

## PRODUCT

SAND EXPRESS Filter Sands are high-silica materials processed in our Columbus, TX plant to meet the requirements of individual water filtration systems. In addition to the standard grades listed below, sands can be manufactured for projects with other specifications.

Sand Express manufactures premium NSF Certified Filter Sands that meet all AWWA B100 standards.



## USES AND ADVANTAGES

Sand Express Filter Sands are suitable for many rapid and slow filtration systems. The raw materials are dried to sterilize the particles before proceeding with the sizing process. With the wide range of screen sizes available in the screening plant, the materials are sized to meet effective size and uniformity coefficient specifications. Rigorous quality control testing during production assures that the final products meet the requirements of the American Water Works Association standard B100 for filtering material.

## PHYSICAL PROPERTIES

Colour	Tan
Grain Shape	Sub-rounded
Bulk Density	95 – 100 lb/ft <sup>3</sup> (1520-1600 kg/m <sup>3</sup> )
	Filter Sand 1.5 – 1.53 tonnes per m <sup>3</sup>
Hardness, Mohs	6.6 – 6.8
Specific Gravity	2.65
Moisture Content	<0.1% weight
Acid Solubility	<5% weight

Bulk density values vary with particle size. Values for individual products can be determined at the time of shipping if required.

## PACKAGING

Packaged in 50# plastic bags and 3,000 lb bulk bags. Other bag sizes and bulk deliveries are available on request.

Product performance is affected by many factors, including storage, method and conditions of application and use. User testing is ESSENTIAL to determine suitability of product for intended method of application and use. Sand Express' SOLE WARRANTY is that the product has been manufactured to specifications. No oral or written information or advice shall increase this warranty or create new warranties. Sand Express' SOLE LIABILITY is to replace product proved defective. In no event shall Sand Express, be liable for any consequential, indirect or other damages whether arising from negligence or otherwise.



## TYPICAL CHEMICAL ANALYSIS and PROPERTIES

Chemical Compound		Typical Value, % weight
Silica	SiO <sub>2</sub>	88 - 90%
Alumina	Al <sub>2</sub> O <sub>3</sub>	6.0 – 6.2%
Iron Oxide	Fe <sub>2</sub> O <sub>3</sub>	0.75 – 0.80%
Calcium Oxide	CaO	0.25 – 0.30%
Potassium	K <sub>2</sub> O	2.85 – 2.90%
Magnesium Oxide	MgO	0.05 – 0.1%
Manganese Dioxide	MnO <sub>2</sub>	<0.01%
Sodium Oxide	Na <sub>2</sub> O	1.32 – 1.37%
Titanium Dioxide	TiO <sub>2</sub>	0.03 – 0.05%
Loss on Ignition		

## TYPICAL SIEVE ANALYSES - Percent Retained

Sieve Size		SANDS, Individual % Retained				
ASTM	Metric (mm)	1/4"-8	8-16	16-30	20-40	30-70
3/8	9.5	0.0%	-	-	-	-
1/4	6.35	-	-	-	-	-
#4	4.76	32.6%	-	-	-	-
#6	3.36	36.8%	-	-	-	-
#8	2.36	26.2%	9.89%	0.00%	0.00%	0.00%
#10	2.00	-	55.65%	-	-	-
#12	1.68	3.9%	-	0.00%	0.1%	0.00%
#16	1.19	-	28.88%	16.6%	7.8%	0.02%
#20	0.841	0.3%	3.37%	44.5%	28.8%	0.05%
#30	0.595	0.0%	1.05%	26.2%	43.9%	10.75%
#40	0.420	0.0%	0.53%	8.9%	14.1%	31.21%
#50	0.297	-	0.35%	3.1%	-	29.82%
#60	0.250	-	0.08%	-	4.8%	5.81%
#70	0.210	-	0.07%	-	-	7.01%
#100	0.149	0.1%	-	-	-	-
Pan (T)		0.1%	0.13%	0.8%	0.5%	15.32%
Effective Size, d <sub>10</sub> , mm		2.9 - 3.1	1.5 – 1.7	0.55 – 0.65	0.45 – 0.55	0.15 – 0.25
Uniformity Coefficient, d <sub>60</sub> /d <sub>10</sub>		1.5 – 1.6	1.2 – 1.3	1.6 – 1.8	1.6 – 1.8	1.8 – 2.1

The sieve analyses given in the tables are typical values. Because actual values could change from time to time please confirm that effective size and uniformity coefficient values remain within specification.

