

KGS Telum® CH
GRINDING / POLISHING

INDUSTRY

Pulp, paper, printing, transportation, oil, gas and power.

MAIN APPLICATIONS

The KGS Telum® CH is a versatile belt used for grinding and polishing / finishing purposes. The strong flexible backer and the precision-engineered diamond grain configuration enables the Telum® CH belt to become a market leader in fast dimensioning and surface finishing. Especially designed with long-lasting durability for hard materials and coatings like HVOF. For softer steel types the Telum® CH CBN is an excellent alternative choice for your process. KGS Telum® CH-resin belts, specifically engineered to replace both metal bond diamond wheels and super-finishing systems. Combines the accuracy of rigid tools (bonded wheels); with the speed, consistency & ease of use of a flexible diamond belt system and for many applications, can replace the need for diamond film finishing.

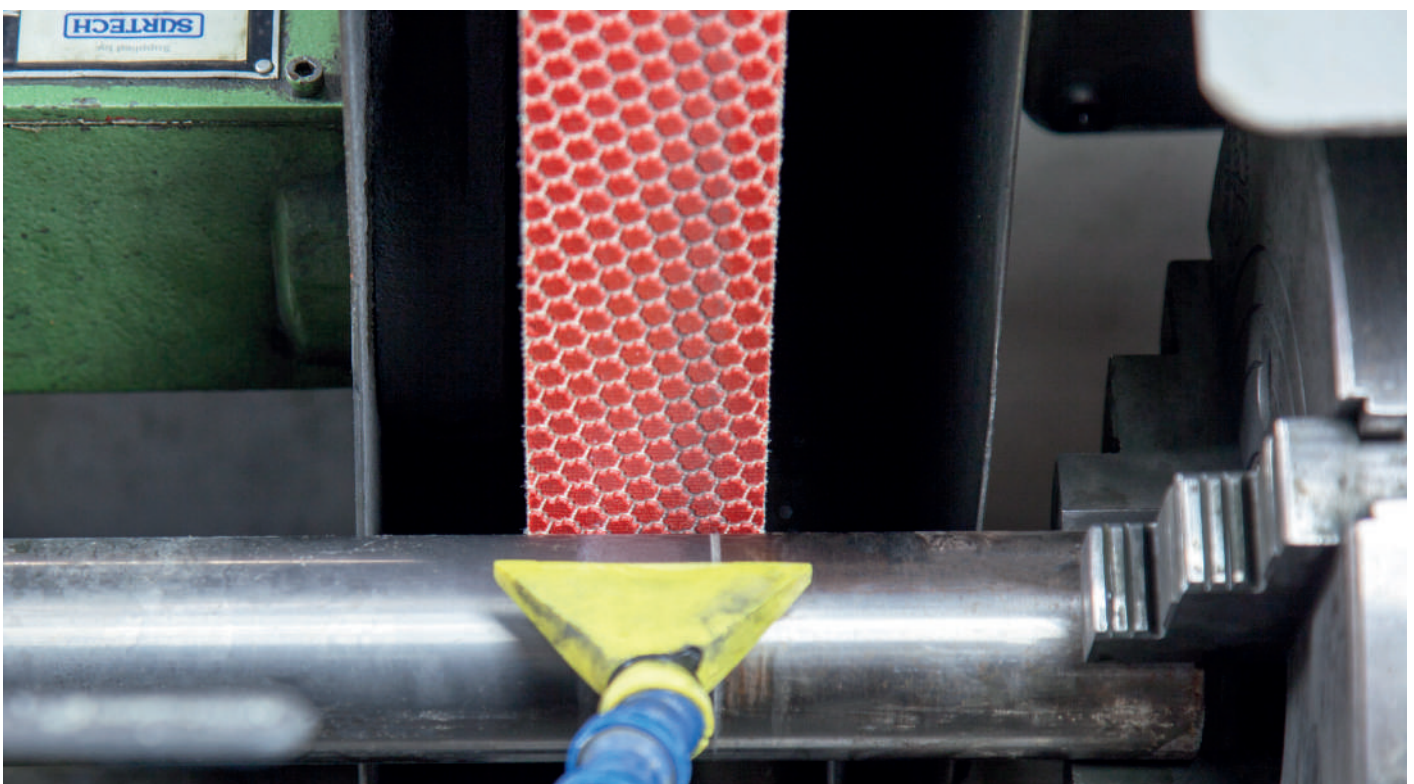
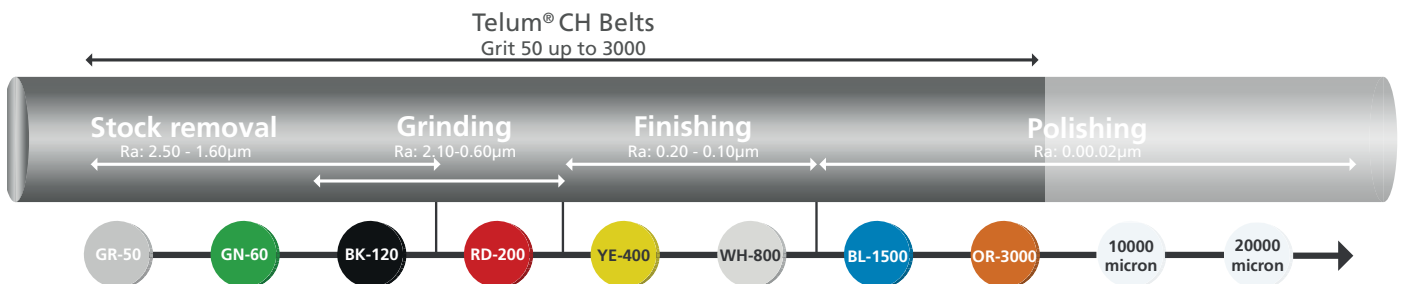
PRODUCT INFORMATION

