

ABRASIVE SOLUTIONS FOR THE OIL & GAS MARKET

PRODUCT RECOMMENDATION GUIDE



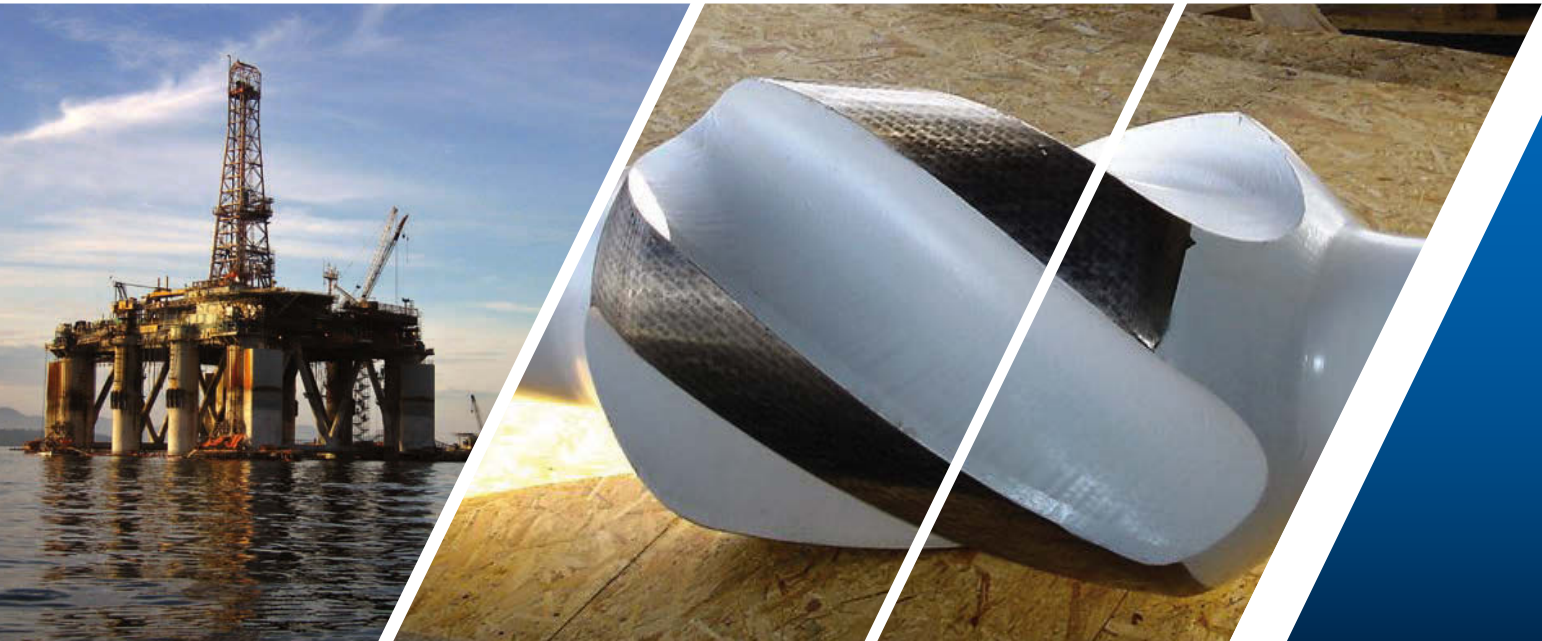
ABRASIVE TECHNOLOGY FOR EXTREME ENVIRONMENTS



OIL & GAS



NORTON FOR EXTREME ENVIRONMENTS





FOR OVER 100 YEARS NORTON HAS SUPPLIED PERFORMANCE ABRASIVE SOLUTIONS RIGHT ACROSS THE WORLD, FROM STANDARD ABRASIVE PRODUCTS TO HIGHLY ENGINEERED LINES FOR SPECIFIC APPLICATIONS.

Safety and quality are paramount values we share with all manufacturers operating in the oil and gas industry. Therefore Norton has developed a complete range of abrasives specifically designed for the manufacture and repair of upstream, midstream and downstream components, shipbuilding, oil rigs, pipelines, and petrochemical plants.

As well as an extensive variety of abrasives for rough and precision grinding, finishing and polishing, Norton offers new innovations, on-site technical support and bespoke solutions for the engineering challenges faced in the industry.

As the leader in abrasive technology, Norton provides added value abrasive solutions. Each year, we make substantial investment in R&D generating innovative ideas that aim to revolutionise abrasives. This strong commitment to innovation ensures that exciting new products are continuously introduced, aiming to improve processes and productivity.

CUSTOMERS COUNT ON NORTON TO...

- Protect and extend the life of critical assets
- Improve productivity
- Protect people in their environment
- Improve the Oil & Gas environment

NORTON EXPERTISE IS BUILT ON...

- Centres of Excellence which enable product testing under 'real life' conditions
- Highly skilled, knowledgeable and experienced people devoted to delivering high performance solutions to fulfil customer needs
- The allocation of time and resource to product testing
- Working closely with customers to help them achieve the absolute best from their abrasive operations

SAFETY IN YOUR ENVIRONMENT

Off-shore applications require the highest safety standards where abrasives are used in the toughest environments and under time-pressure. Worker safety is one of Saint-Gobain's top priorities so Norton products comply with all expectations of European health, safety and environmental standards. **FEPA**, the Federation of European Producers of Abrasives, is dedicated to the promotion of safety in the use of abrasives and is actively involved in the preparation and implementation of the European (EN) and International Standards (**ISO**) for Abrasives and Grinding machines. Norton products also adhere to the global safety standard 'oSa', the Organisation for Safety of Abrasives who pursues, in close collaboration with **FEPA**, the objectives of supporting both the currently attained safety standards for abrasive products and their further developments.

