

NanoDisc

Technical information



Long running times
with the highest quality

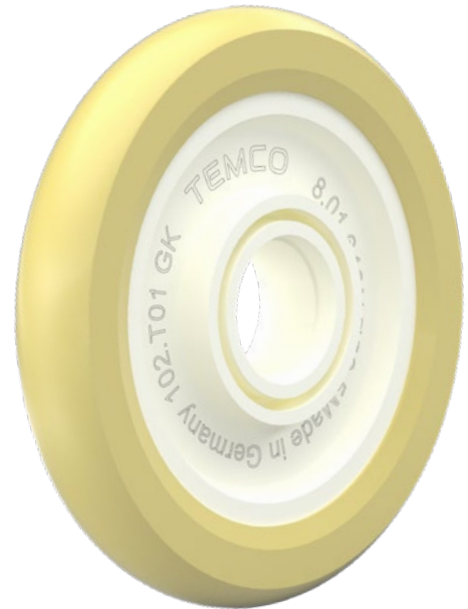
NanoDisc for Texturing Processes

Ceramic vs. polyurethan

The use of ceramic discs has always dominated the production of Polyamide. Until now, PU discs have been very rarely used in PA texturing due to the shorter service life of these discs.

The main problem regarding the service life of PU discs is not wear, as is common in PES production, but the polishing of the surface, which makes threading the yarn much more difficult. The reason for this is that the dtex of most PA yarns is finer compared to PES fibers, further the low yarn tension with finer dtex causes the working surface to become polished. To slow down this polishing process, Temco developed a PU disc incorporating nano technology.

The NanoDisc creates added value for very fine polyamide yarns with dtex <50 and dpf ≤1.



NanoDisc

Advantages of Nano Technology compared to Ceramic and normal PU

- PU is simpler to thread compared to the delicate ceramic material
- Lifetime of at least 2 years (approved by multiple years of testing/field trials)
- Fewer investment costs combined with a higher price-performance ratio for NanoDisc compared to Ceramic

Benefits of NanoDisc

- Higher yarn quality with better Elongation and CC-Value
- Optimised for dpf ≤1
- Field tested approved lifetime of at least 2 years
- Developed and applicable for yarns with dtex <50 and dpf ≤1
- Higher output due to potential speed increase of at least 40m/min
- Complete Temco PU discs portfolio available with Nano Technology



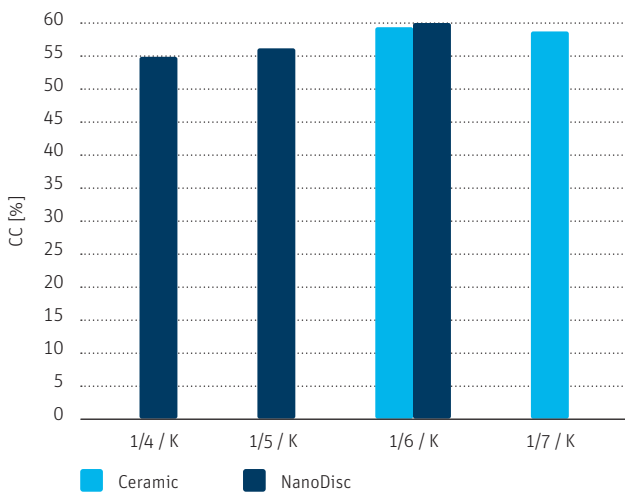
Ceramic disc

Comparison Study Results

Temco carried out a comparative study over a period of more than 2.5 years to compare the innovative Nano Technology with benchmark ceramic discs available on the market. Various textile yarns related by key figures were compared over this period of time and can be found below.

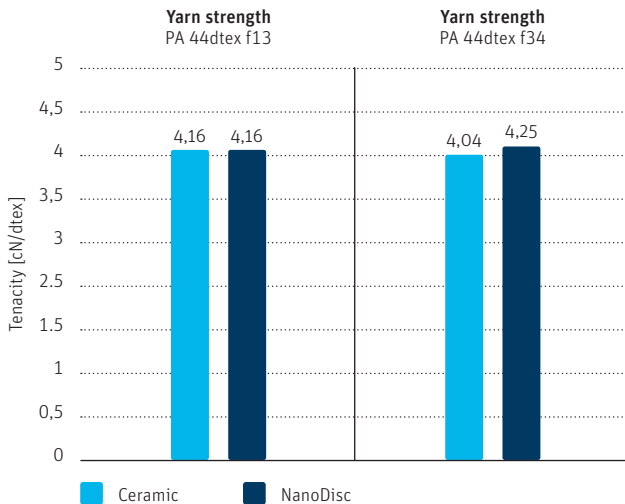
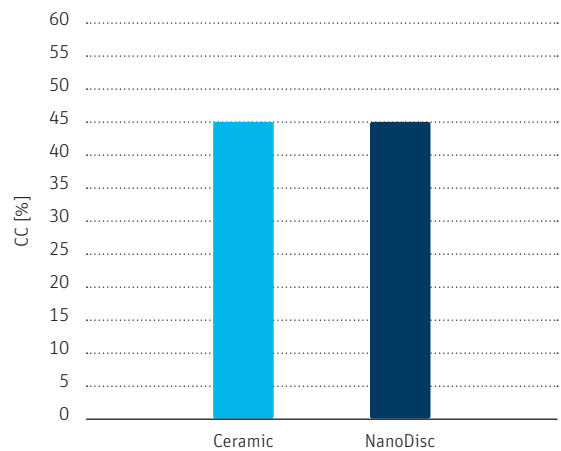
Crimp Contraction (twists in the yarn)

