

BEVELLING

**Preparation of a
welding seam by grinding**

VSM grain technologies in the spotlight

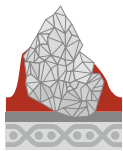
Top grain technologies for high stock removal rates

VSM ACTIROX



- > **Geometrically formed ceramic grain**
- > Maximum stock removal and a faster cut for superalloys and stainless steels
- > Cool grinding extends the service life thanks to VSM TOP SIZE

VSM CERAMICS Plus · (CER Plus)



- > **Optimised self-sharpening effect** when processing high-alloyed steels ensures very high stock removal rates
- > Reduced temperature in the contact area
- > Significantly extended service life

VSM CERAMICS · (CER)



- > Top product with **self-sharpening effect** for processing non-alloyed steels and stainless steels
- > High removal rate
- > Cool grinding allows longer contact times

Top grain technologies for perfect surface finishes

VSM ILUMERON



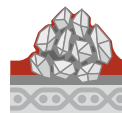
- > **Full faced coated long-term abrasive** with special bonding
- > For fine and consistent surfaces with high gloss levels
- > Developed primarily for processing stainless steels, superalloys and non-alloyed steels

VSM COMPACTGRAIN Plus · (COM Plus)



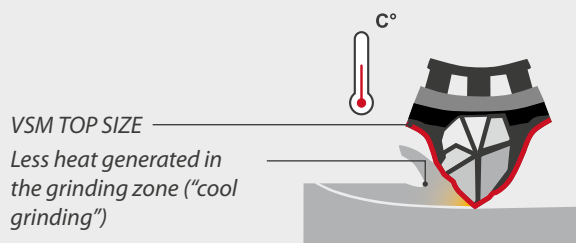
- > **Long-term abrasive** that wears uniformly down to the backing material and achieves a consistent surface finish
- > Optimised reserve grain capacity
- > Improved bonding properties
- > Continuous self-sharpening thanks to the granulate structure

VSM COMPACTGRAIN · (COM)



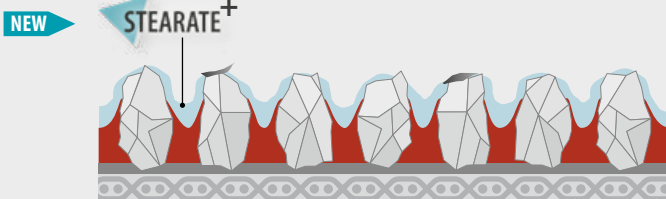
- > **Long-term abrasive** achieves reproducible surface finishes and consistent roughness
- > Uniform stock removal
- > Continuous self-sharpening thanks to the granulate structure

VSM grinding-active additional layers



VSM TOP SIZE is recommended for dry machining heat-resistant stainless steels and non-ferrous metals. The grinding-active additional layer improves the cutting performance whilst reducing the temperature in the contact zone. This significantly extends the service life of the abrasive.

VSM STEARATE Plus and **VSM STEARATE** significantly reduce chip adhesion when processing non-ferrous metals and thus also reduce clogging of the abrasive. The service life is assured and extended so dramatically that excellent stock removal is achieved even after longer periods of use.



VSM STEARATE Plus

VSM – Your specialist for the preparation of welding seams

Benefit from VSM's high-performing abrasives:

- > High stock removal per time unit
- > Extended service life and low set-up costs as a result
- > Smooth and clean surfaces with no traces of slag or other impurities
- > Optimum extraction due to very fine shavings
- > **VSM TOP SIZE** products achieve:
 - > Enhanced machining capacity
 - > A reduced temperature in the grinding area and because of this structural changes are avoided

With VSM you can rely on receiving:

- > High-performance products made in Germany
- > On-site application-based advice
- > Reliable delivery performance
- > Analyses of problems and preliminary tests in the VSM Technical Center
- > Expertise based on co-operating with more than 60 machine manufacturers worldwide
- > A global distribution network with subsidiaries and partners in more than 70 countries

Your application

Cranes



Construction machinery



Excavator buckets



Machine frames and racks



Shipbuilding



Steel bridges



Case studies

Grinding of mild steel plates

VSM CERAMICS **XK888Z**

Workpiece	Panels 15 mm thick
Material	Structural steel
Grinding machine	Bevelling machine
Contact wheel	> 400 mm diam. > hardness: 95° Shore A > serration: 1:1
Cutting speed	30 m/s
Feed rate	1.5 m/min
Belt dimensions	120 × 2,500 mm
Grit size	24, 36
Lubricants	None
Grinding task	Bevelling