THE INTERNAL TESTING AND CERTIFICATION IS BASED ON THE FOLLOWING STANDARDS:

- Safety requirements for Bonded Abrasive products (EN12413: 2011)
- Safety requirements for Super Abrasive products (EN13236: 2001)
- Safety requirements for Coated Abrasives (EN13743: 2002)
- Safety requirements for Diamond Blades (EN13236: 2001).



NORTON: A MULTI-SOLUTION PROVIDER

NORTON PROVIDES AN EXTENSIVE PRODUCT PORTFOLIO FOR ALL MAIN MANUFACTURING & REPAIR APPLICATIONS FOUND IN THE OIL & GAS INDUSTRY, INCLUDING:

OUTER
DIAMETER /
CYLINDRICAL
GRINDING

INTERNAL
DIAMETER &
CENTRELESS
GRINDING

PORTABLE
CUTTING &
GRINDING

WELD REMOVAL,
DE-BURRING,
FINISHING &
POLISHING

NORTON OFFERS THE FOUR MAIN ABRASIVE TYPES FOUND IN THE MANUFACTURE, MAINTENANCE AND REPAIR OF UPSTREAM, MIDSTREAM AND DOWNSTREAM COMPONENTS IN THE PRODUCTION OF OIL & GAS.



UPSTREAM
Extraction



MIDSTREAM
Transportation & Refining/Processing



DOWNSTREAM
Refining & Processing



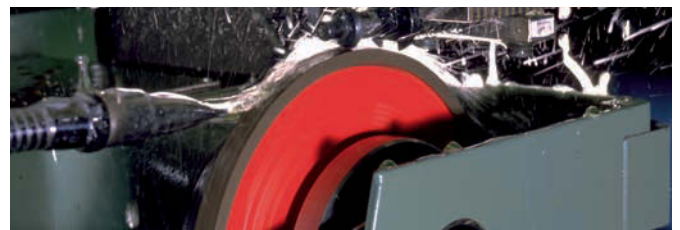
BONDED ABRASIVE stones and wheels are used in the manufacturing of different types of cylindrical drilling equipment including drill pipes for internal grinding. The manufacturing and reshaping of shafts require other bonded products, from mounted points to large grinding stones and sharpening tools.



COATED ABRASIVES AND NON-WOVENS are frequently used for repair operations for removing welds, surface grinding, light material removal, surface finishing, polishing and generating parts to the finest surface finish.



In the field of manufacturing and repairs **CUTTING-OFF AND GRINDING WHEELS** are used in the production of all supporting equipment, from supply vessels to pipes and from pumps to mud shakers.



SUPER ABRASIVES are used in manufacturing shaft and cylindrical parts, the refurbishment of drill bits, and in tool sharpening.



OUR COMMITMENT TO BREAKTHROUGH TECHNOLOGIES...

Norton is committed to utilising new technology breakthroughs. Both ready to deliver stock products and bespoke made-to order solutions are continually reviewed to ensure that Norton utilises the most recent market developments and state-of-the-art technology.



LEADING INNOVATIONS FOR OIL & GAS

QUANTUM™

THE QUANTUM PLATFORM



QUANTUM FAST CUT GRINDING WHEELS deliver an extremely comfortable and efficient solution for all demanding metal fabrication applications. They maintain consistently high levels of stock removal, even on hard alloy steels, maximizing product throughput without the need for high pressure. Quantum Fast Cut wheels are designed for low pressure, large contact area operations and hard alloy steels.

With unrivalled precision, QUANTUM GRINDING WHEELS provide the fastest and finest grinding in the industry. Norton Quantum wheels use alumina grain chemistry and shape developed from the Norton's patented Seeded-Gel Technology for 50% to 100% improved performance and cost savings for grinding materials from cast iron to stainless steel & hard to grind Inconel.

QUANTUM FLAP DISCS AND FIBRE DISCS offer the ultimate solution for material removal on a number of metals, particularly hard to grind materials, found in the oil and gas industry. With ceramic grain & high performance bond formula, stock removal is maximised for quicker process time & cost per part reduction. The Quantum platform of flap and fibre discs also includes an advanced cooling treatment for low heat generation and reduced workpiece burn.

VITRIUM³

VITRIUM³

A revolutionary bond platform, Vitrium³ features an exclusive chemistry that delivers an entirely new grain adhesion science, resulting in improved product versatility across a wide range of precision grinding applications. The benefits include cool cutting for increased part quality, profile holding for reduced cost per part, and high speed operations, allowing increased productivity and throughput. Performance improvements with Vitrium³ span abrasive grains from proprietary Quantum ceramic alumina to conventional aluminium oxide, to optimise grinding processes.



VORTEX[®] RAPID PREP

VORTEX RAPID PREP



A cutting edge technology for all de-burring, blending and surface conditioning applications Vortex Rapid Prep removes surface defects, paint and coatings, oxide and corrosion, mould and blends uneven edges and marks. Using Vortex Rapid Prep saves money as the product lasts 2 to 3 times longer than standard equivalents, saves time, as increases cut rate and eliminates process stages and reduces rework as it does not smear or load on soft metals.

