

A red line graph with several peaks and valleys, resembling a signal or waveform, positioned above the main title.

# PTFE TUBING IMPROVED PROPERTIES

PTFE is the most chemically resistant plastic known. Its mechanical properties are low compared to other engineered plastics, but it can be improved by adding fillers such as ceramer, glass fiber, carbon, graphite and similar materials.

The enhancement of PTFE properties, especially in regard to the tribological behavior and creep tendency, as well as the unchanged chemical resistance show themselves as very positive in their application in the automotive industry and in chemical process engineering.

This is especially true in the case of parts facing high abrasion at high temperatures and in corrosive environments.

PTFE paste extrusion powders filled with ceramer offer superior performance for seals, gaskets, slide bearings, cable insulation and abrasion resistant tubing.

Usually Optinova's SPP Tube comes with fillers in weight-% from 3-7%

**Dimensions:** Optinova produces metric and imperial sizes. Special dimensions can be made upon request. Random production length is standard but fix length and cut pieces can be supplied upon request.

## General properties

Color:	Natural beige
Option:	Colored or striped
Upper service temperature:	260 °C
Chemical resistance:	Excellent
Specific gravity:	2.15
Melting point:	327 °C
Water absorption:	< 0.01 %
Water resistance:	Excellent
Oxygen index:	> 95 %
Flammability:	UL94 V-0

**Abrasion behaviour of push-pull cables made of PTFE paste extrusion powder filled with Ceramer, or PPS.**

Filler type	Filler content weight (%)	Loss of weight (%) after					
		500 000 cycles			1 000 000 cycles		
		23 °C	150 °C	180 °C	23 °C	150 °C	180 °C
100% PTFE	0	rubbed through after 30 000 cycles					
PPS	7	rubbed through after 50 000 cycles					
Ceramer	7	0.4	0.6	1.8	0.9	1.5	2.8
Ceramer	3	1.6	3.5	N/A	2.3	N/A	N/A
Ceramer + additives	4+3	0.3	0.2	N/A	0.9	0.5	N/A

All abrasion tests were carried out without using any lubricant such as silicone fluid. (source: Ticona)

N/A = not measured

**FDA APPROVAL**

Ceramer meets the requirements by the Food and Drug Administration (FDA) for the safe use as articles or components of articles intended for repeated use in contact with food.

[Code of Federal Regulations]

[Title 21, Volume 3]

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