

Practical Solutions for the Pipeline Industry

About Osborn

Since Osborn's inception in 1887, success has always been about ensuring that you finish first. Whether it was last century, last week or in the last hour, customers like you need the right solutions and count on us.

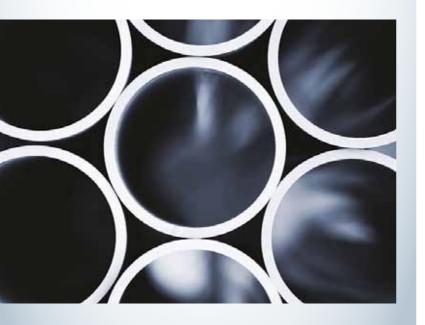
As the global leader in surface treatment and finishing solutions, we have more patents on products and processes than all other brush companies combined.

Engineering expertise and manufacturing skills are what set the Osborn brand apart. People experienced in surface treatment solutions and finishing tools, collaborating with cutomers to achieve optimum results. Matching tough finishing problems with the right solutions when and where you need them.

In addition to more than 10,000 standard products sold in more than 120 countries, we offer local support throughout the world. So, no matter where you or your customers are located, you will always have access to Osborn application expertise and the industry's best, most practical solutions.

When you start with Osborn, you finish first.





Operations in

Countries



Brazil
China
China
France
Germany
India
Mexico
Portugal
Romania
Spain
Spain
Sweden
Taiwan
United Kingdom
United States

Offers access to new ideas, economies of scale, and new techniques to master your surface treatment and finishing needs.



Countries

Your Partner for all...

EXPLORATION

Whether weld cleaning tools are used for tough on or offshore exploration jobs or needed in construction yards, on pontoons, drill rigs or steel framework - you can always count on the reliability and safe performance of Osborn tools. High alloy steel and stainless steel wires - if necessary V4A non-ferrous quality is also available, - are the first choice tools for all material sensitive cleaning jobs such as silicate, slag or rust removal or descaling. Osborn brushes are designed to fit in all types of existing equipment like angle grinders, high speed pneumatic tools or even regular hand drills for (semi-professional) jobs.

Wound and arc strip brushes for well bore and drill hole cleaning are made to order items and fit into any existing drill pipe holders. Help to maintain pressure and viscosity high.

PIPE MANUFACTURING

Osborn is the all-round service provider for all kinds of brush solutions in the pipe coating industry. We cover the full spectrum: **Contact brushes** are used to set continuous electric contacts in pipe welding factories and **Transport Rollers** designed for installation in the hot zone next to the induction heater are typically used in the pre-manufacturing process.

Osborn CUTBACK brushes remove excess coating on pipe ends quickly, efficiently and cost effectively.

Cooperation with leading equipment manufacturers worldwide assures easy assembly of ready-to-use brush sets and single sections in existing devices.



Take advantage of our global distribution network. Osborn brushes are available all over the world, very often in less than 48 hours.

WELD CLEANING

MIG, MAG, TIG and hand welding processes create very different kinds of debris and users have to rely on the effectiveness of the weld cleaning tool.



Silicates, debris and blueing are not easy to idenity in root and fill layers and welding engineers must be able to trust the effectiveness of the chosen cleaning tool. Osborn wire brushes are non-stock removing and leave the welded base material untouched.

However, welding debris will be removed completely on every single layer. Choose first class brushes to keep rework costs to a minimum.

The safety and performance of Osborn weld cleaning brushes is second to none Service life extends to several hundred meters of weld cleaning, far beyond the volume achieved with regular abrasive discs and with a lot less noise and almost spark free.



PIGGING

Osborn Pigging brushes, for pipeline service providers, clean paraffin and other layers of debris in operating pipeline systems. Osborn pigging brushes are part of MFL inspection equipment, which locates defects in pipeline, so as to avoid oil and gas hazards.

Custom made strip or single section brushes made of wire or synthetic bristle ensure that residue is removed from the inner wall of the pipe, increasing the transportation capacity.







Exploration & Drilling

Osborn is the world's leading supplier of surface treatment solutions and high-quality finishing tools for hundreds of industrial and commercial applications, including pipeline and oilfield construction. Osborn's high-quality, innovative and customized tools, as well as excellent customer service, provide the right tools for the right applications.

We offer 100% inspection to assure a perfect fit in your tool!





Osborn: Officially good!