MINIMIZING YOUR ENVIRONMENTAL FOOTPRINT

Commitments to sustainable development

Our Vision

Be the global leader of reference in Abrasives, at the leading edge of innovation and service. Delivering the most comprehensive Abrasive Solutions to our customers.

Our Values

Action

- Respect for the law
- Caring for the environment
- Worker health and safety
- Employee rights

Conduct

- Professional commitment
- Respect for others
- Integrity
- Loyalty
- Solidarity

Minimize the environmental footprint of our operations with five priorities

Increase the use of recycled raw materials in our plants

- Use of recycled manufacturing waste in our bonded abrasives plants
- Recycling of cardboard, plastic, abrasive particles and other materials

Increase the energy efficiency of our production processes

- Annual reductions (year on year reduction targets) in energy consumption
- All manufacturing sites are ISO 9001, ISO 14001 approved and as such are required to show significant year-on-year improvements in waste reduction, energy management and scrap levels
- Insulation of commercial buildings and plants resulting in less energy consumption and CO₂ emissions
- LED lighting in plants
- Optimisation of the curing process for cutting off & grinding wheels with a -30% objective for curing cycles, curing materials, equipment upgrades.

- All new vitrified bonded abrasives require lower firing temperatures than most conventional vitrified bonds, significantly reducing energy consumption

Reduce our CO₂ emissions

- Annual reductions of CO₂ emissions
- Reduction in power usage from shutting down oxidizer systems when not in use
- Air Conditioning regulation intelligence at our plants
- Respect of Care4 norms for new Green-field manufacturing plant
- Transportation policies to lower fuel consumption

Optimize our water resources

- New standard Management of Water and Associated Risks implemented in 2013 – most plants have reduced water usage by between 10-20% vs. 2012 by focusing on the main sources of water usage e.g. use of recycled washing water in our production processes


Strict waste segregation policy

- Recycling of abrasive production waste at Thin Wheel plants



PRODUCT RECOMMENDATION GUIDE

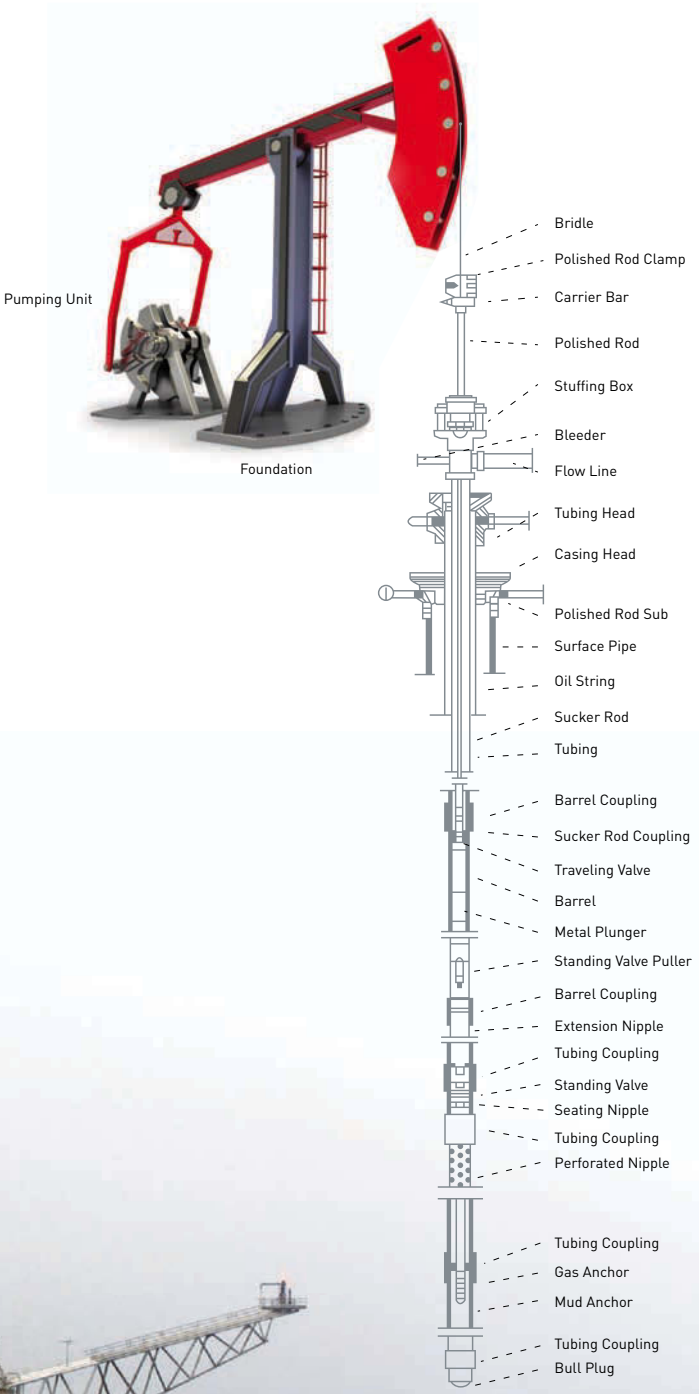
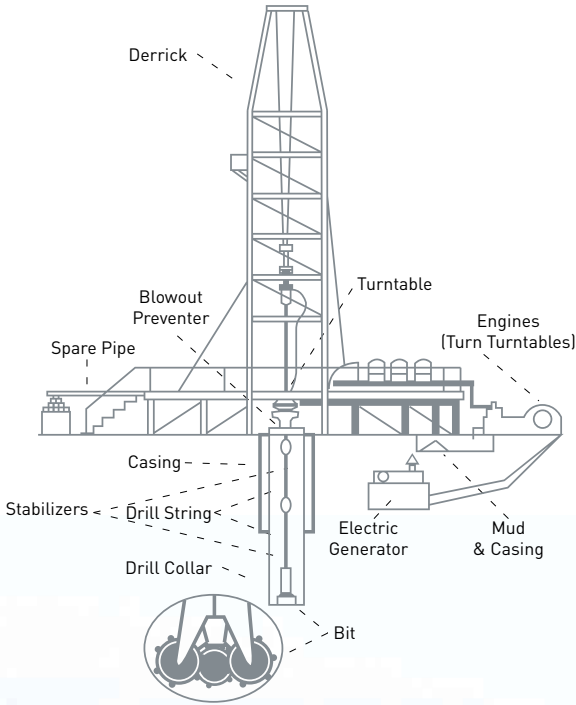
Norton has a complete range of abrasives for all applications found in the manufacture and repair of upstream, midstream and downstream components, ship building, oil rigs, pipelines and petrochemical plants. From cutting and grinding to finishing & polishing Norton can provide a solution that adds value at each stage of the manufacture or repair process.



