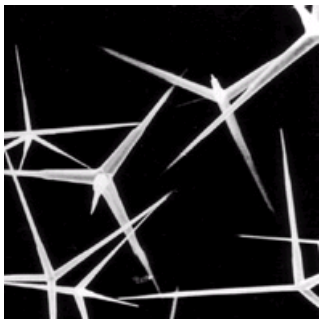
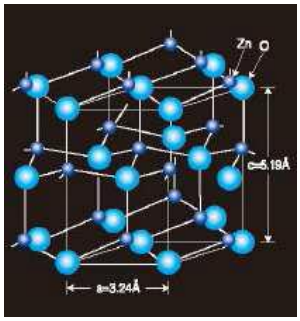
"Pana-Tetra" - Tetrapod shaped zinc oxide

Pana-Tetra is tetrapod shaped single crystal of zinc oxide. It has various unique properties because of its tetrapod structure.

- Improvement in wear & abrasion resistant, dimensional stability, and surface smoothness for thermoplastic resins
- Synergy effect with carbon fiber and PTFE micropowder
- Suitable for ESD control and thermally conductive compounds
- Breaking power improvement for rubber





General characteristics

Chemical formula	ZnO
Shape	Tetrapod shape
Ave. length of leg	10μm
True specific gravity	5.78
Bulk specific gravity	0.1
Sublimation point	1.720℃
Volume resistance	10Ω･cm

End applications

- Seal ring for wear & friction
- Bearing for wear & friction
- Precision gear for dimensional stability
- IC tray for ESD properties
- Heat sink for thermally conductivity
- Shoe sole for breaking properties
- Tire for breaking properties

Grades

Grade	Average length	Surface treatment	Application
WZ-0501	10 μm	No treatment	PTFE, Rubber, Elastomer, Paint
WZ-0501L	20 μm		
WZ-0511	10 μm	Amino silane coupling agent	PP, PS, ABS, PA, PPS, LCP, other resins, Rubber
WZ-0511L	20 μm		
WZ0531	10 μm	Epoxy silane coupling agent	POM, PET, PBT
WZ-05E1	10 μm	Silicone oil	PC
WZ-05F1	10 μm	Amino silane coupling agent, better dispersion	Film and Paint, General resins for better dispersion

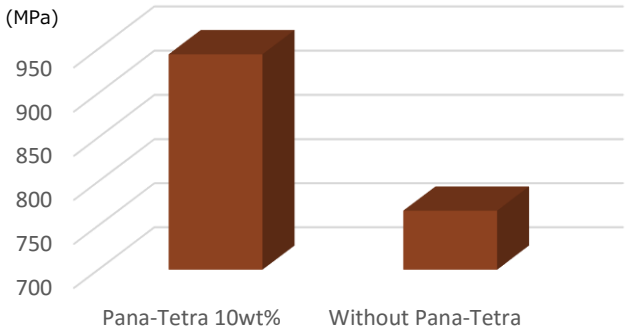
* The above data are reference values and not guaranteed values.

"Pana-Tetra" – for PTFE compound

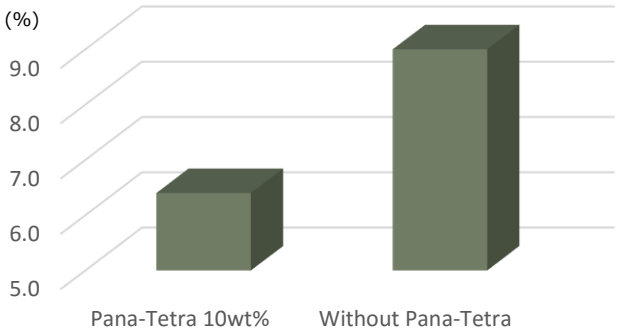
Pana-Tetra is ideal filler for PTFE compound because of its excellent compressive modulus, creep strain, and wear & friction properties. It could be used for high pressure application and cause less damage against soft counter material such as Aluminum.

Compressive properties

Item		Pana-Tetra 10wt%	Without Pana-Tetra
Compressive modulus (MPa)		944	767
Creep strain after 24 h (%)	MD	6.4	9.0
	TD	7.6	13.2



Graph 1. Compressive modulus

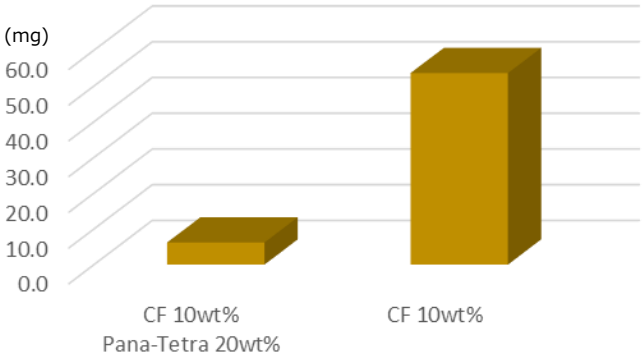


Graph 2. Creep strain after 24 h

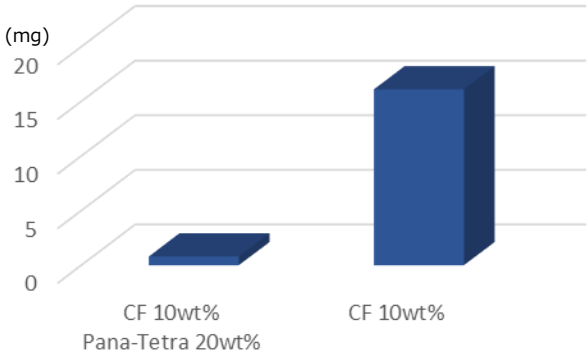
Wear & Friction properties

Item		CF 10wt% Pana-Tetra 20wt%	CF 10wt%
Coefficient of friction		0.19	0.20
Specific wear rate (mg)	Resin	6.2	53.6
	Counter material	0.8	16.1

Conditions Velocity: 0.5 m/sec, Pressure 7.65 kg/cm2, Counter material: Aluminum (A5052 #800)



Graph 3. Specific wear rate (resin)



Graph 4. Specific wear rate (counter material)

* The above data are reference values and not guaranteed values.