------------|-------|---------|--------|---------|---------------|
| 2" (50mm) | 1 | 100.0 | | 100-100 | |
| 1 1/2" (37.5mm) | 1 | 88.3 | | 93-100 | |
| 1" (25mm) | 1 | 27.4 | | 35-55 | |
| 3/4" (19mm) | 1 | 5.8 | | 8-24 | |
| 1/2" (12.5mm) | 1 | 3.2 | | 0-6 | |
| 3/8" (9.5mm) | 1 | 3.1 | | 0-5 | |
| #4 (4.75mm) | 1 | 3.1 | | 0-3 | |
| #8 (2.36mm) | 1 | 3.1 | | | |
| #16 (1.18mm) | 1 | 3.1 | | | |
| #30 (.6mm) | 1 | 3.0 | | | |
| #50 (.3mm) | 1 | 2.7 | | | |
| #100 (.15mm) | 1 | 2.3 | | | |
| #200 (75µm) | 1 | 1.9 | | 0-2 | |
| Pan | 1 | 0.0 | | | |
| Wash Loss (#200/75um) | 1 | 1.6 | | | 0-2 |
| Total Moisture | 1 | 2.4 | | | |

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Basic Quality Statistical Summary Report

Plant 958-JMT
Product 7920-INTERMED AGG P1M LS PI
Specification Intermed Agg P1M LS PI Target
Period 01/24/2021 - 01/30/2021

| Sieve/Test | Tests | Average | St Dev | Target | Specification |
|-----------------------|-------|---------|--------|---------|---------------|
| 2" (50mm) | 1 | 100.0 | | | |
| 1 1/2" (37.5mm) | 1 | 100.0 | | | |
| 1" (25mm) | 1 | 100.0 | | 100-100 | |
| 3/4" (19mm) | 1 | 98.9 | | 98-100 | |
| 1/2" (12.5mm) | 1 | 75.3 | | 72-92 | |
| 3/8" (9.5mm) | 1 | 50.5 | | 39-68 | |
| #4 (4.75mm) | 1 | 9.4 | | 2-23 | |
| #8 (2.36mm) | 1 | 3.9 | | | |
| #16 (1.18mm) | 1 | 3.1 | | | |
| #30 (.6mm) | 1 | 2.9 | | | |
| #50 (.3mm) | 1 | 2.7 | | | |
| #100 (.15mm) | 1 | 2.4 | | | |
| #200 (75µm) | 1 | 1.8 | | 0-3 | |
| Pan | 1 | 0.0 | | | |
| Wash Loss (#200/75µm) | 1 | 1.7 | | | 0-3 |
| Total Moisture | 1 | 3.2 | | | |

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Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1022-2NS GR - Smelter Bay
Specification 2NS GR Spec
Period 01/24/2021 - 01/30/2021

| Sieve/Test | Tests | Average | St Dev | Target | Specification |
|-----------------------|-------|---------|--------|---------|---------------|
| 3/8" (9.5mm) | 1 | 100.0 | | | 100-100 |
| #4 (4.75mm) | 1 | 95.1 | | | 95-100 |
| #8 (2.36mm) | 1 | 82.2 | | | 65-95 |
| #16 (1.18mm) | 1 | 66.9 | | | 35-75 |
| #30 (.6mm) | 1 | 42.6 | | | 20-55 |
| #50 (.3mm) | 1 | 18.5 | | 18-28 | 10-30 |
| #100 (.15mm) | 1 | 4.6 | | | 0-10 |
| #200 (75µm) | 1 | 1.2 | | | |
| Pan | 1 | 0.0 | | | |
| FM | 1 | 2.90 | | 2.7-2.9 | 2.6-3 |
| Wash Loss (#200/75um) | 1 | 1.2 | | | 0-3 |
| Total Moisture | 1 | 4.6 | | | |