

Descriptio

mNZP® 1543/1557 is an enhanced zirconia alumina grain composed of a true abrasive alloy containing approximately 45%Wt zirconia produced by a special fusion process. Fused in an electric arc furnace at approximately 2000 °C , this process develops a very small crystal size and unique columnar eutectic microstructures. The special chemistry and microstructure produces a hard, very tough and aggressively shaped abrasive grain. These features dramatically improve rapid stock removal operations and significantly enhance product life.

mNZP® 1543/1557 is a high performance alternative for NZP/AZ40 as well as for brown and monocrystalline fused alumina in organic bonded abrasives and thin wheels applications.

Physical Properties (Typical)

Crystal Size	12 microns	Melting Point	1890°C
True Density	4.80 g/cm ³	Vickers Hardness	19 GPA for 50 gram load
Loose Pack Density	1.90-2.30 gms/cc	-	-

Chemical Properties (Typical)

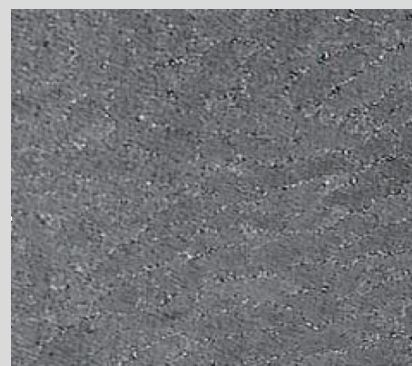
Al ₂ O ₃	54%	ZrO ₂	45%	TiO ₂	0.15%
SiO ₂	0.05%	Fe ₂ O ₃	0.07%	Na ₂ O	0.03%
CaO	0.10%	MgO	0.02%	-	-

Loose Pack Density (LPD) Limits*

Grit Size	1543 LPD (g/cm ³)	Grit Size	1557 LPD(g/cm ³)
F8	Record	F8	Record
F10	Record	F10	Record
F12	2.185-2.305	F12	2.225-2.345
F14	2.165-2.285	F14	2.205-2.325
F16	2.115-2.235	F16	2.155-2.275
F20	2.100-2.220	F20	2.140-2.260
F24	2.095-2.215	F24	2.135-2.255
F30	2.030-2.150	F30	2.070-2.190
F36	1.970-2.090	F36	2.010-2.130



Macrostructure of mNZP® grains



Microstructure of mNZP® grains (SEM)

Application

Code	Treatment	Grain Shape	Sizing Convention	Grit Size	Application
1543	Untreated	Strong	Modified ANSI	F12-F220	Bonded
1557	Treated	Strong	Modified ANSI	F12-F220	Bonded

Sizing Convention and Specifications *

Size	Over size	Coarse Grit	1 st Nominal	2 nd Nominal	-Pan
F8	+5/0	+7/(0-20)	+8/45+	(+8+10)/70+	-12/(0-3)
F10	+6/0	+8/(0-20)	+10/45+	(+10+12)/70+	-14/(0-3)
F12	+7/0	+10/(0-20)	+12/45+	(+12+14)/70+	-16/(0-3)
F14	+8/0	+12/(10-35)	+14/(30-60)	(+14+16)/55+	-18/(0-3)
F16	+10/0	+14/(1-20)	+16/(25-55)	(+16+18)/55+	-20/(0-6)
F20	+12/0	+16/(0-20)	+18/(20-50)	(+18+20)/60+	-25/(0-10)
F24	+16/0	+20/(15-40)	+25/(35-65)	(+25+30)/55+	-35/(0-3)
F30	+18/0	+25/(10-35)	+30/40+	(+30+35)/55+	-40/(0-3)
F36	+20/0	+30/(0-25)	+35/45+	(+35+40)/65+	-45/(0-3)
F46	+30/0	+40/(0-30)	+45/40+	(+45+50)/65+	-60/(0-3)
F54	+35/0	+45/(0-30)	+50/40+	(+50+60)/65+	-70/(0-3)
F60	+40/0	+50/(0-30)	+60/40+	(+60+70)/65+	-80/(0-3)
F70	+45/0	+60/(0-25)	+70/40+	(+70+80)/65+	-100/(0-3)
F80	+50/0	+70/(0-25)	+80/40+	(+80+100)/65+	-120/(0-3)
F90	+60/0	+80/(0-20)	+100/40+	(+100+120)/65+	-140/(0-3)
F100	+70/0	+100/(0-20)	+120/40+	(+120+140)/65+	-200/(0-3)
F120	+80/0	+120/(0-20)	+140/40+	(+120+170)/65+	-230/(0-3)
F150	+100/0	+140/(0-15)	(+170+200)/40+	(+170+200+230)/65+	-325/(0-3)
F180	+120/0	+170/(0-15)	(+200+230)/40+	(+200+230+270)/65+	-
F220	+140/0	+200/(0-15)	(+230+270)/40+	(+200+270+325)/65+	-

*Modified ANSI

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