

# Aggregate Optimization Chart

## Production Gradation Report

PLANT #: **20**

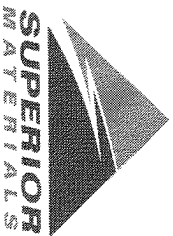
Sample Date: **8/7/23**

Dates Test Represents: **8/8/2023** through **8/14/2023**

Concrete Grade: **S2M, 3500HP**

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

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



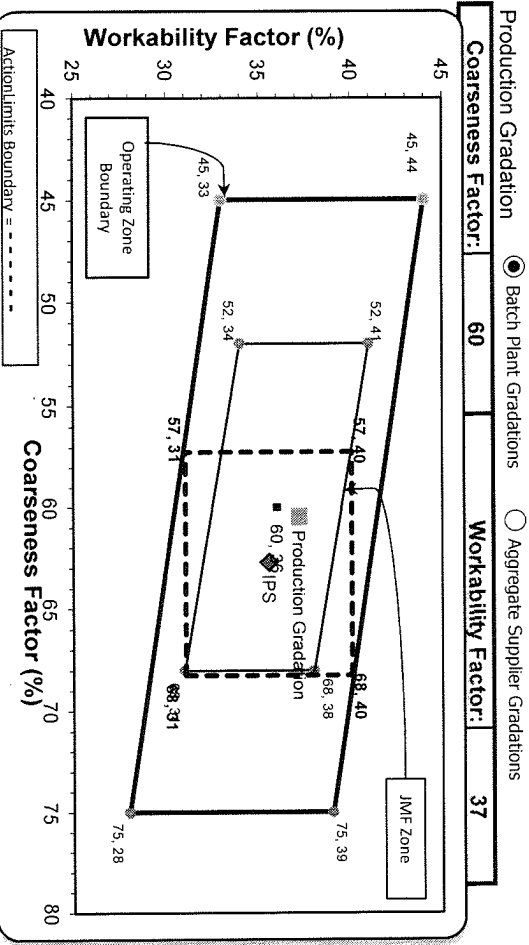
**Superior Materials, LLC**  
30701 W. 10 Mile Rd.  
Suite 500  
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %
GAA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	250	1.53	2.62	8.2
2NS	63-92	Grange Hall	1250	7.56	2.65	41.0
			<b>Total Wt</b>	<b>3050</b>	<b>18.57</b>	<b>100.0</b>

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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	81.4	100.0	100.0	90.5	8.5	9.5
1/2"	46.1	98.1	100.0	72.5	18.1	27.5
3/8"	27.3	87.4	100.0	62.0	10.4	38.0
#4	6.0	23.2	97.7	45.0	17.0	55.0
#8	3.3	7.9	85.1	37.2	7.8	62.8
#16	2.8	4.5	70.6	30.7	6.5	69.3
#30	2.7	3.7	51.7	22.9	7.9	77.1
#50	2.5	3.3	20.2	9.8	13.0	90.2
#100	2.3	3.0	3.2	2.7	7.1	97.3
LBW	1.9	2.6	0.4	1.3	1.4	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.



Initial Production Sample (IPS)

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

Coarseness Factor: **63** Workability Factor: **36**

PREPARED BY:  
SM, LLC Technical Service

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



Plant S20-Superior Flint  
 Product 1051-6AA LS  
 Period: 08/06/2023 - 08/12/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/12/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.1	%	95-100
	3/4" (19mm)	81.4	%	
	1/2" (12.5mm)	46.1	%	30-60
	3/8" (9.5mm)	27.3	%	
	#4 (4.75mm)	6.0	%	0-8
	#8 (2.36mm)	3.3	%	
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.5	%	
	#100 (.15mm)	2.3	%	
	#200 (75µm)	2.04	%	
	Wash Loss (#200/75um)	1.9	%	0-2
	Total Moisture	2.84	%	



Plant S20-Superior Flint  
 Product 1067-26A Mod LS  
 Period: 08/06/2023 - 08/12/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/12/2023

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)	98.1	%	95-100
	3/8" (9.5mm)	87.4	%	60-95
	#4 (4.75mm)	23.2	%	5-30
	#8 (2.36mm)	7.9	%	0-12
	#16 (1.18mm)	4.5	%	
	#30 (.6mm)	3.7	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75um)	2.6	%	0-3
	Total Moisture	2.73	%	



Plant S20-Superior Flint  
 Product 1022-2NS GR  
 Period: 08/06/2023 - 08/12/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/12/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.7	%	95-100
	#8 (2.36mm)	85.1	%	65-95
	#16 (1.18mm)	70.6	%	35-75
	#30 (.6mm)	51.7	%	20-55
	#50 (.3mm)	20.2	%	10-30
	#100 (.15mm)	3.2	%	0-10
	#200 (75µm)	0.6	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	3.21	%	