A TÜV seal means "tested without compromise" and indicates quality at the first glance. Osborn is the only manufacturer in its sector to obtain this certification. This sets Osborn clearly apart from its competitors. A resounding commitment for the consumer.

650 Osborn products out of our standard assortment are certified by TÜV-Süd.

WELD CLEANING

Osborn products are unsurpassed in value and service life. Using Osborn brushes for weld cleaning in on and offshore construction, has a lower thermal impact on surfaces as well as significant overall quality benefits which include lowering the chances of corrosion, grooving and micro fissures. Osborn brushes are non-stock removing and almost spark free, with a noise level far below abrasive tools.



Weld seam cleaning with wire brushes



RUST AND PAINT REMOVAL JOBS

Brushes with crimped or knot style wires are the most common tool used to remove anti-corrosion varnishes and paint from metal surfaces. Non-ferrous materials like stainless steel and aluminium should be brushed with a high alloy stainless steel wire 1.4301 or even 1.4401 (AISI 304 & 316).

Crimped wire brushes create a metallic, blank and satinized surface which can be coated immediately after brushing. Twist knot brushes are the first choice tool for debris that is hard to remove like heavy corrosion and thick layers of paint and coating.

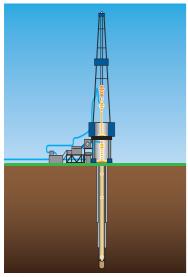
HARD TO REACH AREAS

Osborn Ruftuf brushes are the so called "swiss knife" of the brush industry as brush size is variable and can be changed by simply adjusting the speed of the driving unit. Ruftuf brushes are available in various sizes, in steel and stainless steel wire. Maximum extension to 80-90 mm will be achieved at a work speed of 5,000 – 8,000 RPM.





Ruftuf brushes for internal cleaning at 8,000 RPM





Drill tower

Down hole brushes in a tool holder

WELL BORE BRUSHES

Together with casing scrapers Osborn strip brushes help to maintain a defined pressure level during the wellbore maintenance process. Specially designed Osborn brushes are also used to achieve

a specific roughness on the casing during the final completion process. Osborn supplies carbon and stainless steel brushes with clockwise or anti-clockwise helix, various channel widths and any required length. Brushes are subjected to 100% inspection to ensure the perfect fit.



Drill pipe cleaning with wire brushes

DRILL PIPE CLEANING BRUSHES

Heavy duty disc centre brushes are available to be used on machines used to clean the outside diameter of the pipe; brushes can be supplied as single sections or as units of multiple sections, with or without face plates. When the sections are mounted together the special Osborn design is such that the knots inter-lock eliminating stripes on the surface.

THREAD CLEANING

High quality Ringlock brushes designed for manual use in high speed die grinders are available in 2, 2 ½ and 3 inch diameter with a special crimp to assure the highest density possible. Ruftuf end brushes are also popular for inside diameter cleaning.

The demands on on and offshore steel construction work are very high



- Salt water environment, corrosion resistance and outdoor work, dictate the need for reliable tools.
- Osborn brushes fulfill all your expectations, they are safe and long lasting cleaning tools for steel works, shipyards, drill rigs and oil and gas companies.
- Whether the parts to be processed are flat, profiled or beveled we have the right brushes, all of which are performance and safety tested in the most modern laboratories in the brush industry.

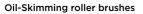
OIL SKIMMING

Floats employed to remove oil slick are often equipped with special brushes, manufactured according to the customer request.

Roller brushes with a plastic core and oil-resistant bristles collect excess oil from the surface of the water quickly and efficiently, the oil is then removed from the brushes.









Special brushes for industrial purposes



Oil Skimmers with Osborn roller brushes

Wheel brushes for descaling, deburring and cleaning of weld seams. knotted Osborn wire



