



Recycled Glass Concrete Sands

Technical Data

Description: Vitro's CS and MG Glass Sands are functional fine aggregate materials made with uniform grain size distributions from 100% recycled glass: CS Glass from bottle glass and a greenish tan in color; and MG Glass from plate glass and white in color. CS and MG Glass Sands are free of crystalline silica and provide a clean recycled sand for concrete, polymer concrete, mortars, and other similar systems. The products are very low in lead (Pb) content and free of label remnants and other post consumer debris.

Vitro provides a service wherein we will work with the customer to incorporate the right glass product into their existing natural sands to allow them to get best properties relative to optimal Fineness Modulus, FM (see next page). Contact your Vitro representative for more information.

Typical Chemical and Physical Properties

NOT FOR SPECIFICATION PURPOSES

Chemical Composition: SiO₂ 70-80%; Na₂O 10-15%; CaO 9-13%; Al₂O₃ 1-5%; K₂O <1%; Fe₂O₃ <1%; MgO <1%; SO₃ <0.5%; TiO₂ <0.1%; LOI <1%; Pb < 40 ppm

	MG-4	CS-6	CS-30	MG-30w	MG-30	CS-60	CS-80	MG-80	Test Method
Specific Gravity	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	ASTM C127
Bulk Density, lb/ft ³	85	85	85	85	85	85	85	85	ASTM C127
D98 top size, mesh	4	6	30	30	30	60	80	80	ASTM C136
Size range, mm	2.4-4.7	1.7-3.4	0.21-0.60 0.23-0.60	0.30-0.60	0.23-0.60	0.07-0.23	0.07-0.18	0.07-0.18	ASTM C136
pH	9.5-10	9.5-10	10-10.5	10-10.5	10-10.5	10-11	10-11	10-11	AFS 113-87S
Color	white	off white	off white	super-white	white	off white	off white	white	
Hardness	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	Mohs Scale
Free moisture, %	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ASTM C566

Important Notice. For applications in Portland cement concrete and related systems, these glass sand products must be used in conjunction with an ASR mitigation strategy such as VCAS Pozzolan, lithium or both. For more information, see Vitro's Technical Bulletin on ASR mitigation.

Fineness modulus (FM):

This is defined as an empirical figure obtained by adding the total percentage of the sample of an aggregate retained on each of a specified series of sieves, and dividing the sum by 100. The sieve sizes are No. 100 (150 μm), No. 50 (300 μm), No. 30 (600 μm), No. 16 (1.18 mm), No. 8 (2.36 mm), No. 4 (4.75 mm), ³/₈" (9.5 mm), ³/₄" (19.0 mm), 1 ¹/₂" (38.1 mm) and larger increasing in the ratio of 2:1. The same value of fineness modulus may be obtained from several different particle size distributions. In general, however, a smaller value indicates a finer aggregate and higher value a coarser aggregate. Fine aggregates range from a FM of 2.00 to 4.00, and coarse aggregates smaller than 38.1 mm range from 6.50 to 8.00.

Combinations of fine and coarse aggregates have intermediate values. See examples of FM calculation to right.

Sieve Sizes, U.S. Series	Total Percent Retained		
	Fine Aggregate	Coarse Aggregate	Combined (Coarse & Fine 65:35)
1 1/2" (38.1-mm)	0	4	3
3/4" (19.0-mm)	0	49	32
3/8" (9.5-mm)	0	91	59
No. 4 (4.75-mm)	4	100	66
No. 8 (2.36-mm)	21	100	72
No. 16 (1.18-mm)	46	100	81
No. 30 (600-μ m)	74	100	91
No. 50 (300-μ m)	89	100	96
No. 100 (150-μ m)	95	100	98
Total	329	744	598
Fineness Modulus = Total/100	3.29	7.44	5.98

Ref. CRDC 104-80

Product Information/Customer Service:

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Standard Package: 50 lb bag; 3,000 lb supersacks.

Disclaimer: The statements in this bulletin are based on data which is believed to be reliable, and is offered in good faith to be applied accordingly to the user's best judgment. Since operating conditions at customer's sites are beyond our control, Vitro Minerals will not assume responsibility for the accuracy of this data, or liability which may result from the use of its products. Likewise, no patent liability is assumed for use of Vitro Mineral products in any manner which could or would infringe on patent rights of others.

Health Hazard Warning: Prolonged inhalation of dust associated with the materials described in this data sheet can cause delayed lung injury. Avoid creating dust when handling, using or storing. Follow OSHA Safety and Health Standards for fugitive dust. Current Material Safety Data Sheet containing safety information is available and should be consulted before usage.