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** P-32

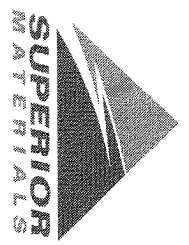
**Sample Date:** 8/7/23

**Dates Test Represents:** 8/8/2023 through 8/14/2023

**Concrete Grade:** S2M, 3500HP

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

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



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

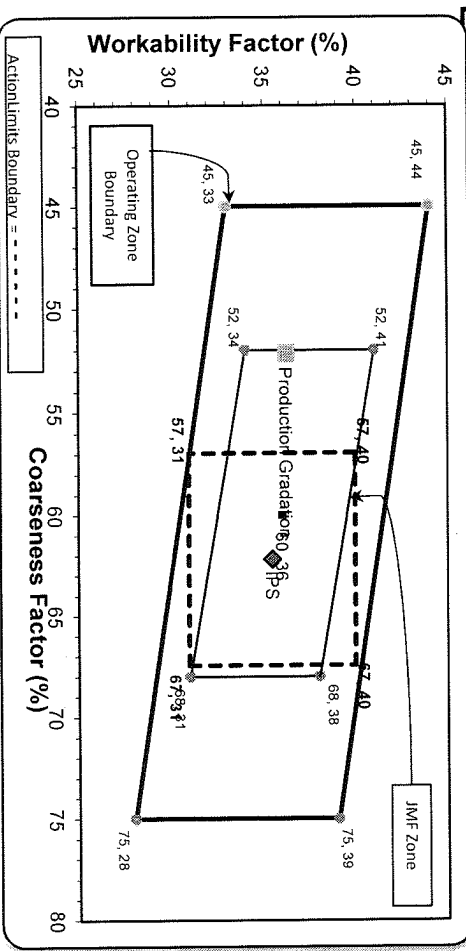
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1520	9.30	2.62	49.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
<b>Total Wt:</b>			<b>3050</b>	<b>18.57</b>		<b>100.0</b>

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"	97.9	100.0	100.0	99.0	1.0	1.0
3/4"	83.2	100.0	100.0	91.6	7.3	8.4
1/2"	51.8	96.1	100.0	75.6	16.0	24.4
3/8"	35.2	90.2	100.0	66.7	8.9	33.3
#4	7.7	22.5	96.4	44.9	21.8	55.1
#8	2.6	5.4	85.3	36.2	8.7	63.8
#16	2.1	2.6	70.8	29.9	6.4	70.1
#30	2.0	2.1	50.2	21.4	8.4	78.6
#50	2.0	1.9	23.7	10.7	10.7	89.3
#100	1.9	1.8	6.8	3.9	6.9	96.1
LBW	1.6	1.6	1.1	1.4	2.5	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:** 52 **Workability Factor:** 36



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:
2"	100.0	62	35
1.5"	100.0		
1"	100.0		
3/4"	94.0		
1/2"	70.2		
3/8"	59.9		
#4	42.7		
#8	35.5		
#16	28.4		
#30	19.2		
#50	8.9		
#100	3.1		
LBW	1.4		

PREPARED BY:  
 SM, LLC Technical Service

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

# Edw. C. Levy Co.

JMT  
 8911 W. Jefferson  
 Detroit, 48209  
 (313) 429-2429

**Plant:** 958-JMT

**Product:** 1054-6AA LS PI

**Period:** 08/06/2023 - 08/12/2023

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

**Report Date:** 08/12/2023

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.9	%	95-100
	3/4" (19mm)	83.2	%	
	1/2" (12.5mm)	51.8	%	30-60
	3/8" (9.5mm)	35.2	%	
	#4 (4.75mm)	7.7	%	0-8
	#8 (2.36mm)	2.6	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75µm)	1.6	%	0-2
	Total Moisture	3.2	%	

Plant 958-JMT  
 Product 1067-26A Mod LS  
 Period: 08/06/2023 - 08/12/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/12/2023

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)	96.1	%	95-100
	3/8" (9.5mm)	90.2	%	60-95
	#4 (4.75mm)	22.5	%	5-30
	#8 (2.36mm)	5.4	%	0-12
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.3	%	

Plant 958-JMT  
 Product 1022-2NS GR - Smelter Bay  
 Period: 08/06/2023 - 08/12/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/12/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.4	%	95-100
	#8 (2.36mm)	85.3	%	65-95
	#16 (1.18mm)	70.8	%	35-75
	#30 (.6mm)	50.2	%	20-55
	#50 (.3mm)	23.7	%	10-30
	#100 (.15mm)	6.8	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.8	%	