Wire dia in mm determined by application





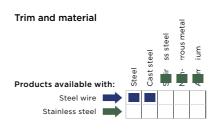
| Dia mm | Dia Inch | Face mm | Face Inch | Grinder size | wall thickness up to > | carbon steel wire, knotted | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
|--------|----------|---------|-----------|--|---------------------------|-------------------------------|-------------------|-------------------|
| 100 | 4" | 6 | 1/4" | 100 mm / 4" | 10 mm | available | available | on request |
| 100 | 4" | 13 | 1/2" | 100 mm / 4" | 10 mm | available | available | on request |
| 115 | 4 1/2" | 6 | 1/4" | 115 mm / 4 ¹ / ₂ " | 15 mm | available | available | on request |
| 115 | 4 1/2" | 13 | 1/2" | 115 mm / 4 ¹ / ₂ " | 15 mm | available | available | on request |
| 125 | 5" | 6 | 1/4" | 125 mm / 5" | 15 mm | available | available | on request |
| 125 | 5" | 13 | 1/2" | 125 mm / 5" | 15 mm | available | available | on request |
| 150 | 6" | 6 | 1/4" | 150 mm / 6" | 20 mm | available | available | on request |
| 150 | 6" | 13 | 1/2" | 150 mm / 6" | 20 mm | available | available | on request |
| 165 | 6 1/2" | 6 | 1/4" | 180 mm / 7" | 15 mm | available | available | on request |
| 171 | 6 3/4" | 6 | 1/4" | 180 mm / 7" | 15 mm | available | available | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | available | available | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | available | available | on request |
| 178 | 7" | 13 | 1/2" | 180 mm / 7" | 25 mm | available | available | on request |
| 230 | 9" | 6 | 1/4" | 230 mm / 9" | 35 mm | available | on request | on request |
| 230 | 9" | 13 | 1/_" | 230 mm / 9" | 35 mm | available | on request | on request |
| 250 | 10" | 25-100 | 1-4" | Drill pipe cleaning machine bore 25,4-100 mm / 1" to 4" incl. Keyways | | available | available | on request |

Cup brushes for agressive rust and paint removal for hand grinders knotted wire



Wire dia in mm determined by application





| Dia mm | Dia Inch | Grinder size | carbon steel wire, knotted | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
|--------|----------|-------------------|-------------------------------|-------------------|-------------------|
| 65 | 2 1/2" | 100-125 mm / 4-5" | available | available | on request |
| 75 | 3" | 100-125 mm / 4-5" | available | available | on request |
| 80 | 3" | 150 mm / 6" | available | available | on request |
| 100 | 4" | 180 mm / 7" | available | available | on request |
| 120 | 5" | 230 mm / 9" | available | available | on request |

Cup brushes for soft rust and paint removal for hand grinders crimped wire



Wire dia in mm determined by application



Trim and material



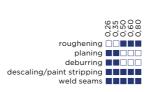
Soft rust and paint removal brushes for hand grinders

| Dia mm | Dia Inch | Grinder size | carbon steel wire, crimped | steel wire, brass coated | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
|--------|----------|-------------------|-------------------------------|-----------------------------|-------------------|-------------------|
| 60 | 2 1/2" | 100-125 mm / 4-5" | available | available | available | on request |
| 75 | 3" | 100-125 mm / 4-5" | available | available | available | on request |
| 80 | 3" | 150 mm / 6" | available | available | available | on request |
| 100 | 4" | 180 mm / 7" | available | available | available | on request |
| 125 | 5" | 230 mm / 9" | available | available | available | on request |
| 150 | 6" | 230 mm / 9" | available | available | available | on request |

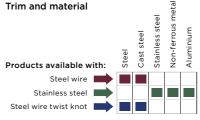
Bevel brushes for processing inaccessible areas e.g. angles, edges or corners. knotted or crimped wire



Wire dia in mm determined by application

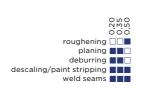


Trim and material

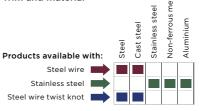




Wire dia in mm determined by application



Trim and material



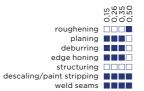
| Dia mm | Dia Inch | Grinder size | carbon steel wire, crimped | carbon steel wire, knotted | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
|--------|----------|-------------------|-------------------------------|-------------------------------|-------------------|-------------------|
| 100 | 4" | 100-115 mm / 4-5" | available | available | available | on request |
| 115 | 4 1/2" | 100-115 mm / 4-5" | available | available | available | on request |
| 125 | 5" | 125 mm / 5" | available | available | available | on request |

Ruftuf end brushes for high-speed tools knotted Osborn wire





Wire dia in mm determined by application





End brushes for hard to reach areas

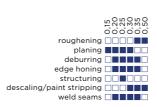
| Dia mm | Dia Inch | flares up to | flares up to | Grinder | carbon steel wire, knotted | 1.4301 / AISI 304 | 1.4401 / AISI 316 | oil free / degreased |
|--------|----------|--------------|--------------|---------------------|-------------------------------|-------------------|-------------------|-------------------------|
| 20 | 1/2" | 25-75 mm | 1"-3" | high speed grinders | available | available | available | on request |
| 23 | 3/4" | 25-75 mm | 1"-3" | high speed grinders | available | available | available | on request |
| 30 | 1" | 30-85 mm | 1">3" | high speed grinders | available | available | available | on request |