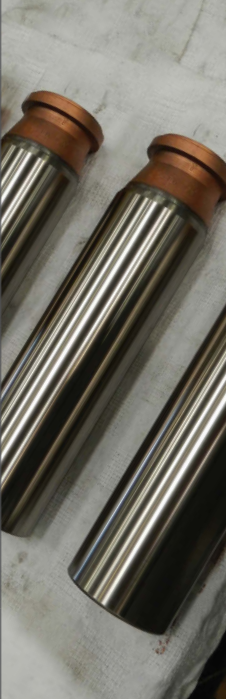



OIL AND GAS COMPONENTS

PLUNGERS & PONY RODS
ARE FOUND IN FRAC PUMPS




OUTER DIAMETER GRINDING

PLUNGERS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cylindrical traverse or plunge, roughing and finishing	Vitrium ³ grinding wheels with both Quantum or conventional abrasive grain	CNC or mechanically guided OD grinder
	Cylindrical traverse, roughing and finishing	Resin bond super abrasive wheel	Manual OD grinder; CNC OD grinder
	Truing and dressing above vitrified wheels	Blades, multi-point and single point dressers	Stationary dresser
	De-burring and blending	Oil & Gas cutting-off wheel	Right angle grinder
	Blending and finishing	50mm R980 Blaze quick-change coated abrasive discs	Die grinder
	Blending and finishing	50mm and 75mm Rapid Blend discs and Vortex Rapid Blend unitised wheels	Inline grinder
	Roughing	Viking R996 belts, Red-X R976 belts	Belt sander
	Semi-finishing	Blue Force R872 belts	Belt sander
	Finishing	Norax U336 belts	Belt sander
	Traverse, super-finishing	Q351R film rolls for microfinishing and L67F3 film rolls for lapping	Manual OD grinder
Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and diamond M631 Nanozyte disc	Met lab machine	


PONY RODS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cylindrical traverse or plunge, roughing and finishing	Vitrium ³ grinding wheels with both Quantum or conventional abrasive grain	CNC or mechanically guided OD grinder
	Cylindrical traverse, roughing and finishing	Resin bond super abrasive wheel	Manual OD grinder; CNC OD grinder
	Truing and dressing above vitrified wheels	Blades, multi-point and single point dressers	Stationary dresser
	Traverse, super-finishing	Q351R film rolls for microfinishing and L67F3 film rolls for lapping	Manual OD grinder
	Roughing	Viking R996 belts	Belt sander
	Semi-finishing	Blue Force R872 belts	Belt sander
	Finishing	Norax U336 belts	Belt sander
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and diamond Nanozyte M631 discs	Met lab machine


OUTER DIAMETER GRINDING


PISTONS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cylindrical traverse or plunge, roughing and finishing	Vitrium ³ grinding wheel with both Quantum or conventional abrasive grain	CNC or mechanically guided OD grinder
	Cylindrical traverse, roughing and finishing	Resin bond super abrasive wheel	Manual OD grinder; CNC OD grinder
	Truing and dressing vitrified wheels	Blades, multi-point and single point dressers	Stationary dresser
	Roughing	Viking R996 belts	Belt sander
	Semi-finishing	Blue Force R872 belts	Belt sander
	Finishing	Norax U336 belts	Belt sander
	Polishing	R222 or R202 abrasive rolls R222 or R202 handy rolls	Manual and jitterbug sander
	Traverse, super-finishing	Norax U234 and Q351R film rolls for microfinishing	Manual OD grinder
Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel or Nanozyte M631 diamond abrasive discs	Met lab machine	



INTERNAL DIAMETER GRINDING


SHAFTS AND OTHER CYLINDRICAL PARTS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cylindrical traverse or plunge, roughing and finishing	Vitrium ³ grinding wheels with both Quantum or conventional abrasive grain	CNC or mechanically guided OD grinder
	Cylindrical traverse, roughing and finishing	Resin bond super abrasive wheels	Manual OD grinders; CNC OD grinders
	Truing and dressing vitrified wheels	Blades, multi-point and single point dressers	Stationary dresser
	Polishing	Rapid Prep non-woven belts	Belt sander
	Polishing	R222 or R202 abrasive rolls R222 or R202 handy rolls	Manual and jitterbug sander
	Traverse, super-finishing	Q351R film rolls for microfinishing and L67F3 film rolls for lapping	Manual OD grinder
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and M631 diamond Nanozyte discs	Met lab machine