Characteristics:

- > Extremely strong cutting capacity thanks to the sturdy backing and the consistent production of fresh cutting edges
- > Extremely sturdy belt joints on abrasive tools
- > VSM ceramic grain and **VSM TOP SIZE** ensure cool grinding



Grinding of structural components

VSM CERAMICS Plus XK885Y

Workpiece	Structural components
Material	Steel
Grinding machine	Bevelling machine
Contact wheel	> 400 mm diam. > hardness: 90° Shore A > serration: 2:1
Cutting speed	30 m/s
Feed rate	14 m/min
Belt dimensions	100 × 3,200 mm
Grit size	20, 24
Lubricants	None
Grinding task	Bevelling

Characteristics:

- > High-performing bevelling even for hard, high-alloyed steels
- > Optimum belt joints
- > VSM ceramic grain and **VSM TOP SIZE** ensure cool grinding



Bevelling with abrasives

Coated abrasives provide many advantages for the bevelling of welding seams as compared to other methods such as plasma and laser cutting, shearing, turning and milling.

Method	Advantages	Disadvantages
Grinding	<ul style="list-style-type: none">> Suitable for all types of steel and bevel angle> Suitable for widths with high quality bevels> Utmost quality, speed and precision	
Oxy-fuel cutting	<ul style="list-style-type: none">> Low investment and wear part costs> Covering a wide range of material thicknesses from medium to large	<ul style="list-style-type: none">> Only suitable for structural steel> Poor cuts for thicknesses under 5 mm> Material distortion, straightening work required> High heat transfer, large impacted area> Low dimensional stability
Plasma cutting	<ul style="list-style-type: none">> Cutting of alloyed steels and aluminium from thin to medium thicknesses> High cutting speeds	<ul style="list-style-type: none">> Heat-related distortion of workpieces> Limited range up to 30 mm> Wide kerf
Laser cutting	<ul style="list-style-type: none">> High degree of part accuracy for thin and medium sheet metal thicknesses> Small kerf width (0.2 – 0.4 mm)	<ul style="list-style-type: none">> High investment and operational costs> Limited range of sheet metal thicknesses
Water jet	<ul style="list-style-type: none">> No metallurgical changes on cut surfaces	<ul style="list-style-type: none">> High investment and operational costs
Shearing	<ul style="list-style-type: none">> No heat transfer	<ul style="list-style-type: none">> Limited range up to 10 mm
Milling / Turning	<ul style="list-style-type: none">> Clean, oxid-free cut surfaces without burrs	<ul style="list-style-type: none">> High wear and tear for stainless steel> Limited range of sheet metal thicknesses

VSM abrasives for beveling in preparation of welding seams



Back-stand	Beveling machine	Angle grinding	Backing	Grain technology	Feature	Stock removal / Surface								VSM series	
						20	24	36	40	50	60	80	100		120
●	●		Cloth	VSM CERAMICS Plus	▼ TOP SIZE, ◊	■	■	■	■	■	■	■	■	■	XK885Y
●	●		Cloth	VSM CERAMICS Plus	▼ TOP SIZE, ◊	■	■	■	■	■	■	■	■	■	XK880Y
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊		■	■							XK888Z
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊	■	■	■	■	■					XK877Z
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊		■	■	■	■	■	■	■	■	XK870X
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊			■	■	■	■	■	■	■	XK850X
●	●		Cloth	VSM CERAMICS	◊		■	■	■	■	■	■	■	■	XK760X
●	●		Cloth	VSM ZIRCONIA ALUMINA	▼ TOP SIZE, ◊			■	■	■	■	■	■	■	KK815Y
●	●		Cloth	VSM ZIRCONIA ALUMINA	▼ TOP SIZE, ◊			■	■	■	■	■			ZK744X
●	●		Cloth	VSM ZIRCONIA ALUMINA	◊		■	■	■	■	■				KK715X
●	●		Cloth	VSM ZIRCONIA ALUMINA	◊		■	■	■	■					KK716
NEW		●	Fibre	VSM ACTIROX	▼ TOP SIZE			■							AF890
NEW		●	Fibre	VSM ACTIROX				■							AF799
		●	Fibre	VSM CERAMICS Plus	▼ TOP SIZE	■	■	■	■	■	■	■	■	■	XF885
		●	Fibre	VSM CERAMICS	▼ TOP SIZE		■	■	■	■	■	■	■	■	XF870
		●	Fibre	VSM CERAMICS	▼ TOP SIZE			■	■	■	■				XF850
		●	Fibre	VSM CERAMICS			■	■	■	■	■		■		XF760
NEW		●	Fibre	VSM STEARAT Plus	◄ STEARATE ⁺		■	■	■	■	■	■	■	■	XF733
		●	Fibre	VSM ZIRCONIA ALUMINA			■	■	■	■	■	■	■	■	ZF713