Wheel brushesfor high speed tools knotted or crimped wire





Wire dia in mm determined by application



Products available with: Steel wire crimped Stainless steel Stainless steel Brass wire

| Dia mm | Dia Inch | Grinder | carbon steel wire, crimped | carbon steel wire, knotted | 1.4301 / AISI 304 | 1.4401 / AISI 316 | Brass wire |
|--------|----------|-------------------------------------|-------------------------------|-------------------------------|-------------------|-------------------|------------|
| 20 | 1" | high speed grinders / hand drill | available | | available | on request | available |
| 30 | | high speed grinders / hand drill | available | | available | on request | available |
| 40 | | high speed grinders / hand drill | available | | available | on request | available |
| 50 | | high speed grinders / hand drill | available | | available | on request | available |
| 60 | | high speed grinders / hand drill | available | | available | on request | available |
| 70 | | high speed grinders / hand drill | available | | available | on request | available |
| 75 | V | high speed grinders / hand drill | | available | available | on request | |
| 80 | 3 1/4" | high speed grinders / hand drill | available | | available | on request | available |

Hand brushes, brooms, paint brushes, various materials for manual operations









| | Model | type | no. of rows | steel wire | stainless wire | brass wire | synthetic filament | Mexican Fibre |
|---|------------------------------|---------------|-----------------|------------|----------------|------------|-----------------------|------------------|
| 1 | wooden handle | regular | 2 rows | available | available | available | | |
| 1 | wooden handle | regular | 3 rows | available | available | available | | |
| 1 | wooden handle | regular | 4 rows | available | available | available | | |
| 1 | wooden handle | regular | 5 rows | available | available | available | | |
| 1 | wooden handle | regular | 6 rows | available | available | available | | |
| 1 | wooden handle | welder's best | 3 rows, pointed | available | available | | | |
| 2 | plastic handle scratch brush | conical | 1 row | available | available | available | | |
| 3 | Broom | regular | various | available | | | available | available |
| 4 | Paint Brush | regular | | | | | | available |

Did you know?

Load Runners® Idler Rollers

Osborn designed the world's first non-needle roller bearing idler roller more than fifty years ago to solve an internal manufacturing challenge on the company's foundry equipment. Today, Load Runners® is the world's leading idler-roller and rail solution for precise guidance of heavy loads in harsh environments, used in numerous industries. Load Runners® tolerate both high radial and thrust loads and are maintenance-free. They help reduce your design time and lower overall material handling system costs. Find more information and CAD-drawings/models for easy incorporation into your designs on:

www.loadrunners.com



Ready to Roll... Anywhere!

Osborn Load Runners idler-rollers are specially designed to tolerate both radial and thrust loads for heavy-duty applications. With tapered roller bearings or deep-groove ball bearings, these prefabricated rollers are engineered for convenience.

Along with Osborn Load Rails, precut and drilled to your specifications, Load Runners are the complete solution for linear motion control.

Tapered bearings for thrust load tolerance are sealed to keep out contaminants. Sizes from $^{1}/_{2}"$ to 10".

Modifications include relube provision, high temp grease & seals, non-metallic tread.