STABILIZERS / REAMERS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cylindrical traverse, snagging/rough (interrupted cut)	Organic snagging wheels	Manual OD grinder
	De-burring and blending	Organic snagging cups	Right angle grinder
	Manual grinding	Quantum fibre discs	Right angle grinder
	Manual grinding	Quantum flap discs Oil & Gas flap discs	Right angle grinder
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and Nanozyte M631 diamond abrasive discs	Met lab machine


VALVES / COUPLINGS / SLEEVES	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	ID grinding, finishing	Quantum with Vitrium ³ vitrified grinding wheel	ID grinder
	Cylindrical traverse, roughing and finishing	Resin bond super abrasive wheels	Manual OD grinder; CNC OD grinders
	Truing and dressing vitrified wheels	Blades, multi-point and single point dressers	Stationary dresser
	Side grinding, weld removal, burr removing	Quantum Fast Cut grinding wheel	Right angle grinder
	De-burring and blending	SG R929 file belts	Belt sander
	De-burring and super-finishing	Diamond slurries and compounds, and L67F3 film polishing rolls	Manual OD grinder
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and M631 diamond Nanozyte discs	Met lab machine



INTERNAL DIAMETER GRINDING


DRILL BITS / DRILL HEADS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	De-burring	Quantum and silicon carbide vitrified mounted points	Die and pencil grinder
	Cylindrical, heavy interrupted cut	Resin bond diamond wheels	OD grinder
	Cylindrical, heavy interrupted cut	SG R929 file belts	File belt sander
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and diamond M631 Nanozite discs	Met lab machine


DRILL PIPE	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Pipe upset	Organic and vitrified cones, plugs and mounted points	ID grinder
	Pipe upset and weld removal	Norton organic snagging cups	Right angle cup grinder
	Weld cleaning, weld removing, burr removing	Norton Oil & Gas cutting & grinding wheel	Right angle grinder
	Pipe upset	Viking R996 belts	Swing frame belt grinder
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and M631 diamond Nanozite discs	Met lab machine
	Thread de-burring	Rapid Blend NEX and Vortex Rapid Blend U2305 wheels	Horizontal shaft die grinder


GAGES	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cylindrical traverse or plunge grind	Vitrium ³ grinding wheel with both Quantum or conventional abrasive grain	OD grinder




CYLINDRICAL GRINDING

SMALL DIAMETER PLUNGERS (<75mm)	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Roughing and finishing	Organic grinding wheels with rubber regulating wheels	Thrufeed centerless grinder
	Truing and dressing above resin and rubber bond wheels	Blades, multi-point and single point dressers	Stationary dresser
	Blending and polishing	Norax U234 belts	Belt sander
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and M631 diamond Nanozyte discs	Met lab machine


POLISH RODS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Roughing and finishing	Organic grinding wheels with rubber regulating wheels	Thrufeed centerless grinder
	Truing and dressing above resin and rubber bond wheels	Blades, multi-point and single point dressers	Stationary dresser
	Blending and polishing	Norax U234 belts	Belt sander
	Blending and polishing	Toros resin bond metallurgical non-reinforced cut-off wheel and Nanozyte M631 diamond abrasive discs	Met lab machine


SUCKER RODS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Roughing and finishing	Organic grinding wheels with rubber regulating wheels	Thrufeed centreless grinder
	Truing and dressing above resin and rubber bond wheels	Blades, multi-point and single point dressers	Stationary dresser
	Blending and polishing	Norax U234 belts	Belt sander
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel M631 diamond Nanozyte discs	Met lab machine

SUCKER ROD COUPLINGS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Roughing and finishing	Organic grinding wheels with rubber regulating wheels	Thrufeed centreless grinder
	Truing and dressing above resin and rubber bond wheels	Blades, multi-point and single point dressers	Stationary dresser
	Blending and polishing	Norax U234 belts	Belt sander
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and M631 diamond Nanozyte discs	Met lab machine






CYLINDRICAL GRINDING

VALVE CAGES	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Roughing & finishing	Organic grinding wheels with rubber regulating wheels	Thrufeed centreless grinder
	Truing & dressing above resin and rubber bond wheels	Blades, multi-point and single point dressers	Stationary dresser
	Blending & polishing	Norax U234 belts	Belt sander
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and Nanozyte M631 diamond abrasive discs	Met lab machine

PDCS (POLYCRYSTALLINE DIAMOND COMPACTS)	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Grinding from as-pressed to finished dimension	Organic grinding wheels with rubber regulating wheels	Centreless grinder
	Chamfering	Resin bond diamond wheels	OD Grinder
	Surface grinding the Wc (tungsten carbide) backing	Type 6A2, 2A2T wheels	Vertical spindle rotary surface grinder





