

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** P-102

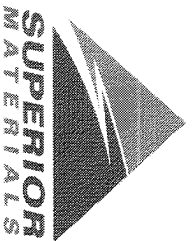
Sample Date: 4/8/24

Dates Test Represents: 4/9/2024 through 4/15/2024

Concrete Grade: DM, 4500HP

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

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



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

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

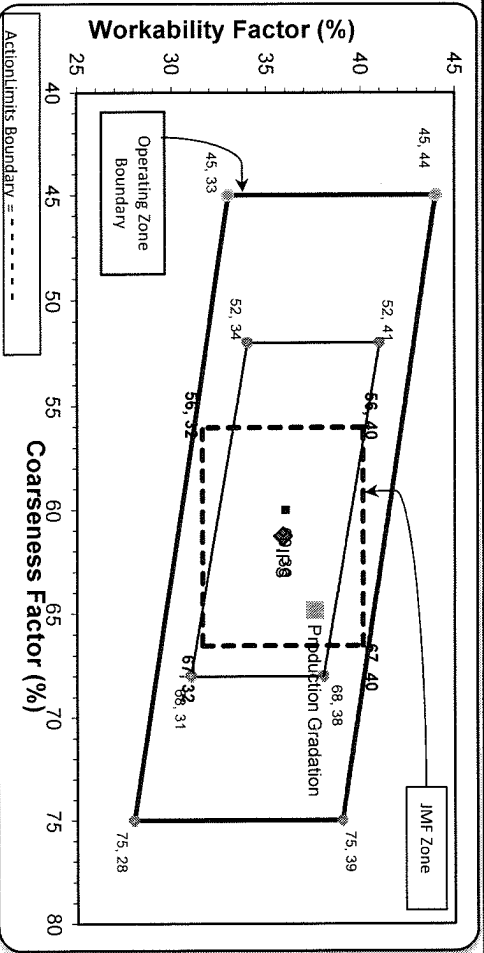
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1350	8.04	2.69	45.8	
26A	58-003	Stoneco	450	2.68	2.69	15.3	
2NS	63-114	Highland	1150	6.95	2.65	39.0	
<b>Total Wt</b>						<b>2950</b>	<b>100.0</b>

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"	80.6	100.0	100.0	91.1	8.9	8.9
1/2"	37.0	97.3	100.0	70.8	20.4	29.2
3/8"	14.2	81.3	100.0	57.9	12.9	42.1
#4	3.2	18.6	99.0	42.9	15.0	57.1
#8	2.0	6.3	85.1	35.1	7.8	64.9
#16	1.8	3.8	68.0	27.9	7.1	72.1
#30	1.7	3.1	49.5	20.5	7.4	79.5
#50	1.6	2.8	21.7	9.6	10.9	90.4
#100	1.5	2.6	4.8	3.0	6.7	97.0
LBW	1.3	2.5	1.0	1.4	1.6	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: 65      Workability Factor: 35      Adjusted WF: 37.6



Sieve	Coarseness Factor:	Workability Factor:	Adjusted WF:
2"	61	36	37.6
1.5"	0.0	0.0	0.0
1"	0.7	0.7	0.7
3/4"	10.1	10.1	10.8
1/2"	18.5	18.5	29.3
3/8"	10.0	10.0	39.3
#4	16.3	16.3	55.6
#8	8.5	8.5	64.1
#16	8.6	8.6	72.7
#30	8.2	8.2	80.9
#50	11.7	11.7	92.6
#100	5.6	5.6	98.1
LBW	1.2	1.2	99.3

PREPARED BY: SM, LLC Technical Service

Approved By: \_\_\_\_\_



Plant S102-Superior Novi

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	80.6	%	
	1/2" (12.5mm)	37.0	%	30-60
	3/8" (9.5mm)	14.2	%	
	#4 (4.75mm)	3.2	%	0-8
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.6	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.39	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	2.50	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	97.3	%	95-100
	3/8" (9.5mm)	81.3	%	60-95
	#4 (4.75mm)	18.6	%	5-30
	#8 (2.36mm)	6.3	%	0-12
	#16 (1.18mm)	3.8	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	2.5	%	
	Wash Loss (#200/75um)	2.5	%	0-3
	Total Moisture	5.41	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.0	%	95-100
	#8 (2.36mm)	85.1	%	65-95
	#16 (1.18mm)	68.0	%	35-75
	#30 (.6mm)	49.5	%	20-55
	#50 (.3mm)	21.7	%	10-30
	#100 (.15mm)	4.8	%	0-10
	#200 (75µm)	1.1	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	2.48	%	