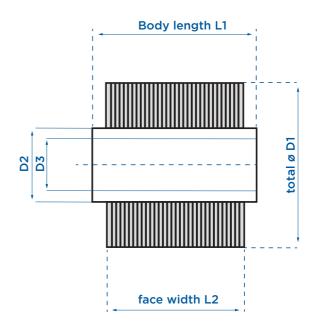


PRODUCT INQUIRY FORM WELLBORE MAINTENANCE BRUSHES H T OAT

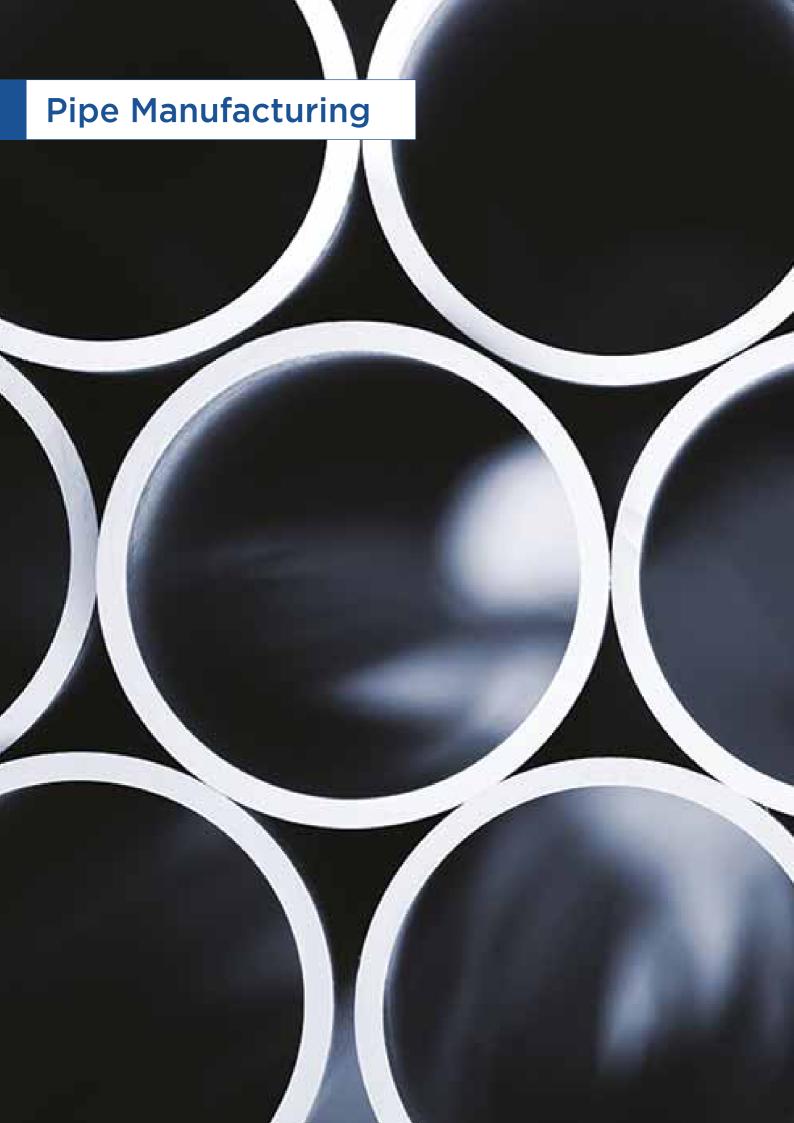
| Sender | |
|---------------------------------|------------|
| Company: | Post code: |
| Name: | City: |
| Department: | E-Mail: |
| Street: | Phone/Fax: |
| Dimensions / Material | |
| Length (L): | |
| Overall trim (OAT): | |
| Height backing tape (H): | |
| Width backing tape (W): | |
| Material (Type of wire / size): | |
| Radius (R): | |
| | |
| Notes: | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

PRODUCT INQUIRY FORM OIL SKIMMING BRUSHES





| Company: | Post code: | |
|-------------------------------|--|--|
| Name: | City: | |
| Department: | E-Mail: | |
| Street: | Phone/Fax: | |
| Dimensions / Material | | |
| Body material: | Total dia (tol.) D1: | |
| Fill Material: | Core diameter D2: | |
| Fill colour: | Body length L1: | |
| Fill diameter: Face width L2: | | |
| | Bore diameter D3: | |
| RPM: | Chem. resistant against: | |
| Notes: | | |
| | No. of peripheral rows: a: bundles dia. d.: | |
| | No of. longitudinal rows: b: bundles spiral angle w: | |









Roller brushes made on request to remove shot.

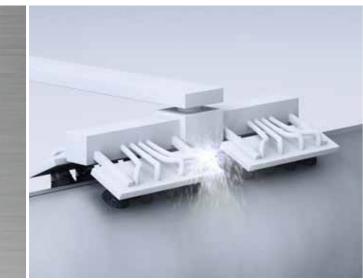
Pipe Manufacturing

Osborn is the all-round service provider for all kinds of brushing solutions in the pipe manufacturing and coating industry. Osborn's high-quality, innovative and customized tools, as well as best-in-class customer service, provide the right tools for the right applications in pipe welding, hot zones and pipe coating removal.

SHOT BLASTING BRUSHES

Osborn offers a wide choice of punch type special brushes to fit in various shot blasting machines. Those products are made to order and will clean sand or grit in industrial sandblasting lines.