POLISHING

ROTORS / STATORS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Traverse, slack of belt stock removal and polishing	Viking R996 for roughing Blue Force R872 for semi-finishing Norax U336 for finishing	Thrufeed centerless grinder
	Polishing	50mm and 75mm mini flap wheels R207	Inline die grinder
	Traverse, scale and pitting removal, polishing	Viking R996 for roughing Blue Force R872 for semi-finishing Norax U336 for finishing	Custom belt machine on lathe
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and Nanozyte M631 diamond abrasive discs	Met lab machine
	Traverse, grinding and polishing, scale and pitting removal	L67F3 diamond discs for HVOC	Custom wheel machine
	Traverse, snake skin removal	Rapid Blend NEX and Vortex Rapid Blend U2305 wheels	Custom wheel machine
	Minor polishing of HVOF	Vortex convolute Rapid Finish convolute wheels	Custom wheel machine
	Polishing	50mm & 75mm R890 Blaze coated abrasive quick-change discs and unitised wheels	Inline and die grinder
Polishing	150mm Rapid Blend NEX unitised wheels	Inline air grinder	
SUCKER ROD PUMP BARRELS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Honing	Honing stones 5SGG(80-100)P-Q10VEA sulphur treated	Horizontal honing machine
	Traverse, super finishing	Q351R film rolls for microfinishing and L67F3 film rolls for lapping	Manual OD grinder
PIPE LINE COMPONENTS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Spherical ball valve honing	Honing blocks PA120F0VS5 roughing SA320I8VS5 finishing	Grinding machines for ball valve components




PORTABLE OFF-HAND

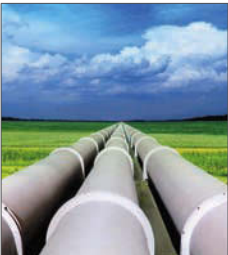
LAND BASED ON-SHORE INSTALLATIONS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Large diameter pipe cutting	Norline petrol saw	350mm portable petrol saw
	Weld grinding general metal removal	Quantum Fast Cut grinding wheels Quantum & Oil & Gas flap discs Quantum fibre discs	Right angle grinder
	Weld preparing and cleaning, cut and grind	Oil & Gas combination wheel for cutting and grinding	Right angle grinder
	Quick, clean and safe cutting operations	Quantum Long Life cutting-off wheels	Right angle grinder
	General off-hand metal removal applications	Oil & Gas grinding wheels	Right angle grinder
	De-burring, blending, cleaning	Quantum fibre discs	Right angle grinder
	De-burring, blending, cleaning	Oil & Gas flap discs Quantum flap discs	Right angle grinder
	Thread de-burring	Vortex Rapid Blend 9AM unitised wheels	Bench and pedestal grinder
Rust removal and paint stripping	Rapid Strip & Blaze Rapid Strip 115mm T27 depressed centre wheels	Right angle grinder	


OFFSHORE RIGS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Large diameter pipe cutting	Norline petrol saw	400mm portable petrol saw
	Weld grinding general metal removal, quick and heavy de-burring	Oil & Gas grinding wheels	Right angle grinder
	Pipe and weld preparing and cleaning, cut and grind	Oil & Gas cutting-off and grinding combination wheels	Right angle grinder
	Quick, clean and safe cutting operations	Oil & Gas cutting-off wheels	Right angle grinder
	General off-hand metal removal applications	Oil & Gas grinding wheels	Right angle grinder
	De-burring, blending, cleaning	Quantum fibre discs Oil & Gas flap discs Quantum flap discs	Right angle grinder
	De-burring, blending, cleaning	Oil & Gas flap discs Quantum flap discs	Right angle grinder
	Thread de-burring	Vortex Rapid Blend 9AM unitised wheels	Bench and pedestal grinder
Rust removal and paint stripping	Rapid Strip depressed centre T27 wheels	Right angle grinder	




PORTABLE OFF-HAND

SHIP RIGS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cutting large diameter pipe	Norline petrol saw	350mm portable petrol saw
	Metal removal, weld grinding	Oil & Gas grinding wheel	Right angle grinder
	Weld cleaning / weld preparing	Oil & Gas cutting-off and grinding combination wheel	Right angle grinder
	Cutting-off tubes, plates, sheets	Oil & Gas cutting-off wheels	Right angle grinder
	Edge grinding / bevelling oil pipes	Oil & Gas grinding wheels	Right angle grinder
	De-burring, blending, weld cleaning	Quantum fibre discs	Right angle grinder
	De-burring, blending, weld cleaning	Quantum flap discs Oil & Gas flap discs	Right angle grinder
	Weld blending and de-burring	Vortex Rapid Blend 9AM unitised wheels	Bench and pedestal grinder
Rust removal and paint stripping	Rapid Strip & Blaze Rapid Strip 115mm depressed centre T27 wheels	Right angle grinder	




PIPELINE ASSEMBLY	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Weld removal and finishing	Organic snagging cups	Right angle cup grinder
	Notching and weld cleaning pipe joints	Quantum Fast Cut grinding wheel	Right angle grinder
	Weld cleaning pipe joints	Oil & Gas cutting and grinding combination wheel	Right angle grinder
	De-burring, blending, cleaning	Quantum flap discs Oil & Gas flap discs	Right angle grinder

PIPELINE MANUFACTURING	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	ID cleaning	Quantum & conventional organic wheels	Large ID grinder
	OD buffing	Resin bonded BZZ wheels	OD grinder
	Cutting & grinding	Quantum cutting-off and grinding wheels	Right angle grinder
	Weld removal	Viking R996 belts Red-X R976 belts	Inline belt head

WELL SERVICE EQUIPMENT	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cutting & grinding	Oil & Gas cutting-off and grinding wheels	Right angle grinder
	De-burring & cleaning	Oil & Gas cutting-off and grinding combination wheel	Right angle grinder
	De-burring, blending & cleaning	Quantum flap discs Oil & Gas flap discs	Right angle grinder



