Cerpass TGE™
For Bonded Abrasive Tools

CERPASS TGE™ grain is a next-generation seeded gel product that offers the most extreme aspect ratio of any abrasive grain available. This is achieved by Saint-Gobain's globally patented grain extrusion technology. The unique combination of the nano-structure is composed of extremely uniform, sub-micron crystals, each one designed to fracture conchoidally when stressed. The high aspect ratio of the macrostructure allows for an extremely aggressive cutting ceramic grain, ideal in high material removal-rate applications.

Physical properties (typical)

Compound	Alpha Aluminum Oxide	**Hardness (GPa)[A]**	21.60
Color	White Translucent to Off-white /Opaque	**Density (g/cm3)[B]**	3.91
Shape	Extruded Rods	**Crystal Size (µm)[C]**	0.17

A: by Vickers Diamond Indent Method
B: by Helium Pycnometry
C: by Uncorrected Intercept Method of SEM Photographs

Chemical properties (typical)

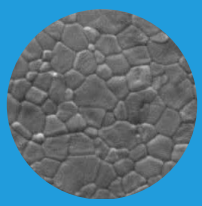
Predominant Chemical Composition		$Al_2O_3 \geq 99.6$ %	
Trace Chemical Compositon			
Constituent	Typical PPM	Constituent	Typical PPM
TiO_2	<2000	CaO	<100
SiO_2	<700	Fe_2O_3	<200
NaO_2	<100	MgO	<150

Product Availability: Macro-Sized Grains Treated and Untreated

CERPASS® Code	Macro Grain Shape	Treatment	Sizing	Grit Sizes
TGE-0557	Extruded	Untreated	Modified Sizing (*)	20, 24, 36, 50, 70, 80, 100, 120

(*) Traditional sizing convention and distributions do not apply to TGE; a modified sizing method is applied.
TGE grit size typically indicates the equivalent conventional crushed particle size.

Macrostructure of individual Extruded CERPASS TGE®-0557 grains.



An actual scanning electron microscope (SEM) photograph, at 50,000 magnification, shows the unique and sub-micron crystal structure of CERPASS TGE® grains.

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Loose Pack Density (LPD) Limits: (Macro Sizes)

LPD: Codes TGE-0577 – Extruded Grain ShapeLPD measured to American National Standards Institute (ANSI), ANSI B74.4-1992, Revision of ANSI B74.4-1977. Traditional sizing convention and distributions do not apply to TGE and a modified sizing method is applied. TGE grit size typically indicates the equivalent conventional crushed particle size. Aspect ratio controls the length with respect to the diameter of a TGE particle. Coarse Fraction is defined as twinned grits (and greater).

Grit size	Lower Limit (g/cm^3)	Upper Limit (g/cm^3)	Aspect Ratio		Coarse Fraction (Max %)
			Mean	Standard dev.	
20	1.86	2.06	1.5-3.5	0.2-0.8	5
24	1.85	2.05	1.5-3.5	0.2-0.8	5
36	1.80	2.00	2.9-4.5	0.7-1.3	5
50	1.79	1.99	3.1-4.9	0.7-1.3	10
70	1.84	2.04	3.3-5.1	0.7-1.3	10
80	1.70	1.90	3.3-5.1	0.7-1.3	10
100	1.71	1.91	3.3-5.1	0.7-1.3	10
120	1.72	1.92	3.3-5.1	0.7-1.3	10

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