Contact cup brushes in welding head

CONTACT BRUSHES

Contact brushes are used to maintain continuous electric contacts in pipe welding units. Flexible crimped wire brushes ensure a constant electric connection between the welding nozzle and the moving raw steel pipe. Any interruption or incorrect contact will cause welding defects that could be avoided and cost intensive rework on the entire layer along the pipe. Very often such welding defects are not discovered until later after ultrasonic or X-Ray examination.

Cup brushes crimped wire



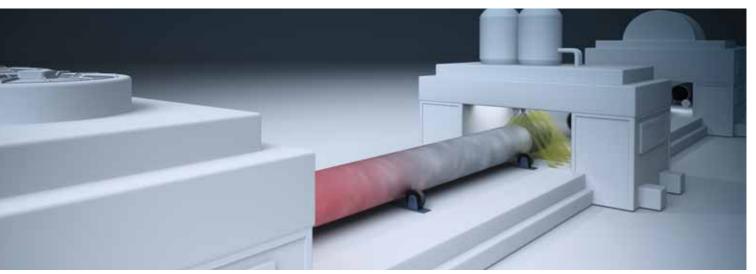
Particularly suitable to ensure continous electric contact

| Dia mm | Dia Inch | carbon steel wire, crimped |
|--------|----------|----------------------------|
| 60 | 2 1/2" | available |
| 75 | 3" | available |
| 80 | 3" | available |
| 100 | 4" | available |
| 125 | 5" | available |
| 150 | 6" | available |

TRANSPORT BRUSHES

Osborn transport brush rollers offer a new and effective technology to the pipe-coating industry. Wire brush rollers are a perfect alternative to polyurethane (PU) rollers commonly used today, particularly in the hot zone areas following the induction heating ovens. When pipes leave the induction

ovens at temperatures as high as approx. 150° C / 300° F, the melting point of polyurethane is relatively low and the rollers are easily damaged, wear is very high and service life, in turn, short.



Pipe leaving induction heating prior to coating process

Osborn brushes are designed to withstand the high temperatures hence service life is several times that of PU rollers. This leads to a drastic reduction in the number of times the brush rollers must be replaced, downtime is reduced respectively the pipe-coating process no longer needs to be stopped as frequently, as when PU rollers are in use. Osborn transport brush rollers have a perfectly trimmed flat surface so there is no risk of damage to the pipes.



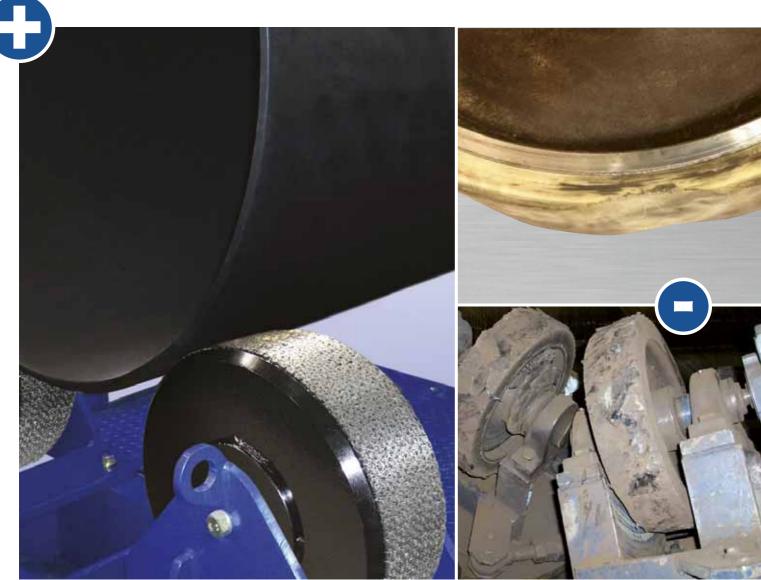
Did you know?





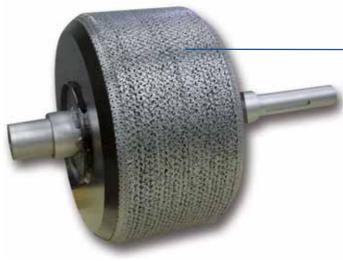
Osborn wire brush roller

TRANSPORT ROLLERS



Induction heater and wire transport rollers.

