

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **p11**

Sample Date: **4/29/24**

Dates Test Represents: **4/30/2024** through **5/6/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



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

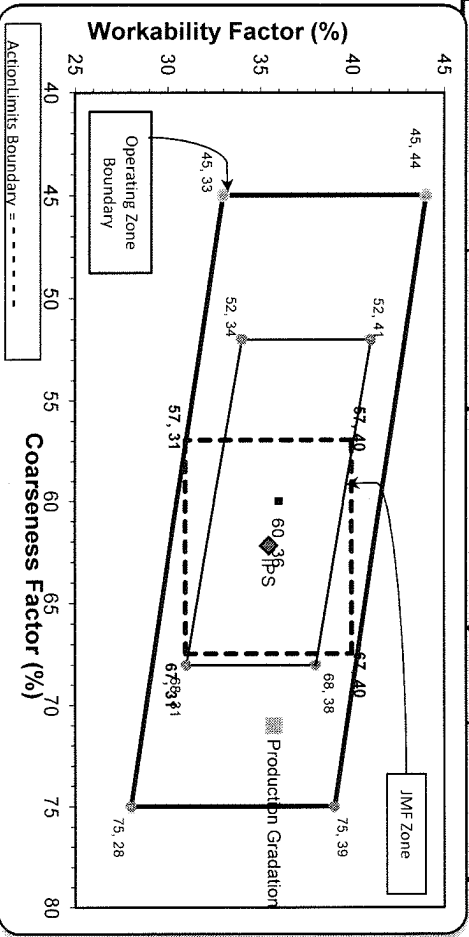
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
GAA	71-47	Presque Isle	1600	9.79	2.62	52.5
26A	71-47	Presque Isle	220	1.35	2.62	7.2
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
			Total Wt	3050		100.0

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"	95.6	100.0	100.0	97.7	2.3	2.3
3/4"	73.0	100.0	100.0	85.8	11.9	14.2
1/2"	31.9	96.3	100.0	64.0	21.8	36.0
3/8"	15.2	84.1	100.0	54.4	9.6	45.6
#4	2.6	20.3	95.7	41.4	12.9	58.6
#8	2.1	5.5	84.9	35.7	5.7	64.3
#16	1.9	3.4	70.6	29.7	6.0	70.3
#30	1.8	2.9	50.7	21.6	8.1	78.4
#50	1.7	2.6	23.7	10.6	11.0	89.4
#100	1.6	2.4	7.2	3.9	6.7	96.1
LBW	1.3	2.2	1.1	1.3	2.6	98.7

Production Gradation

Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **71** Workability Factor: **36**



Initial Production Sample (IPS)

Sieve	% 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

*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 S11-Onsite Jefferson

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	95.6	%	95-100
	3/4" (19mm)	73.0	%	
	1/2" (12.5mm)	31.9	%	30-60
	3/8" (9.5mm)	15.2	%	
	#4 (4.75mm)	2.6	%	0-8
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.49	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	2.14	%	



Plant S11-Onsite Jefferson

Product 1067-26A Mod LS

Period: 04/28/2024 - 05/04/2024

Name/Title Doug Storey / QC Technician

Report Date 05/04/2024

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)	96.3	%	95-100
	3/8" (9.5mm)	84.1	%	60-95
	#4 (4.75mm)	20.3	%	5-30
	#8 (2.36mm)	5.5	%	0-12
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.3	%	
	Wash Loss (#200/75um)	2.2	%	0-3
	Total Moisture	2.96	%	



Plant S11-Onsite Jefferson

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.7	%	95-100
	#8 (2.36mm)	84.9	%	65-95
	#16 (1.18mm)	70.6	%	35-75
	#30 (.6mm)	50.7	%	20-55
	#50 (.3mm)	23.7	%	10-30
	#100 (.15mm)	7.2	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	4.71	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **12**