Product type	Pattern	Backer	Flexibility	Stretch	Grit availability	Wet/Dry	Joint type
		Backing type					
Belts	Telum® CH	BP2 - Heavy and very durable backing, Y-weight poly-cotton, waterproof	Medium	Low	50 up to 3000	Wet or a mist of water	WR

DIMENSIONS

	min (mm)	max (mm)
Width	20	300
Length	533	5000

GRITS AND APPEARANCES OF SURFACES





PROCESS RECOMMENDATIONS

- The process benefits from very precise equipment. Generally - with an accurately calibrated metal roll - and as sprayed with 250 micron of coating. Depending on the quality of the sprayed powder, the type of gun and whether the application is by hand or by robot.
- This coating could have an Ra of around 8 micron and an Rt of around 70 micron. So at least 80 micron is removed to ensure they reach below to the continuous closed layer. The target is to remove around 100 micron to end up with accurately sized and polished roll (in this example with a 150 micron layer). The initial grind is normally required to remove the coarse finish from spraying –say 75 micron – this is done with the red 200 grit, or coarser grit if needed (this initial grind is more often done by wheels today).
- The next 25 micron will normally be done with Yellow 400 grit and finer - with multiple passes - ending with the final required diameter and a specific coating thickness & Ra (often although some rolls require a high reflective finish).

TECH TIP

For calibration of the rolls use green 60 grit. In case of a softer steel type, use Telum CH CBN version in green 60 grit. For finishing use Telum CH, use white 800 (sometimes Yellow 400 will be enough also) to achieve an RA of around 0.2 Use coolant additives suitable for belt grinding operations like Shell Metalina B200 or D3202 (non-solvent base), avoid oil based coolants.

GOOD TO KNOW

KGS-Diamond belts have a much longer lifetime than other non-diamond belts which results in much less setup-time and a strong increase in productivity.

YOUR FUTURE BENEFITS

- Same results every time
- 2 in 1 application (Grinding and polishing)
- Efficient - low-cost solution
- Increase in production
- Continuous performance
- Lower grinding force than wheels
- Save 95% by not having to invest in new machines



CASE STUDIES

1 WC Roll for sheet metal industry - Time-reduction of 88% and an increase of 700% in productivity



Large R - customers often require coarse Ra values as rough as 3.0 or even 4.2 Ra. This roll, which is slightly tapered, normally takes over 8 hours to finish with a diamond wheel. KGS Telum CH diamond belt system took less than one hour, including set-up, to achieve the required finish.

2 Hydraulic rams - Chrome replacement - Process made easier



Dynabrade belt finishing machine - grinding and calibration is done with the coarse belts on an incompressible pulley. Finishing with the finer belts can be supported by the "Free Running" attachment from Dynabrade.

3 Retro-fit DBS on wheel grinder - Save 95% by not having to invest in new machines.



Customers with large diamond wheel grinders can normally benefit from the diamond belt system at a very low cost, without the investment in a tool post grinder - by replacing the diamond wheel with an incompressible pulley – and adding an extra smaller pulley behind it. Key point – This set up gave the same Ra values as the KGS R&D team, and took a fraction of the time to grind and polish both WC & CrC sprayed coatings.

4 Free running DBS - Dry - Time and money saver!



KGS Telum CH belts are used dry on special hard coatings with a free running set-up. For one customer with silicon aluminium oxide coating the advantage of KGS Telum CH over SiC belts is huge. Not only has the grinding time been decreased from 6 hours to less than 1 hour, there has also been a high cost saving in silicon carbide abrasive belts.