Worn out PU rollers due for replacement

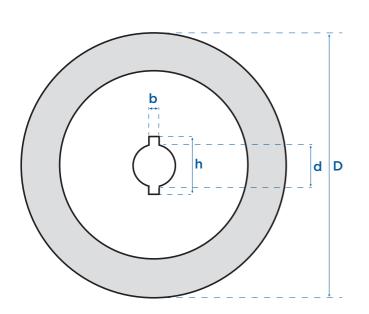


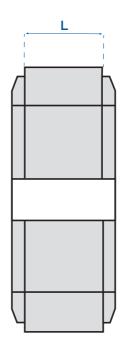
Extra large transport roll for 56" pipe



Surface of brush transport roller.

PRODUCT INQUIRY FORM TRANSPORT ROLLERS







| Sender | |
|-----------------------|-------------|
| Company: | Post code:: |
| Name: | City: |
| Department: | E-Mail: |
| Street: | Phone/Fax: |
| Dimensions / Material | |
| Brush dia (D): | |
| Bore dia (d): | |
| Keyway (h): | |
| Keyway width (b): | |
| Face width (L): | |

CHECKLIST

- What is the diameter (min./max.) of the pipes to be transported?
- What load must the transport brush carry (tons per brush) or: how heavy is the pipe and how many transport brushes are being used?
- How thick is the wall of the pipe?



Dynamic balancing machine

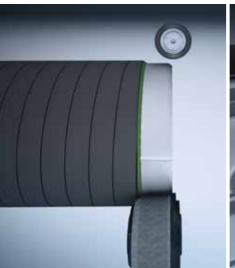
CUTBACK BRUSHES

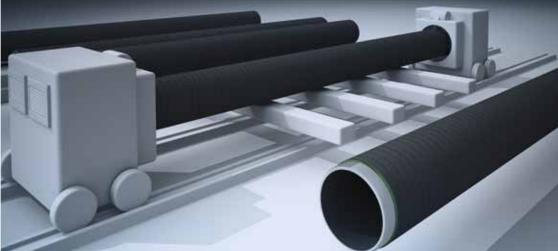
The Osborn Cutback-brush-system is used worldwide to remove coating at the end of the pipes, independent of whether the coating is high (HD), medium (MD) or low density (LD), polyethylene (PE) or polypropylene (PPN). The Cutback-brush-system performs three operations in one. The pipe ends are cleaned, coating is removed and an angle created on the edge of the remaining coating. Plastic bonded (PB) wheels on both sides of the brush are responsible for the bevelling operation on the

coating and cleaning the ends of the pipe.

Costs are kept to a minimum due to the long life of the product and the short processing time. An internal cooling system is a further option to prevent the brushes from becoming clogged and reduce heat build-up.

Cutback machine manufacturers offer different brush systems to take off the coating.

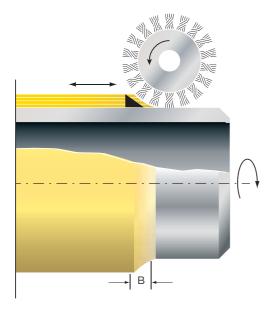




Two station cutback

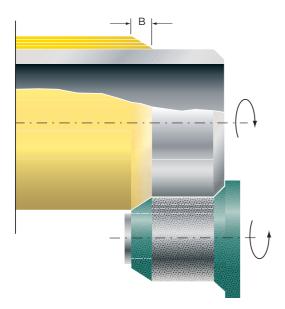
WHEEL BRUSH SYSTEM

Just one twist knot wheel brush is installed on top or below the pipe to peel off the coating. As the pipe rotates, the brush removes the coating. It is important to oscillate the brush since this will speed up the process and extend brush life.



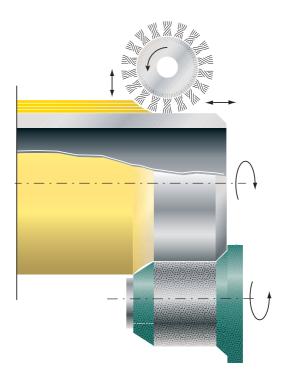
ROLLER BRUSH SYSTEM

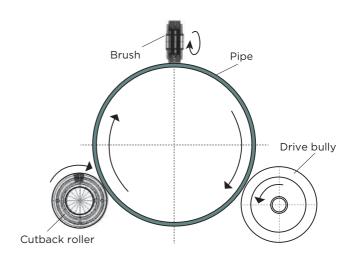
A wide face roller brush is positioned parallel to the pipe's central axis and peels off the coating in one operation. As the entire brush face width matches the desired cutback length this operational set-up is considerably more efficient, faster and longer lasting. Bevel cutting (B) cutback and edge cleaning are carried out in one step only.