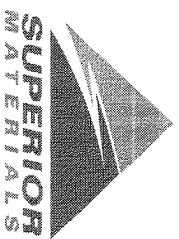
Sample Date: **4/29/24**

Dates Test Represents: **4/30/2024** through **5/6/2024**

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 ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	270	1.65	2.62	8.9
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

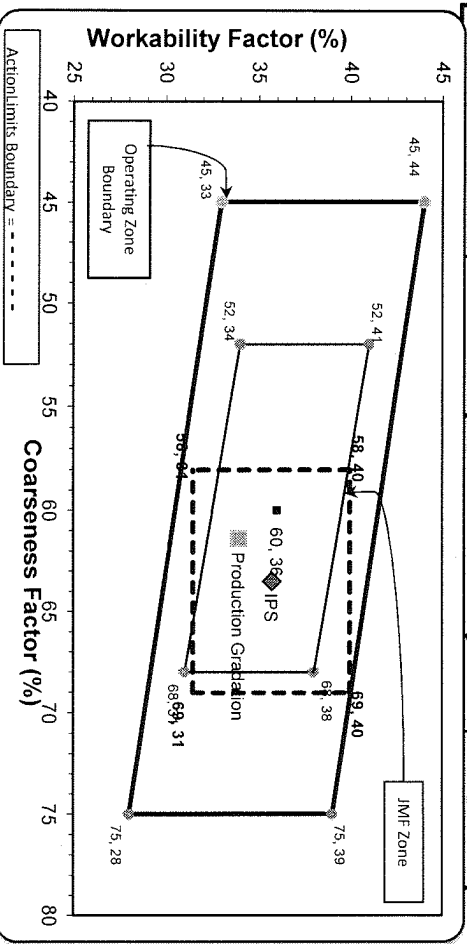
Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	1.3	1.3
3/4"	11.6	13.0
1/2"	19.2	32.1
3/8"	8.4	40.6
#4	16.7	57.3
#8	8.8	66.1
#16	6.4	72.5
#30	6.6	79.1
#50	10.8	89.9
#100	7.5	97.4
LBW	1.5	98.9

<--- 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 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: **61** Workability Factor: **34**



Initial Production Sample (IPS)

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	0.8	0.8
3/4"	8.3	9.1
1/2"	19.6	28.7
3/8"	12.1	40.8
#4	17.7	58.5
#8	5.8	64.3
#16	7.9	72.1
#30	9.5	81.7
#50	11.0	92.7
#100	5.3	98.0
LBW	1.1	99.1

Coarseness Factor: **64** Workability Factor: **36**

PREPARED BY:
SM, LLC Technical Service

Approved By:



Plant S12-Onsite Southfield

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.4	%	95-100
	3/4" (19mm)	74.5	%	
	1/2" (12.5mm)	37.7	%	30-60
	3/8" (9.5mm)	23.2	%	
	#4 (4.75mm)	5.2	%	0-8
	#8 (2.36mm)	2.9	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.75	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	2.97	%	



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Period: 04/28/2024 - 05/04/2024

Name/Title Doug Storey / QC Technician

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	26A 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)	94.7	%	95-100
	3/8" (9.5mm)	82.7	%	60-95
	#4 (4.75mm)	19.6	%	5-30
	#8 (2.36mm)	4.4	%	0-12
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	2.41	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.0	%	95-100
	#8 (2.36mm)	79.5	%	65-95
	#16 (1.18mm)	64.6	%	35-75
	#30 (.6mm)	48.5	%	20-55
	#50 (.3mm)	22.0	%	10-30
	#100 (.15mm)	3.5	%	0-10
	#200 (75µm)	0.5	%	
	FM	2.87		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	4.97	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: **4/29/24**

Dates Test Represents: **4/30/2024**

through **5/6/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1500	8.94	2.69	48.4
26A	58-003	Stoneco	400	2.38	2.69	12.9
2NS	63-114	Highland	1200	7.26	2.65	38.7
			Total Wt	3100		100.0