# Aggregate Optimization Chart

## Production Gradation Report

PLANT #: P-02

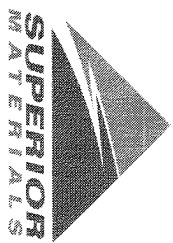
Sample Date: 4/8/24

Dates Test Represents: 4/9/2024 through 4/15/2024

Concrete Grade: DM, 4500HP

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

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



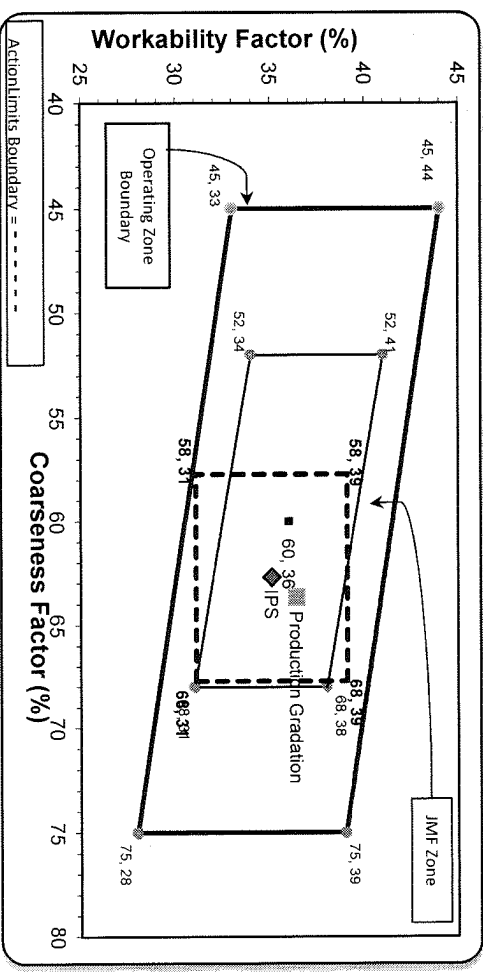
Superior Materials, LLC  
30701 W. 10 Mile Rd.  
Suite 500  
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (ssd)	ft <sup>3</sup>	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		<b>Total Wt</b>	<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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"	71.6	100.0	100.0	85.8	14.2	14.2
1/2"	31.5	93.3	100.0	65.1	20.7	34.9
3/8"	19.2	83.3	100.0	57.9	7.2	42.1
#4	4.7	18.0	97.0	42.6	15.3	57.4
#8	2.8	4.1	81.0	33.9	8.7	66.1
#16	2.4	2.2	66.0	27.6	6.3	72.4
#30	2.3	1.9	50.2	21.2	6.3	78.8
#50	2.2	1.7	24.8	11.1	10.1	88.9
#100	2.1	1.6	5.3	3.3	7.8	96.7
LBW	1.7	1.5	1.0	1.4	1.9	98.6

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **64** Workability Factor: **34** Adjusted WF: **36.4**



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"	95.1	4.9	4.9
1/2"	74.6	20.5	25.4
3/8"	59.3	15.3	40.7
#4	42.1	17.2	57.9
#8	35.1	7.1	64.9
#16	29.2	5.9	70.8
#30	21.9	7.3	78.1
#50	9.6	12.4	90.4
#100	2.4	7.2	97.6
LBW	0.9	1.5	99.1

Initial Production Sample (IPS)

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

\*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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

PREPARED BY:  
SM, LLC Technical Service

Approved By: \_\_\_\_\_



**Plant** S2-Hoover

**Product** 1051-6AA LS

**Name/Title** Doug Storey / QC Technician

**Period:** 04/07/2024 - 04/13/2024

**Report Date** 04/13/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	95.1	%	95-100
	3/4" (19mm)	71.6	%	
	1/2" (12.5mm)	31.5	%	30-60
	3/8" (9.5mm)	19.2	%	
	#4 (4.75mm)	4.7	%	0-8
	#8 (2.36mm)	2.8	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.80	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	1.80	%	



Plant S2-Hoover

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	93.3	%	95-100
	3/8" (9.5mm)	83.3	%	60-95
	#4 (4.75mm)	18.0	%	5-30
	#8 (2.36mm)	4.1	%	0-12
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75µm)	1.5	%	0-3
	Total Moisture	2.15	%	



Plant S2-Hoover

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.0	%	95-100
	#8 (2.36mm)	81.0	%	65-95
	#16 (1.18mm)	66.0	%	35-75
	#30 (.6mm)	50.2	%	20-55
	#50 (.3mm)	24.8	%	10-30
	#100 (.15mm)	5.3	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.76		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	2.64	%	