PRODUCT TESTS

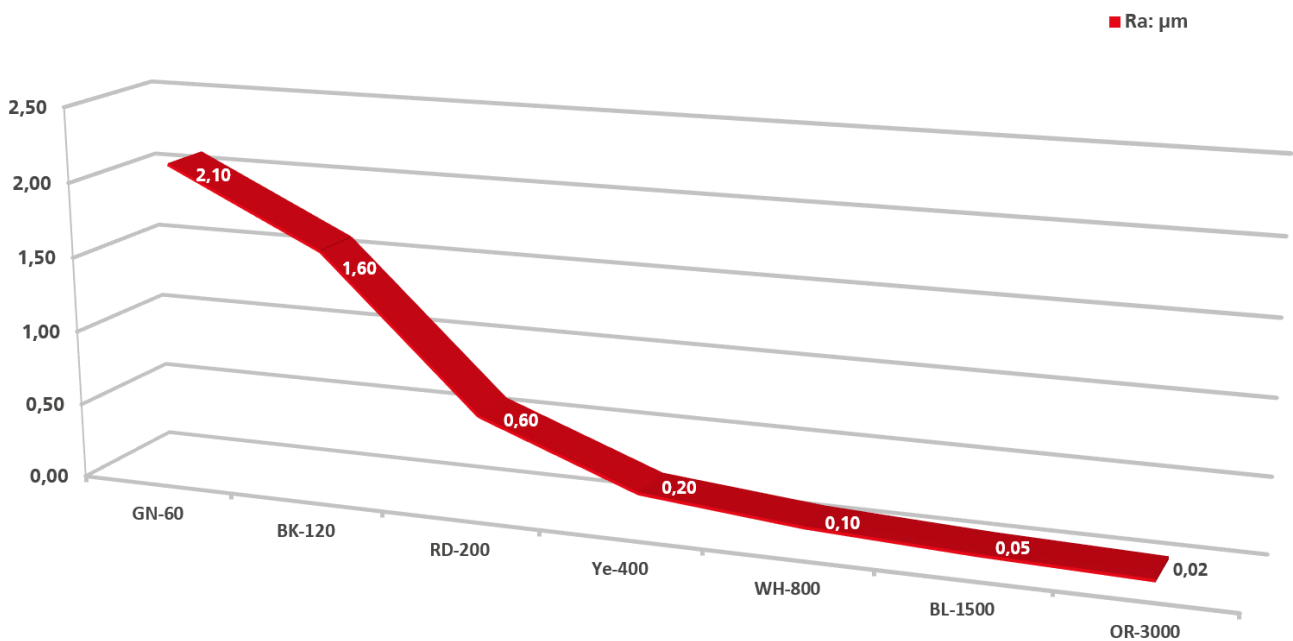
PROCESS PARAMETERS

R&D Test Centre Holland - Application Engineering Test Equipment

LEH III/F	Tool post grinder on variable speed lathe
Head	Fixed for hard coating removal & grinding. Floating for fine finishing and polishing
Belt	Size - 2,000 x 50 mm (78¾x2 Inches)
Cutting Speed	42 m/sec (8,200 SFPM)
Pulley	Smooth & incompressible - hardness 90 shore
Coolant	Water with 5% shell metalina D for belt grinding
HVOF Cylinders	Ø50 mm @ 600 rpm (2" diameter @ 600 rpm)
Traverse Rate	0.6 mm per rotation (360 mm/min or 1.2 SFPM)

TEST RESULTS

Figure 1. Finish achieved with KGS Telum® CH belts HVOF tungsten carbide cylindrical parts



KEY POINTS

- Coarse grits provide a high stock removal
- Red 200 grit can remove 24 microns per pass
- Orange 3000 grit gives mirror finish - Ra 0.02 µm

Table 1. Finish achieved with KGS Telum® CH belts - HVOF tungsten carbide cylindrical parts

		GN - 60	BK - 120	RD - 200	YE - 400	WH - 800	BL - 1500	OR - 3000
Surface finish results per Grit Mesh	Ra: µm	2.10	1.60	0.60	0.20	0.10	0.05	0.02
	Ra: µin	84.0	64.0	24.0	8.0	4.0	2.0	0.8
Thickness of WC material removed per pass	Pulley	Fixed	Fixed	Fixed	Floating	Floating	Floating	Floating
	Micron	65.0	41.0	23.0	3.5	1.5	0.6	0.2
	Thou	2.56	1.61	0.91	0.14	0.06	0.02	0.01

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