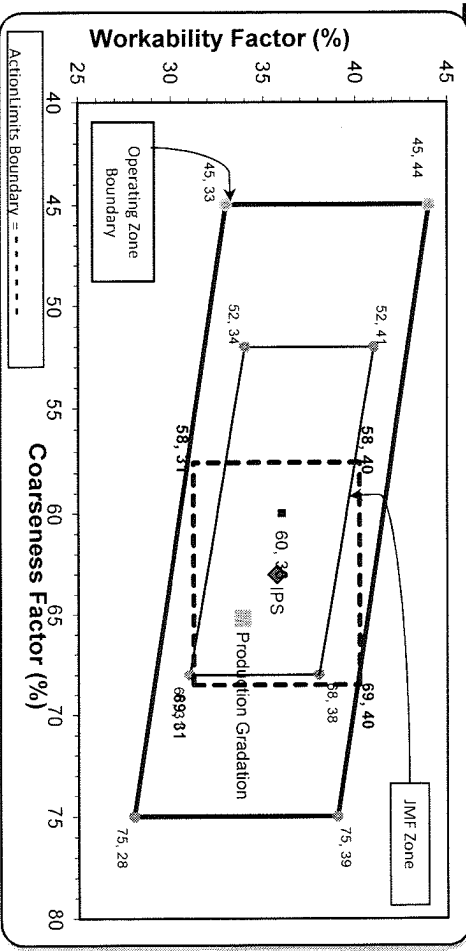
Verify this number is 100%

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"	99.5	100.0	100.0	99.8	0.2	0.2
3/4"	77.9	100.0	100.0	89.3	10.5	10.7
1/2"	30.7	99.2	100.0	66.4	22.9	33.6
3/8"	14.1	88.1	100.0	56.9	9.5	43.1
#4	2.4	15.7	98.8	41.4	15.5	58.6
#8	1.6	5.5	83.7	33.9	7.5	66.1
#16	1.5	3.7	65.5	26.6	7.3	73.4
#30	1.4	3.1	45.6	18.7	7.8	81.3
#50	1.3	2.9	18.1	8.0	10.7	92.0
#100	1.2	2.7	4.1	2.5	5.5	97.5
LBW	0.9	2.4	1.1	1.2	1.3	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 4% for the 3/4" sieve when
 a 1.5" max. size (nom. Max. 1.0") aggregate is used.

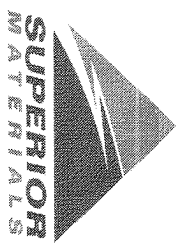
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **65** Workability Factor: **34**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	63	36	0.0	0.0
1.5"			0.0	0.0
1"			0.8	0.8
3/4"			8.3	9.1
1/2"			19.6	28.7
3/8"			11.8	40.5
#4			15.7	56.2
#8			8.1	64.3
#16			8.7	73.0
#30			8.4	81.4
#50			11.8	93.2
#100			5.4	98.6
LBW			0.8	99.4



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

PREPARED BY: SM, LLC Technical Service

Approved By: _____



Plant S102-Superior Novi

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.5	%	95-100
	3/4" (19mm)	77.9	%	
	1/2" (12.5mm)	30.7	%	30-60
	3/8" (9.5mm)	14.1	%	
	#4 (4.75mm)	2.4	%	0-8
	#8 (2.36mm)	1.6	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.3	%	
	#100 (.15mm)	1.2	%	
	#200 (75µm)	1.10	%	
	Wash Loss (#200/75um)	0.9	%	0-2
	Total Moisture	2.23	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

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)	99.2	%	95-100
	3/8" (9.5mm)	88.1	%	60-95
	#4 (4.75mm)	15.7	%	5-30
	#8 (2.36mm)	5.5	%	0-12
	#16 (1.18mm)	3.7	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.9	%	
	#100 (.15mm)	2.7	%	
	#200 (75µm)	2.5	%	
	Wash Loss (#200/75µm)	2.4	%	0-3
	Total Moisture	4.18	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.8	%	95-100
	#8 (2.36mm)	83.7	%	65-95
	#16 (1.18mm)	65.5	%	35-75
	#30 (.6mm)	45.6	%	20-55
	#50 (.3mm)	18.1	%	10-30
	#100 (.15mm)	4.1	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.37	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-103**