PORTABLE OFF-HAND

PUMP JACKS	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cutting & grinding	Oil & Gas cutting-off and grinding wheels	Right angle grinder
	De-burring & cleaning	Oil & Gas cutting-off and grinding combination wheel	Right angle grinder
	De-burring, blending & cleaning	Quantum flap discs Oil & Gas flap discs	Right angle grinder
PETROCHEMICAL	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Cutting & grinding	Oil & Gas cutting-off and grinding wheels	Right angle grinder
	De-burring & cleaning	Quantum flap discs Oil & Gas flap discs	Right angle grinder
	De-burring, blending & cleaning	Flap wheels R207	Straight grinder
MET LAB	APPLICATION	NORTON PRODUCT RECOMMENDATION	MACHINE TYPE REQUIRED
	Preparing specimens	Toros resin bond metallurgical non-reinforced cut-off wheel and M631 diamond Nanozyte discs	Met lab machine



NORTON SOLUTIONS

STOCK & MADE-TO-ORDER

NORTON PRIDES ITSELF ON PROVIDING THE MOST APPROPRIATE AND EFFECTIVE ABRASIVE SOLUTION FOR ALL APPLICATIONS INVOLVING CUTTING, STRIPPING, GRINDING AND POLISHING.

There is complete range of stock products available at short notice in addition to a large number of made-to-order products designed to meet the technical requirements of complex environments.

Many of our customers benefit from our technical support – facilitating the choice of abrasive and combining insight from both sides to run appropriate tests and improve processes.

CUTTING-OFF & GRINDING WHEELS

There are a wide number of cutting and grinding applications in the oil & gas industry, for which Norton can provide the ideal solution.

For the highest standards in safety and performance, the Norton Oil & Gas range is the perfect solution, offering high material removal, low vibration and maximum working comfort. In addition Norton offers a full line of products specifically developed for High Frequency machines in Norton Quantum Long Life.



TYPE	DIA (mm)	TxB (mm)	SPECIFICATION	PK QTY	ART No.
NORTON OIL & GAS GRINDING WHEELS				BETTER	++++
27	115	7,0x22,23	A 24 Q	25	66252844788
	125		A 24 Q	25	66252844789
	180		A 24 Q	25	66252844790
	230		A 24 Q	25	66252844791
41	115	1,0x22,23	A 60 T	25	66252844792
	115	1,6x22,23	A 46 T	25	66252844793
	125	1,0x22,23	A 60 T	25	66252844794
	125	1,6x22,23	A 46 T	25	66252844795
	125	2,5x22,23	A 46 T	25	66252844910
	180	1,6x22,23	A 46 T	25	66252844796
	180	2,5x22,23	A 46 T	25	66252844911
	230	1,9x22,23	A 36 T	25	66252844797
27	125	4,0x22,23	A 24 T	25	66252844815
	180		A 24 T	25	66252844835
	230		A 24 T	25	66252844836

NORTON QUANTUM LONG-LIFE GRINDING WHEELS				BEST	+++++
27 HF	180	7,0x22,23	ZA 24 R	10	66252842862
	230		ZA 24 T	10	66252840382*
27	115		ZA 24 R	10	66252842242
	125		ZA 24 R	10	66252842243
	115		A 24 P	10	66252844261
	125		A 24 P	10	66252844262
	180		A 24 P	10	66252844263
	230		A 24 P	10	66252844264

FIBRE DISCS

From rapid weld grinding to blending and finishing Norton has a complete range of high performance fibre discs available for refurbishment of equipment. A full resin bond system with heavy duty fibre backing increases strength, product life, resistance and durability. Use with heavy duty nylon back-up pad for long life and effective cooling system.

The Quantum range features a number of products with supersize treatment for loading resistance & low heat generation to reduce work piece burn.



DIA (mm)	GRIT	PK QTY	ART No.
NORTON QUANTUM FIBRE DISCS BEST +++++			
115	36	25	66623327494
	50	25	66623327496
	60	25	66623327497
	80	25	66623327499
	120	25	66623327500
125	36	25	66623327501
	50	25	66623327502
	60	25	66623327503

DIA (mm)	GRIT	PK QTY	ART No.
NORTON QUANTUM FIBRE DISCS BEST +++++			
125	80	25	66623327504
	120	25	66623327505
180	36	25	66623327506
	50	25	66623327507
	60	25	66623327508
	80	25	66623327509
	120	25	66623327510

BACK-UP PADS Always use the correct back-up pad when using fibre discs

BACK-UP PAD TYPE	DIA (mm)	DENSITY	ATTACHMENT	PK QTY	ART No.
Aircool	115	Hard	M14	1	69957382821
	125	Hard	M14	1	69957382823
	178	Hard	M14	1	69957382824
		Hard	5/8	1	63642588243
Nylon fibreglass reinforced	115	Hard	M14	5	66623376727
	125	Hard	M14	5	66623376821
		Hard	5/8	5	66623377068
	180	Hard	M14	5	66623376822
		Hard	5/8	5	66623377069

MAXIMUM OPERATING SPEED

DIA (mm)	MOS (M/S)	MAX RPM
100	80	5300
115	80	13300
125	80	12300
150	80	10200
180	80	8600

FLAP DISCS

Norton Oil & Gas and Quantum flap discs cut faster, provide an excellent finish and have longer product life than standard discs. Used primarily for material removal, flap discs are ideal for land based and off-shore rig maintenance operations.

Norton Oil & Gas flap discs are excellent for stainless steel medium pressure applications. Norton Quantum is ideal for aggressive & sharp applications on powerful machines.