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**TYPICAL SIEVE ANALYSES** - Percent Passing

Sieve Size		SANDS, Cumulative % Passing				
Sieve	Metric, mm	1/4"-8	8-16	16-30	20-40	30-70
3/8	9.5	-	-	-	-	-
1/4	6.35	100.00%				
#4	4.76	62.32%	-	-	-	-
#6	3.36	30.6%	-	-	-	-
#8	2.36	4.4%	90.11%	100.00%	100.00%	100.00%
#10	2.00	-	-	-	-	-
#12	1.68	0.5%	34.46%	100.00%	99.9%	100.00%
#16	1.19	-	5.58%	83.4%	92.1%	99.98%
#20	0.841	0.2%	2.21%	38.9%	63.3%	99.93%
#30	0.595	0.2%	1.16%	12.7%	19.4%	89.18%
#40	0.420	0.2%	0.63%	3.8%	5.3%	57.97%
#50	0.297	-	0.28%	0.7%	-	28.14%
#60	0.250	-	0.20%	-	0.5%	22.33%
#70	0.210	-	0.13%	-	-	15.32%
#100	0.149	0.1%	-	-	-	-
Pan (T)		0.0%	0.00%	0.00%	0.00%	0.00%
Effective Size, $d_{10}$ , mm		2.9 - 3.1	1.5 - 1.7	0.55 - 0.65	0.45 - 0.55	0.15 - 0.25
Uniformity Coefficient, $d_{60}/d_{10}$		1.5 - 1.6	1.2 - 1.3	1.6 - 1.8	1.6 - 1.8	1.8 - 2.1

The sieve analyses given in the tables are typical values. Because actual values could change from time to time please confirm that effective size and uniformity coefficient values remain within specification.

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# FILTER AND WATER WELL SILICA SANDS AND GRAVEL

**CUSTOM  
AGGREGATES**

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## PRODUCT

CUSTOM AGGREGATES Filter Sands and Gravels are high-silica materials processed in our Picayune, Mississippi plant to meet the requirements of individual water filtration systems. In addition to the standard grades listed below, sands can be manufactured for projects with other specifications.

Custom Aggregates manufactures premium NSF Certified Filter Sands that meet all AWWA B100 standards.



## USES AND ADVANTAGES

Custom Aggregates Filter Sands and Gravels are suitable for many rapid and slow filtration systems. The raw materials are dried to sterilize the particles before proceeding with the sizing process. With the wide range of screen sizes available in the screening plant, the materials are sized to meet effective size and uniformity coefficient specifications. Rigorous quality control testing during production assures that the final products meet the requirements of the American Water Works Association standard B100 for filtering material.

## PHYSICAL PROPERTIES

Colour	White
Grain Shape	Sub-rounded
Bulk Density	95 - 100 lb/ft <sup>3</sup> (1520-1600 kg/m <sup>3</sup> )
	Filter Sand                      1.50 – 1.53 tonnes per m <sup>3</sup>
Hardness, Mohs	6.8 - 7
Specific Gravity	2.65
Moisture Content	<0.1% weight
Acid Solubility	<5% weight

Bulk density values vary with particle size. Values for individual products can be determined at the time of shipping if required.

## PACKAGING

Custom Aggregates sands and gravels are available in 50 lb plastic. Other bag sizes and bulk deliveries are available on request.

Product performance is affected by many factors, including storage, method and conditions of application and use. User testing is ESSENTIAL to determine suitability of product for intended method of application and use. Custom Aggregates's SOLE WARRANTY is that the product has been manufactured to specifications. No oral or written information or advice shall increase this warranty or create new warranties. Custom Aggregates's SOLE LIABILITY is to replace product proved defective. In no event shall Custom Aggregates, be liable for any consequential, indirect or other damages whether arising from negligence or otherwise.

# FILTER AND WATER WELL SILICA SANDS AND GRAVEL

**CUSTOM  
AGGREGATES**

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## TYPICAL CHEMICAL ANALYSIS and PROPERTIES

Chemical Compound		Typical Value, % weight
Silica	SiO <sub>2</sub>	98.5 – 99.5%
Alumina	Al <sub>2</sub> O <sub>3</sub>	0.15 – 0.30%
Iron Oxide	Fe <sub>2</sub> O <sub>3</sub>	0.05 – 0.08%
Calcium Oxide	CaO	0.01 – 0.02%
Magnesium Oxide	MgO	0.01 – 0.02%
Sodium Oxide	Na <sub>2</sub> O	0.01 – 0.02%
Potassium	K <sub>2</sub> O	0.05 – 0.15%
Loss on Ignition		0.10 – 0.20%

