

PALMER

MANUFACTURING & SUPPLY, INC.

PALMER TECHNICAL SAND

High Performance Spherical Ceramic Sand For
Metalcasting Mold & Core Production



All foundries are facing increasing regulatory pressure to eliminate silica sand. Palmer Technical Sand provides a solution to this problem while increasing casting quality and reducing scrap.



Made in U.S.A.

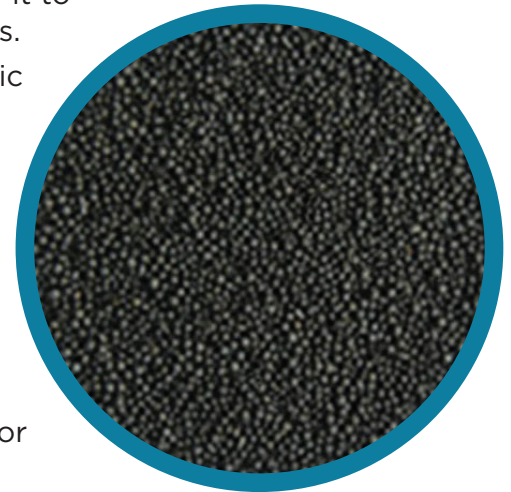
www.palmermfg.com

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PALMER TECHNICAL SAND

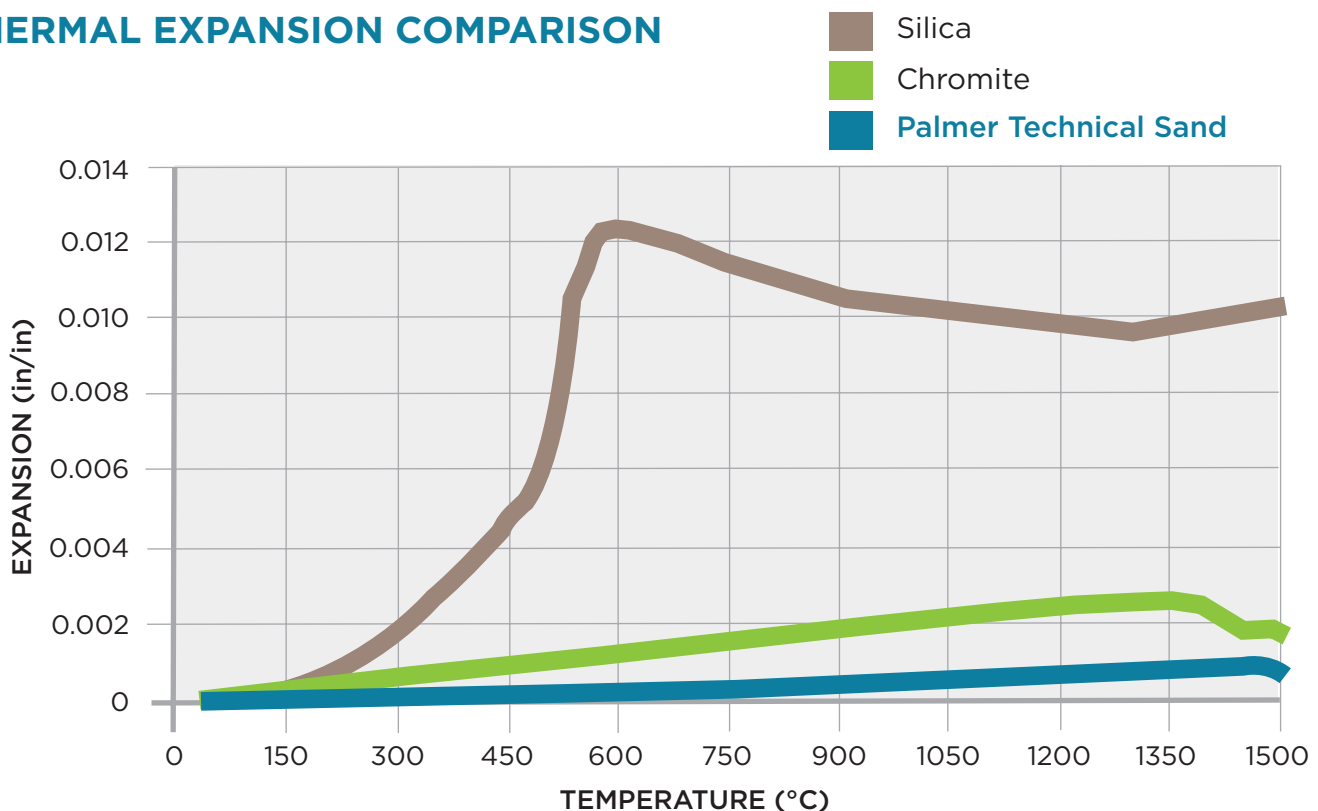
Unique properties allow for exceptional benefits in the cores and mold process for metal casting. Sand grain crush resistance is superior compared to silica, chromite, and most ceramic sands, allowing for it to be more efficiently reclaimed in mechanical or thermal applications.