DIA (mm)	GRIT	PK QTY	ART No.
NORTON OIL & GAS FLAP DISCS BETTER ++++			
125	40	10	77696084938
	60	10	77696084943

DIA (mm)	GRIT	PK QTY	ART No.
NORTON QUANTUM FLAP DISCS BEST +++++			
115	40	10	66254461027
115	60	10	66254461029
115	80	10	66254461031
125	40	10	66254445878
125	60	10	66254445879
125	80	10	66254461033
180	40	10	66254461036
180	60	10	66254461038
180	80	10	66254461040

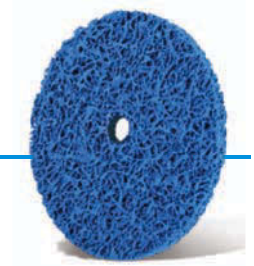
CONVOLUTE WHEELS

Use for minor polishing of HVOF rotors & stators, traverse action, snake skin removal, de-burring, flash removal, reducing surface roughness, rust removal, weld blending and imparting a final finish.



DIM DxWxB (mm)	REF CODE	ABRASIVE TYPE	GRADE	DENSITY	PK QTY	ART No.
RAPID FINISH CONVOLUTE WHEELS						GOOD +++
200x25x76	D19	SIC	F	9	3	66261018641
		SIC	M	9	3	66261018997

UNITISED WHEELS

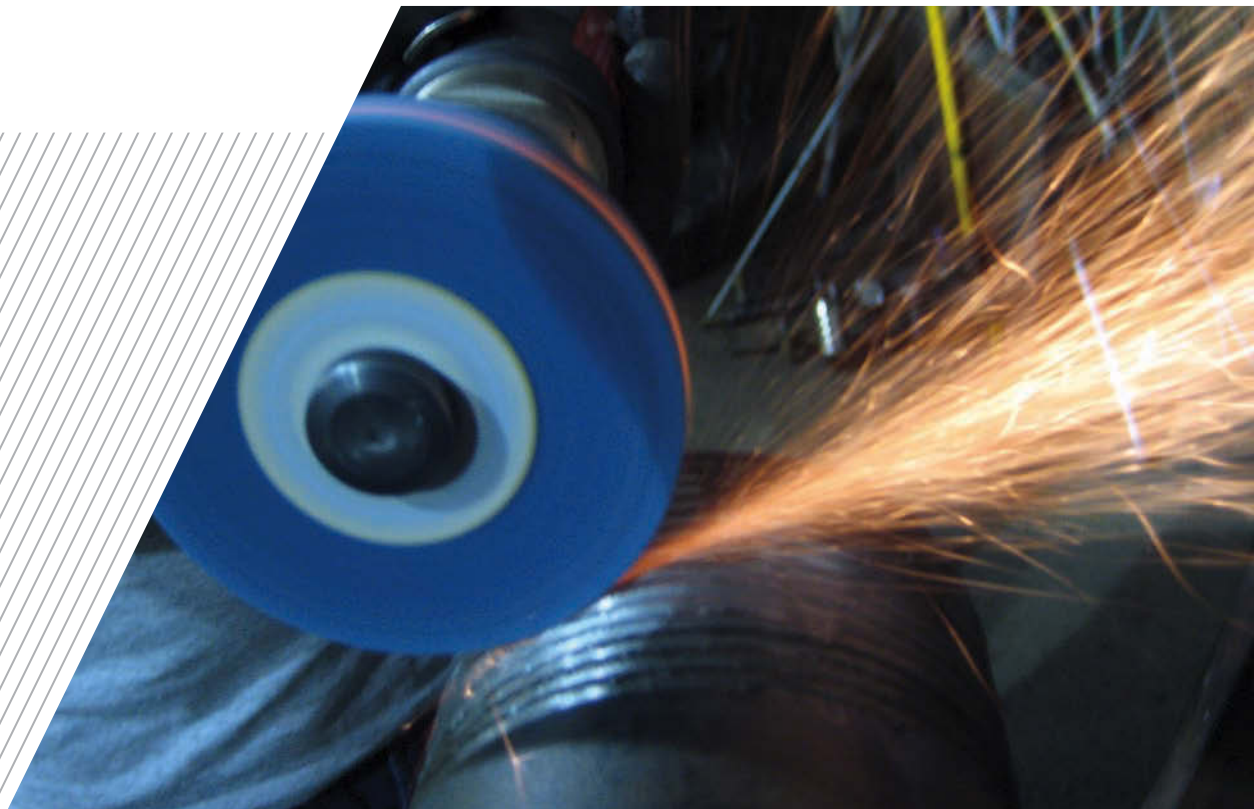


For pipe upset thread de-burring and cleaning, accessing small channels and gaps, Vortex Rapid Blend Unitised wheels are the most effective solution. Cut, grind and finish with just one product!

DIA DxTxB (mm)	GRADE	MAX RPM	PK QTY	ART No.
VORTEX RAPID BLEND UNITISED WHEELS				BETTER ++++
75x3x6	VOR-5AM	18000	40	66261093448
	VOR-7AM	18000	40	66261191445
75x6x6	VOR-3AM	18000	40	66254428454
	VOR-5AM	18000	40	66254414832
	VOR-7AM	18000	40	66261199696
75x13x6	VOR-7AM	18000	40	66261080267

ACCESSORIES FOR DIE GRINDERS

PRODUCT	FOR BEARTEX® PRODUCT TYPE	DIA LxSxW (mm)	FOR WHEEL / DISC DIA (mm)	FOR WHEEL / DISC BORE HOLE DIA (mm)	PK QTY	ART No.
Mandrel	Unitised Wheels	75 x 6	up to 75	6 & 12	1	63642586236





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