

# Material and Application Guide

## 2NS Natural Sand – Buno Road



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**Material:** Natural Sand

**Product:** MDOT – 2NS

**Location:** American Aggregate, Buno Road Plant – State Pit #47-16

**Applications:** Fine aggregate in portland cement concrete  
Filter sand in septic fields  
Pipe bedding and backfill  
General fill

**Description:** A graded fine aggregate, produced by washing and screening natural sand. A yellow to light brown material formed by the natural abrasion and disintegration of rocks by glacial or riverbed action. The particles are sized from  $\frac{3}{8}$ " (9.5mm) to #200 mesh (75 $\mu$ m).



**2NS Natural Sand – Actual size shown**

## Specifications: Michigan Department of Transportation

2NS Natural Sand conforms to all the requirements of Michigan Department of Transportation "2003 Standard Specifications for Construction", section 902 "Aggregates"

## Gradation:

U.S. Sieve	3/8"	#4	#8	#16	#30	#50	#100	LBW
Metric Sieve	9.5mm	4.75mm	2.36mm	1.18mm	600 $\mu$ m	300 $\mu$ m	150 $\mu$ m	
Specification	100	95-100	65-95	35-75	20-55	10-30	0-10	0-3.0
2008 Average	<b>100</b>	<b>96</b>	<b>79</b>	<b>64</b>	<b>50</b>	<b>26</b>	<b>6</b>	<b>0.8</b>

## Physical Properties:

- Fineness Modulus, F.M. (2008 Average) – 2.79 (Specification 2.55 – 2.95)
- Shipping Moisture (2008 Average) – 3.6%
- ASTM C 29, Loose Unit Weight (2008 Average) – 112 lb/ft<sup>3</sup>
- ASTM C 29, Rodded Unit Weight (2008 Average) – 117 lb/ft<sup>3</sup>
- ASTM C 128, Bulk Specific Gravity Dry (2008 Average) – 2.62
- ASTM C 128, Bulk Specific Gravity SSD (2008 Average) – 2.65
- ASTM C 128, Absorption (2008 Average) – 1.2%
- ASTM C 123, Light Weight Particles (Coal and Lignite) in Aggregate – 1.0%
- ASTM C 142, Clay Lumps and Friable Particles in Aggregate – 0.0%
- ASTM C 88, Soundness of Aggregate by Use of Magnesium Sulfate – 9% loss
- ASTM C 40, Organic Impurities in Fine Aggregate for Concrete < 1
- ASTM C 1252, Uncompacted Void Content, Method A – 38.2%
- MTM 118, Fine Aggregate Angularity – 2.0

## General Usage Guide:

The 2NS Natural Sand should be blended into the concrete mixture along with the cement, coarse aggregate, water, admixtures and any special additives in the proportions detailed in the mix design. Care needs to be taken to ensure that the mix water is adjusted to compensate for 2NS Natural Sand moisture.

## Field Estimating Quantities:

	<b>Blast Furnace Slag Coarse Aggregate</b>	<b>Limestone Coarse Aggregate</b>	<b>Natural Gravel Coarse Aggregate</b>
Typical 2NS sand requirements per 1 cy. yd. of 3500 PSI concrete	1350 – 1450 lbs	1200 – 1350 lbs	1200 – 1350 lbs

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