

CellBlockEX™

FIRE/HEAT/SMOKE SUPPRESSANT

Aggregates Comparison



Aggregates in comparison

	CellBlockEX®	Perlite	Vermiculite	Expanded Clay	EPS
Thermal conductivity coefficient	0.07 W/mK (all granular sizes)	ca. 0.06 W/mK	0.05 - 0.07 W/mK	0.10 - 0.22 W/mK depending on grain and type	0.035 - 0.045 W/mK
Granular strength	high	very low	very low	very high	very low
Water absorption	high 25-30 vol.-%	very high 50-70 vol.-% greatly variable	very high 50-70 vol.-% greatly variable	low to high water absorption 5-15 vol.-% depending on granular form and firing process	very low 1-2 vol.-%
Granular structure	regular as per grading curve 11 sizes 0.04 - 16 mm	greatly variable (no defined granular structure) change through conveying and mixing processes	greatly variable (no defined granular structure) change through conveying and mixing processes	sand 0 - 4 mm (crushed beads) 4 - 8 + 8 - 16 round grain	equigranular
Bulk density	low, e.g. 2 - 4 mm = 190kg/m ³ 8 - 16 mm = 140kg/m ³	very low 35 - 95 kg/m ³ depending on grain	low 60 - 160 kg/m ³ depending on grain	high 1 - 4 mm = 400-650 kg/m ³ 4 - 16 mm = 280-500 kg/m ³	very low 15 - 50 kg/m ³
Binder required	low due to ball shape, granular structure and low water absorption	high due to irregular granular structure and high water absorption	high due to irregular granular structure and high water absorption	high with crushed beads low with round grain	high through low inherent strength
Compressive strength	high	very low severe abrasion	very low severe abrasion	high	very low
Recycling product	yes ("Blue Angel" award)	no	no	no	in part

CellBlockEX® vs Vermiculite

CellBlockEX is 100% recycled material and is made from post-consumer-recycled glass that's destined for the land-fill prior to being diverted to one of two manufacturing plants worldwide. Vermiculite is a mined mineral and carries with it stigmas associated with the mining industry.

CellBlockEX is a manufactured material and is capable of maintaining a consistent physical property specification regardless of where in the world the material is ordered from, or delivered to. It achieves the same exact dimensions every time. Packaged Vermiculite is inconsistent from region to region. As a mined material, the physical properties including density, porosity, water content, etc., vary from supplier-to-supplier, region-to-region, and mine-to-mine making it difficult to accurately calculate performance.

CellBlockEX's smooth spherical shape safely covers and encloses products and packaging without degradation when exposed to vibration and friction in the shipping process. In contrast, Vermiculite's angular and irregular geometry features sharp, knife-like points. These sharp edges can degrade packaging and present a greater opportunity to damage products during transport.

CellBlockEX contains no Crystalline Silica (see attached HVG report). The dust present on Vermiculite has been identified as containing Crystalline Silica. New OSHA regulations have cracked down on Crystalline Silica. (see: <https://www.osha.gov/Publications/OSHA3681.pdf>). Also note that Vermiculite has a very low compressive strength and easily breaks down and crushes. The more handling and shipping the material endures the more it breaks down and the more fine dust particles it generates and can release during final use.

Vermiculite, in ore concentrate and exfoliated state, may contain small quantities of crystalline silica as quartz. This is usually only present as non-respirable particles but mechanical action such as milling may reduce any quartz that may be present to respirable particle size.

Vermiculite is believed to contain less than 1% crystalline silica based on testing. The International Agency for Research on Cancer (IARC) has classified crystalline silica as a possible carcinogen, which means there is limited evidence for human Carcinogenicity of crystalline silica. For vermiculite products containing less than 1% total crystalline silica under standard conditions and assuming that regulatory protective measures are in place, the Maximum Exposure Limit (0.3 mg/m³ in a TWA of 8 hours) for respirable crystalline silica should not be exceeded.

CellBlockEX's raw material has seven distinct particle size ranges allowing the final CellBlockEX products to be specifically engineered to the customer's needs. Fine particle sizes as low as 40-um can be used in pressurized fire extinguishers. Larger grain size mixtures can be engineered and blended to be used as a loose-fill packaging in containers. Vermiculite suppliers have little control over their particle dimensions. Because it is a mined aggregate, it is difficult to offer consistent size ranges.





CellBlock[®]
Fire Containment Systems

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