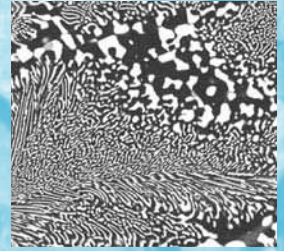
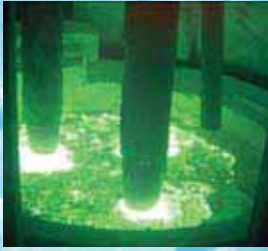




# Grain Codes: 1610 and 1612 Bonded Applications



Bonded abrasives made with NorZon NV™ 1610 and 1612 demonstrate groundbreaking cutting abilities, bringing higher efficiency and lower force development to your applications. The grain, a 40 percent alumina-zirconia formulation, provides strength and resistance to dulling. Our unique electro-fusion process combines zircon sand, alumina and stabilizers at close to 1900°C or 3452°F. This recipe creates abrasive grains with controlled fracture properties engineered to give dramatic improvements in rapid stock removal operations. Depending on the grit

size and applications, the effective cutting life of this sharp, hard, durable grain is two to six times longer than ordinary abrasives.

NorZon NV™ 1610 and 1612 are especially suited for use in applications in which rapid medium-to-heavy stock removal is required. These grains offer enhanced performance on a variety of materials, including stainless and high alloy steels. NorZon NV™ will also outperform traditional alumina-zirconia grains at lower applied pressure and power conditions.

## NorZon™ NV

GRAIN CODE	GRAIN SHAPE	TREATMENT	SIZING CONVENTION	GRIT SIZES	APPLICATIONS
1610	Strong	Untreated	Modified ANSI	10-220	Bonded Abrasives
1612	Strong	Silane Treated	Modified ANSI	10-220	Bonded Abrasives



## Chemical Properties (Typical)

CHEMICAL	PERCENT (%)
Aluminium Oxide (Al <sub>2</sub> O <sub>3</sub> )	53.0-60.0
Zirconium Oxide (ZrO <sub>2</sub> + HfO <sub>2</sub> )	39.0-42.5
Calcium Oxide (CaO)	Max 0.13
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	Max 0.20
Magnesium Oxide (MgO)	Max 0.05
Silica (SiO <sub>2</sub> )	Max 0.60
Sodium Oxide (Na <sub>2</sub> O)	Max 0.05
Titanium Oxide (TiO <sub>2</sub> )	Max 2.00
Yttria (Y <sub>2</sub> O <sub>3</sub> )	Max 0.80

## Physical Characteristics

DESCRIPTION	MEASUREMENT
Crystal size	10-15 microns
True density	4.68 gms/cc
Vickers hardness for 50g load	19 GPA
Melting point	1890°C
LPD range	1.90-2.30 gms/cc

## Loose Packed Density Range ANSI B 74.4 1992 Test Unit A

SIZE	1610	1612
12	2.185-2.305	2.225-2.345
14	2.165-2.285	2.205-2.325
16	2.115-2.235	2.155-2.275
20	2.100-2.220	2.140-2.260
24	2.095-2.215	2.135-2.255
30	2.030-2.150	2.070-2.190
36	1.970-2.090	2.010-2.130

## U.S. Standard Sieves/Limits—Modified ANSI Codes 1610 and 1612

SIZE	OVERSIZE	COARSE GRIT	1ST NOMINAL	2ND NOMINAL	PAN
8	+5/0	+7/(0-20)	+8/45+	(+8+10)/70+	-12/(0-3)
10	+6/0	+8/(0-20)	+10/45+	(+10+12)/70+	-14/(0-3)
12	+7/0	+10/(0-20)	+12/45+	(+12+14)/70+	-16/(0-3)
14	+8/0	+12/(10-35)	+14/(30-60)	(+14+16)/55+	-18/(0-3)
16	+10/0	+14/(1-20)	+16/(25-55)	(+16+18)/55+	-20/(0-6)
20	+12/0	+16/(0-20)	+18/(20-50)	(+18+20)/60+	-25/(0-10)
24	+16/0	+20/(15-40)	+25/(35-65)	(+25+30)/55+	-35/(0-3)
30	+18/0	+25/(10-35)	+30/(40+)	(+30+35)/55+	-40/(0-3)
36	+20/0	+30/(0-25)	+35/45+	(+35+40)/65+	-45/(0-3)
46	+30/0	+40/(0-30)	+45/40+	(+45+50)/65+	-60/(0-3)
54	+35/0	+45/(0-30)	+50/40+	(+50+60)/65+	-70/(0-3)
60	+40/0	+50/(0-30)	+60/40+	(+60+70)/65+	-80/(0-3)
70	+45/0	+60/(0-25)	+70/40+	(+70+80)/65+	-100/(0-3)
80	+50/0	+70/(0-25)	+80/40+	(+80+100)/65+	-120/(0-3)
90	+60/0	+80/(0-20)	+100/40+	(+100+120)/65+	-140/(0-3)
100	+70/0	+100/(0-20)	+120/40+	(+120+140)/65+	-200/(0-3)
120	+80/0	+120/(0-20)	+140/40+	(+140+170)/65+	-230/(0-3)
150	+100/0	+140/(0-15)	(+170+200)/40+	(+170+200+230)/65+	-325/(0-3)
180	+120/0	+170/(0-15)	(+200+230)/40+	(+200+230+270)/+65	
220	+140/0	+200/(0-15)	(+230+270)/40+	(+230+270+325)/65+	



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