

# VeriShield® V220

## HIGH-DENSITY MODULAR RADIATION SHIELDING



**Groundbreaking system of dry stacked shielding modules which interlock to form a tight, leak-free therapy room of any size or shape. Unique sine-wave shapes eliminate straight line seams and provides superior neutron, photon and particle attenuation at the joints. Available in multiple densities, VeriShield construction typically requires half the space of mass concrete vaults.**

VeriShield radiation shielding components are individual modules which are combined together to form a composite structure to create the required radiation attenuating environment. The constructed system retains the ability to be deconstructed and reused.

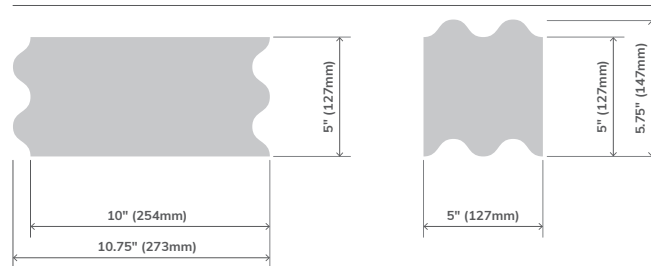
VeriShield products are manufactured in a controlled environment and incorporate high Z aggregates (for photon attenuation) as well as neutron additive materials.

The VeriShield photon, neutron and electron shielding modules feature a design that presents a full 100% inter-locking edge. Lapping or alternating of the seams results in the prevention of straight line paths for radiation streaming. Modules interlock together to form a solid and stable structure

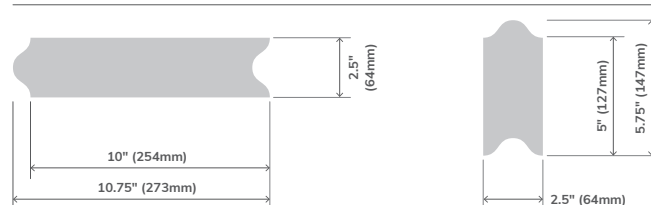
Standard VeriShield V220 modules are 5" x 5" x 10" (127 x 127 x 254mm). VeriShield V220 is also available in half thickness, with a nominal thickness of 2.5" (63 mm).

Compressive strength is guaranteed to meet 6,600 psi. This product routinely easily surpasses this minimum and is typically on the order of 7,000 psi and above (depending upon final mix ratios). Grout materials will have a lesser compressive strength as water content is increased for working properties, but shall not be less than 6,000 psi when mixed on site.

### V220



### V220HT



# Veritas VeriShield® V220 and VeriShield Grout

VeriShield V220 Shielding Modules and Grout are manufactured and packaged in a controlled environment and incorporate a combination of fine and coarse graded aggregates with a cement binder.

Designed to be mixed with portland cement, VeriShield Grout will remain volume stable in both wet and dry conditions, and remains stable without cracking or lamination from compressive loading, impact, lateral thrust, high heat or continuous vibration.



<b>SIZE</b>	5" x 5" x 10" – 127 x 127 x 254mm
<b>WEIGHT PER MODULE</b>	31.5 lbs – 14.3 kg
<b>*DENSITY</b>	220 lbs/cu ft – 3.5 g/cu. cm (median)
<b>COMPRESSIVE STRENGTH</b>	6,600 psi – 464 kgf/cm <sup>2</sup>
<b>SOLUBILITY</b>	Insoluble
<b>REACTIVITY</b>	Non-Reactive
<b>MELTING POINT</b>	^2,800°F - 1,538°C
<b>BOILING POINT</b>	N/A

\*Density variances may vary by ±8% due to standard manufacturing tolerances. VeriShield® modular blocks are engineered to meet or exceed industry standards, ensuring 100% radiation shielding effectiveness.

Grout compressive strength shall never be less than 6,000 psi when mixed on site.

## COMPOSITION INFORMATION

Major Compounds

Chemical Name	CAS Registry Number
Portland Cement	*65997-15-1
Gypsum (calcium sulfate)	13397-24-5
* May contain crystalline silica	14808-60-7

## PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A
Vapor Pressure (mm Hg)	N/A
Melting Point	N/A
Vapor Density (AIR-1)	N/A
Evaporation Rate	N/A
Solubility in Water	N/A
Appearance & Odor	Grey; no odor

## FIRE AND EXPLOSION HAZARD DATA - NONE

## REACTIVITY DATA

Stability: Stable

## RADIATION ATTENUATION

Attenuation is based on interpolated data for some energies. The listed TVL's represent the average tenth value thickness after 5 decades of attenuation. First TVT and equilibrium TVL's may be available for thin barrier sections.

Veritas will provide calculations with appropriate safety factors to ensure attenuation requirements are met.

### V220 Attenuation - Primary Barrier (1TVL=)

6MV:	9.0" - 22.9 cm
10MV:	10.2" - 25.9 cm
15MV:	11.4" - 29.0 cm
18MV:	11.7" - 29.7 cm

### V220 Attenuation - Secondary Barrier (1TVL=)

6MV:	7.4" - 18.8 cm
10MV:	8.0" - 20.3 cm
15MV:	8.7" - 22.1 cm
18MV:	8.7" - 22.1 cm