## TYPICAL SIEVE ANALYSES - Percent Retained

Sieve Size		SANDS Individual % Retained					GRAVEL, Individual %
ASTM	Metric (mm)	6-10	8-16	6-20	20-50	30-70	1/8" x 3/8"
3/8"	9.5	-	-	-	-	-	2.2%
1/4"	6.35	-	-	-	-	-	63.9%
#4	4.76	0.0%	0.0%	0.0%	-	-	29.1%
#6	3.36	7.0%	0.0%	0.0%	-	-	4.4%
#8	2.36	-	-	23.2%	-	0.03%	0.3%
#12	1.68	92.2%	67.4%	49.0%	-	0.03%	-
#16	1.19	-	-	-	0.0%	0.04%	0.0%
#18	1.0	-	-	-	0.43%	-	-
#20	0.841	0.5%	32.1%	27.4%	4.49%	0.85%	-
#30	0.595	0.0%	0.2%	0.3%	35.45%	8.43%	-
#35	0.500	-	-	0.1%	13.34%	-	-
#40	0.420	0.0%	0.1%	0.0%	13.15%	31.43%	-
#50	0.297	0.1%	0.0%	0.1%	21.89%	37.69%	-
#60	0.250	-	-	-	6.95%	-	-
#70	0.210	0.0%	0.1%	0.0%	-	16.09%	-
#80	0.177	-	-	-	-	2.82%	-
#100	0.149	0.1%	0.0%	0.0%	-	-	-
Pan (T)		0.1%	0.1%	0.0%	4.03%	2.59%	0.1%
Effective Size, d <sub>10</sub> , mm		2.0-2.2	1.3-1.4	1.35-1.45	0.25-0.35	0.2-0.3	4.5-5.5
Uniformity Coefficient, d <sub>60</sub> /d <sub>10</sub>		1.3-1.4	1.4-1.5	1.5-1.6	2.0-2.2	1.7-1.9	1.3-1.4

The sieve analyses given in the tables are typical values. Because actual values could change from time to time please confirm that effective size and uniformity coefficient values remain within specification.

## TYPICAL SIEVE ANALYSES - Percent Passing

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# FILTER AND WATER WELL SILICA SANDS AND GRAVEL

**CUSTOM  
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Sieve Size		SANDS Cumulative % Passing					GRAVEL, Cumulative %
ASTM	Metric (mm)	6-10	8-16	8-20	20-50	30-70	1/8" x 38"
3/8"	9.5	-	-	-	-	-	97.8%
1/4"	6.35	-	-	-	-	-	33.9%
#4	4.76	100.0%	100.0%	100.0%	-	-	4.8%
#6	3.36	93.0%	100.0%	100.0%	-	-	0.4%
#8	2.36	-	-	76.8%	-	99.97%	0.2%
#12	1.68	0.7%	32.6%	27.8%	-	99.94%	-
#16	1.19	-	-	-	100.0%	99.90%	0.2%
#18	1.0	-	-	-	99.57%	-	-
#20	0.841	0.2%	0.5%	0.4%	95.06%	98.05%	-
#30	0.595	0.2%	0.3%	0.1%	59.52%	90.62%	-
#35	0.500	-	-	0.1%	46.14%	-	-
#40	0.420	0.2%	0.2%	0.1%	32.96%	59.19%	-
#50	0.297	0.2%	0.2%	0.0%	11.00%	21.50%	-
#60	0.250	-	-	-	4.04%	-	-
#70	0.210	0.2%	0.1%	0.0%	-	5.41%	-
#80	0.177	-	-	-	-	2.59%	-
#100	0.149	0.1%	0.1%	0.0%	-	-	-
Pan (T)		0.0%	0.0%	0.0%	0.00%	0.00%	0.00%
Effective Size, $d_{10}$ , mm		2.0-2.2	1.3-1.4	1.35-1.45	0.25-0.35	0.2-0.3	4.5-5.5
Uniformity Coefficient, $d_{60}/d_{10}$		1.3-1.4	1.4-1.5	1.5-1.6	2.0-2.2	1.7-1.9	1.3-1.4

The sieve analyses given in the tables are typical values. Because actual values could change from time to time please confirm that effective size and uniformity coefficient values remain within specification.

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# FILTER AND WATER WELL SILICA SANDS



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## PRODUCT

MONARCH MOUNTAIN Filter Sands are high-silica materials processed in our Sheridan, AR plant to meet the requirements of individual water filtration systems. In addition to the standard grades listed below, sands can be manufactured for projects with other specifications.

Monarch Mountain manufactures premium NSF Certified Filter Sands that meet all AWWA B100 standards.



## USES AND ADVANTAGES

Monarch Mountain Filter Sands are suitable for many rapid and slow filtration systems. The raw materials are dried to sterilize the particles before proceeding with the sizing process. With the wide range of screen sizes available in the screening plant, the materials are sized to meet effective size and uniformity coefficient specifications. Rigorous quality control testing during production assures that the final products meet the requirements of the American Water Works Association standard B100 for filtering material.

