Casting Media Alternatives

One process, multiple possibilities.
Industry-proven materials.

1 Zircon

Available printed as a single material or as an additive to silica sand, Zircon offers the best anti-veining solution on the market.

A natural mineral, Zircon is often used in foundries to achieve the highest quality castings. Zircon's high thermal conductivity and its non-wettability by molten metal make it an ideal mold and chill sand. Low thermal expansion aids in dimensional accuracy and resists metal penetration for reduced veining and superior surface finish.

2 Chromite

Naturally resistant to the effects of high temperatures and pressure, Chromite allows faster heat dispersion, resulting in finer micro-structure for higher quality castings.

As a mold and core making sand, its properties enable the material to be utilized in heavy duty gray iron and steel foundries. Its high thermal conductivity gives it favorable chilling properties and moderate thermal expansion contributes to excellent dimensional stability.

3 Ceramic Beads

A cost-effective replacement for Zircon sand, Ceramic Beads offer good thermal expansion control making it effective in prevention of veining.

Ceramic Beads is a spherical ceramic (synthetic) sand which exhibits excellent refractory properties, high permeability and thermal expansion. Gases are readily dispersed, reducing the potential for porosity in the casting. Ceramic Beads is compatible with all binders and is especially recommended for casting steel alloys or printing cores subject to high thermal stress conditions.

4 Black Iron Oxide

A trusted anti-veining additive, Black Iron Oxide is often used by foundries in traditional mold production.

Black Iron Oxide has long been used by the foundry industry to reliably prevent surface defects during casting. Used as an additive with silica sand for mold and core production, Black Iron Oxide provides excellent anti-veining characteristics.

Material Comparison

Material Property	Material for 3D Printed Production of Cores & Molds				
	Silica Sand	Zircon	Chromite	Ceramic Beads	Black Iron Oxide
Anti-veining Rating*	1	4	3	5	3
Tensile Strength	320	360	220	220	320
LOI	1.40	0.60	+0.99	0.92	1.30
Color	Off White	Tan/Orange	Black	Tan/Beige	Black Crystals
Permeability	>120	70	180	85	>120
Melting Point	1,760°C	2,600°C	1,850°C	1,825°C	1,377°C
Surface Finish (RMS)	200-400	150-250	350-450	200-400	200-400
pH	7.1	6.8	8.3	7.2	Similar to Silica
ADV	2.0	1.0	0.5	2.65	Similar to Silica
Ideal Applications	Ferrous and Non Ferrous	Ferrous and Non Ferrous	Ferrous	Ferrous and Non Ferrous	Ferrous
Price $-$$$$	$	$$$$	$$	$$$	$
Availability	Global	North America & Europe	North America	Global	North America

*Anti-veining ratings are relative scores based on Silica as worst performer and Ceramic Beads being best. Actual results vary due to variability at individual foundries.