- Low thermal expansion eliminating veining defects. Granulometric size distribution customized to avoid penetration flaws.
- High permeability spherical material, reducing or eliminating gas defects.
- Inert material, avoiding undesirable reactions with different metals & alloys, resins and additives used in the casting process.
- High strength and thermal stability to cast complex geometric and thin parts.
- Significantly reduces sand grain degradation during mechanical or thermal reclamation.
- Non-crystalline silica, will not contribute to health hazards associated with crystalline silica exposure, meeting the new OSHA silica PEL regulations.
- Provides superior finish in 3D sand printing applications.



SPHERICAL
CERAMIC SAND

THERMAL EXPANSION COMPARISON



PHYSICAL AND THERMAL PROPERTIES COMPARISON

		PALMER TECHNICAL SAND	CHROMITE SAND	SILICA SAND
Bulk Density	g/cm ³	2.00	2.60	1.59
Bulk Density	lb/ft ³	124.9	162.3	99.3
Specific Heat @ 1,100 °C	J/g °C	0.2370	-	-
	cal/g °C	0.0566	-	-
Thermal Conductivity @1,100 °C	W/m °C	0.2990	-	-
	in/in	0.00077	0.002336	0.010058
Thermal Expansion @1,100 °C	%LC	0.077	0.234	1.006
	°C	1,445	1,368	1,350 -1,450
Sintering Point	°F	2.633	2.494	2,462 - 2,642

SIEVE ANALYSIS AND SHAPE

		PALMER TECHNICAL SAND						
Sieve No	Microns	AFS 40	AFS 45	AFS 50	AFS 55	AFS 65	AFS 75	AFS 85
20	850	-	-	-	-	-	-	-
30	600	2	-	-	-	-	-	-
40	450	28	21	1	-	-	-	-
50	300	55	34	25	16	8	2	-
70	212	12	29	60	54	39	15	13
100	150	3	13	13	25	44	59	44
140	106	-	2	1	5	7	20	29
200	75	-	1	-	-	1	4	14
270	53	-	-	-	-	1	-	-
Fines		1	-	-	-	-	-	-
Grain Fineness Number GFN		41.5	46.9	50.4	55.9	63.9	75.2	85.9
Base Permeability		281	227	162	136	104	-	-
Grains Format		Spherical						

GRAIN FINENESS NUMBER INCREASE AFTER CRUSH

@527.7 kgf/cm² [(Final GFN - Initial GFN)/Initial GFN]x100



PALMER TECHNICAL SAND

CHEMICAL AND MINERALOGICAL ANALYSIS

		PALMER TECHNICAL SAND
Chemical Composition, (%)	Al ₂ O ₃	73
	Fe ₂ O ₃	17
	SiO ₂	7
	TiO ₂	1.5
	Other	1.5
Mineralogical Analysis, (%)	Corundum	86.5
	Hematite	7.0
	Maghemite	1.5
	Mullite	5.0
	Anorthite	-



Typical Values

Note: SiO₂ is bonded to other oxides in crystalline phase as mullite and anorthite.

OTHER PROPERTIES

		PALMER TECHNICAL SAND
Loss on ignition	%	<0.10
Moisture	%	<0.10
pH	-	7.64
Acid Demand Value	-	0.2

MOLD & CORE APPLICATIONS USING PALMER TECHNICAL SAND

- Aluminum automotive engine parts
- Stainless steel marine parts
- Cast iron valves
- Alloys for heavy engine parts
- Carbon steel turbines
- Non-ferrous alloys aircraft parts
- Special non-ferrous alloys for complex & thin walls components



ENGLISH

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