Sample Date: **4/29/24**

Dates Test Represents: **4/30/2024** through **5/6/2024**

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 ³	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1500	8.94	2.69	48.4	
26A	58-003	Stoneco	400	2.38	2.69	12.9	
2NS	63-114	Highland	1200	7.26	2.65	38.7	
Total Wt						3100	100.0

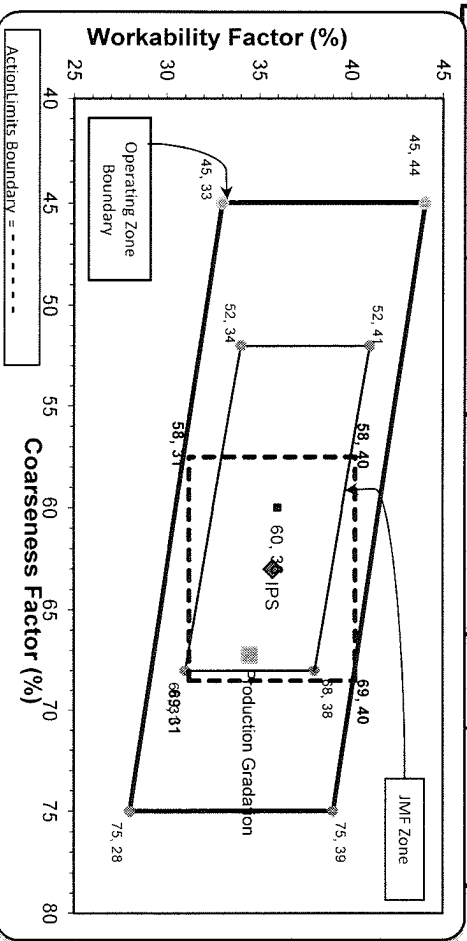
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.5	100.0	100.0	92.5	7.5	7.5
1/2"	32.7	99.6	100.0	67.4	25.1	32.6
3/8"	12.5	86.8	100.0	56.0	11.4	44.0
#4	2.6	10.3	99.2	41.0	15.0	59.0
#8	1.7	3.4	85.8	34.5	6.5	65.5
#16	1.5	2.4	69.3	27.9	6.6	72.1
#30	1.3	2.1	51.9	21.0	6.9	79.0
#50	1.2	1.9	24.0	10.1	10.9	89.9
#100	1.1	1.8	5.2	2.8	7.3	97.2
LBW	1.0	1.7	0.7	1.0	1.8	99.0

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 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

Initial Production Sample (IPS)



Coarseness Factor: **67** Workability Factor: **34**

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: _____



Plant S103-Superior Brighton

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

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)	84.5	%	
	1/2" (12.5mm)	32.7	%	30-60
	3/8" (9.5mm)	12.5	%	
	#4 (4.75mm)	2.6	%	0-8
	#8 (2.36mm)	1.7	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.3	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.1	%	
	#200 (75µm)	1.07	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	2.13	%	



Plant S103-Superior Brighton

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

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)	99.6	%	95-100
	3/8" (9.5mm)	86.8	%	60-95
	#4 (4.75mm)	10.3	%	5-30
	#8 (2.36mm)	3.4	%	0-12
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	2.63	%	



Plant S103-Superior Brighton

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/28/2024 - 05/04/2024

Report Date 05/04/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.2	%	95-100
	#8 (2.36mm)	85.8	%	65-95
	#16 (1.18mm)	69.3	%	35-75
	#30 (.6mm)	51.9	%	20-55
	#50 (.3mm)	24.0	%	10-30
	#100 (.15mm)	5.2	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.65		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	3.85	%	