Legend:

○ for low to medium contact pressure
 ◉ for medium contact pressure
 ● for medium to high contact pressure
 ◊ also suitable for wet applications

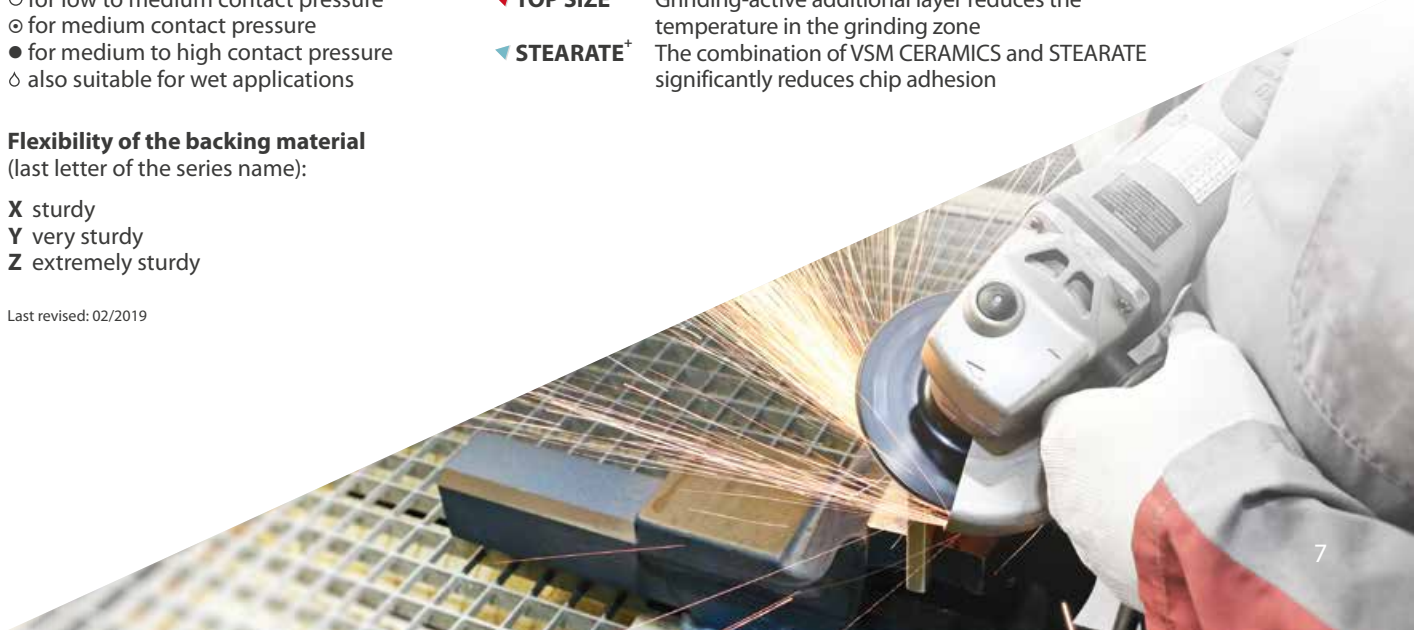
▼ **TOP SIZE** Grinding-active additional layer reduces the temperature in the grinding zone
 ◄ **STEARATE⁺** The combination of VSM CERAMICS and STEARATE significantly reduces chip adhesion

Flexibility of the backing material

(last letter of the series name):

X sturdy
Y very sturdy
Z extremely sturdy

Last revised: 02/2019



A worldwide leader in abrasives.



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