## PHYSICAL PROPERTIES

Colour	White
Grain Shape	Sub-angular
Bulk Density	95 - 100 lb/ft <sup>3</sup> (1520-1600 kg/m <sup>3</sup> )
	Filter Sand                      1.50 – 1.53 tonnes per m <sup>3</sup>
Hardness, Mohs	6.8 - 7
Specific Gravity	2.65
Moisture Content	<0.1% weight
Acid Solubility	<5% weight

Bulk density values vary with particle size. Values for individual products can be determined at the time of shipping if required.

## PACKAGING

Monarch Mountain Filter sands are available in 50 lb plastic and 100 lb paper bags, or in 2,400 bulk bags. Other bag sizes and bulk deliveries are available on request.

Product performance is affected by many factors, including storage, method and conditions of application and use. User testing is ESSENTIAL to determine suitability of product for intended method of application and use. Monarch Mountain's SOLE WARRANTY is that the product has been manufactured to specifications. No oral or written information or advice shall increase this warranty or create new warranties. Monarch Mountain's SOLE LIABILITY is to replace product proved defective. In no event shall Monarch Mountain be liable for any consequential, indirect or other damages whether arising from negligence or otherwise.

# FILTER AND WATER WELL SILICA SANDS



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## TYPICAL CHEMICAL ANALYSIS and PROPERTIES

Chemical Compound		Typical Value, % weight
Silica	SiO <sub>2</sub>	97 – 99%
Alumina	Al <sub>2</sub> O <sub>3</sub>	0.50 – 1.50%
Iron Oxide	Fe <sub>2</sub> O <sub>3</sub>	0.02 – 0.07%
Calcium Oxide	CaO	0.03 – 0.05%
Magnesium Oxide	MgO	0.01 – 0.08%
Sodium Oxide	Na <sub>2</sub> O	0.01 – 0.03%
Potassium	K <sub>2</sub> O	0.03 – 0.20%
Loss on Ignition		0.10 – 0.20%

## TYPICAL SIEVE ANALYSES - Percent Retained

Sieve Size		SANDS, Individual % Retained			
ASTM	Metric	6-10	8-16	20-40	40-70
#4	4.76 mm	0.0%	0.0%		
#6	3.36 mm	7.0%	0.0%		
#12	1.68 mm	92.2%	67.4%	0.0%	
#16	1.19 mm			0.8%	
#20	0.841 mm	0.5%	32.1%	48.4%	0.0%
#30	0.595 mm	0.0%	0.2%	46.8%	
#40	0.420 mm	0.0%	0.1%	3.9%	
#50	0.297mm	0.1%	0.0%		77.1%
#70	0.210 mm	0.0%	0.1%		12.9%
#100	0.149 mm	0.1%	0.0%		7.8%
#140	0.105 mm	0.0%	0.0%		
#200	0.074 mm	0.0%	0.0%		2.1%
Pan (T)		0.1%	0.1%	0.1%	0.0%
Effective Size, d <sub>10</sub> , mm		2.0 – 2.2	1.2 – 1.4	0.60 – 0.70	0.15 – 0.25
Uniformity Coefficient, d <sub>60</sub> /d <sub>10</sub>		1.3 – 1.4	1.4 – 1.5	1.3 – 1.4	1.65 – 1.75

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# FILTER AND WATER WELL SILICA SANDS



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## TYPICAL SIEVE ANALYSES - Percent Passing

Sieve Size		SANDS, Cumulative % Passing			
Sieve	Metric	6-10	8-16	20-40	40-70
#4	4.76 mm	100.0%	100.0%		
#6	3.36 mm	93.0%	100.0%		
#12	1.68 mm	0.7%	32.6%	100.0%	
#16	1.19 mm			99.2%	
#20	0.841 mm	0.2%	0.5%	50.8%	100%
#30	0.595 mm	0.2%	0.3%	4.0%	
#40	0.420 mm	0.2%	0.2%	0.1%	
#50	0.297mm	0.2%	0.2%		22.9%
#70	0.210 mm	0.2%	0.1%		9.9%
#100	0.149 mm	0.1%	0.1%		2.1%
#140	0.105 mm	0.1%	0.1%		
#200	0.074 mm	0.1%	0.1%		0.0%
Pan (T)		0.0%	0.0%	0.0%	0.0%
Effective Size, $d_{10}$ , mm		2.0 – 2.2	1.2 – 1.4	0.60 – 0.70	0.15 – 0.25
Uniformity Coefficient, $d_{60}/d_{10}$		1.3 – 1.4	1.4 – 1.5	1.3 – 1.4	1.65 – 1.75

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Monarch Mountain Minerals and Aggregates, 1 Grant 111, Sheridan AR 72150 Tel: (870) 917 2279 Fax (870) 942 1377