Disc combination, PA 44dtex f13



Crimp Contraction (twists in the yarn)

Disc combination 1/6 / K, PA 44dtex f34



Development of surface roughness from NanoDiscs

Disc	Worklife (24/7) after 5 months	Worklife (24/7) after 24 months
	Roughness [μ]	Roughness [μ]
1	1,278	1,218
2	1,484	1,045
3	1,347	1,024
4	1,086	1,048
5	0,902	1,144
M	1,219	1,096

Comparison to ceramic disc:

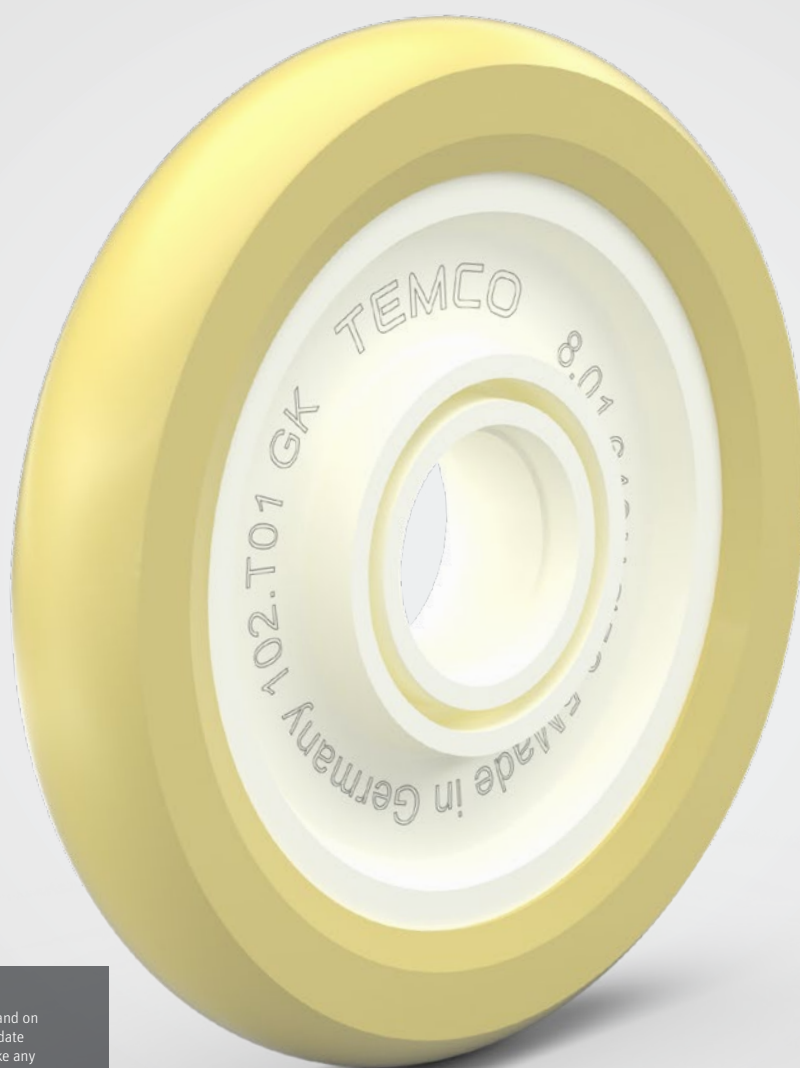
- Tensile strength ↑ ~1g/d
- Elongation ↑ ~ 8%

D27f68 FD PA6 trial result

DR=1.260, NanoDisc 1-4-1

D/Y	T1 (cN)	T2 (cN)	K	Tenacity (g/den)	Elongation (%)
1,75	13,8	16,6	1,2	4,85	29,8
2,10	14,7	14,6	0,99	4,72	28,8
2,35	15	13,6	0,91	4,65	27,6

Tested disc model	8.01.583 NanoDisc
Yarn spec running	PA6 27D/68F
Disc configuration	1-4-1
Yarn speed	600 m/min
Used in bulk machine	No



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