TWO STATION

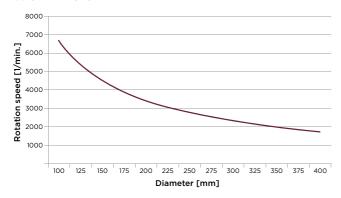
One wide face roller brush positioned parallel to the pipe axis and additional support brushes are the most efficient machinery set-up. Cutback brush times can be reduced to a minimum. As the support brush is positioned at 90° displaced bevel to the pipe axis the cleaning performance increases considerably and leads to the shortest possible process times.





Two station brush system

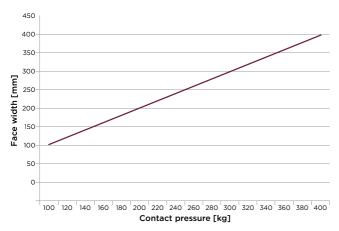
WORKING SPEED



| Surface speed [35 m/s] | Diameter [mm] | Rotation speed [1/min.] |
|---------------------------|------------------|----------------------------|
| 35 | 200 | 3350 |
| 35 | 250 | 2675 |
| 35 | 300 | 2230 |
| 35 | 350 | 1910 |
| 35 | 375 | 1720 |
| 35 | 400 | 1670 |
| 35 | 425 | 1575 |

Surface speed recommendation: 35 m/sec

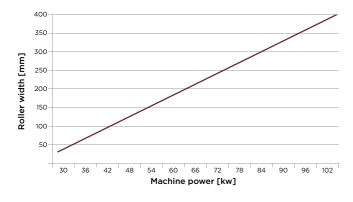
CONTACT PRESSURE



| Face width [mm] | Contact pressure [kg] | Contact pressure [N] |
|--------------------|--------------------------|-------------------------|
| 100 | 100 | 981 |
| 120 | 120 | 1177,2 |
| 140 | 140 | 1373,4 |
| 160 | 160 | 1569,6 |
| 180 | 180 | 1765,8 |
| 200 | 200 | 1962 |

Based on a brush dia. 390 / 114 knotts

MACHINE POWER



| Roller width [mm] | Machine power [kw] |
|----------------------|-----------------------|
| 100 | 30 |
| 110 | 33 |
| 120 | 36 |
| 130 | 39 |
| 140 | 42 |
| 150 | 45 |
| 160 | 48 |
| 170 | 51 |
| 180 | 54 |
| 190 | 57 |
| 200 | 60 |
| | |





READY-TO-USE CUTBACK BRUSH

Osborn offers ready-to-use roller brushes which are preassembled and dynamically balanced. The brush is designed according to the required cutback length and can carry out three work steps in one operation:

- 1.) apply a defined bevel on the coating
- 2.) take off the coating in a defined area and
- 3.) clean the pipe end

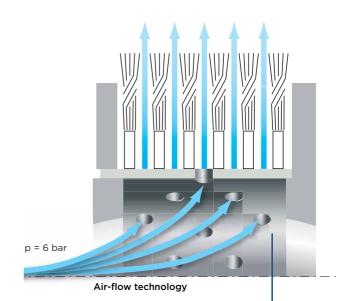
A slightly oversized brush section at the end of the Cutback brush can work as a bumper and stop the pipe whilst it is driven into the cutback station.

AIR COOLING SYSTEM

Cutback brushes are available with an additional air cooling system. The brush core (also available for refill systems) is prepared to support air cooling systems which can be installed easily on almost every existing Cutback equipment. A compressor with 5-6 bar and a pneumatic tube can pump enough air directly into the brush center. This reduces the work temperature considerably and allows work at higher speeds and with more contact pressure, resulting in much shorter process times. Increase your capacity output by taking advantage of this feature!

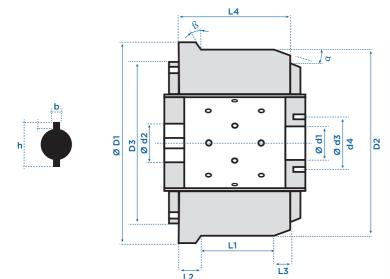


Pipeline construction site



Cooling bores in the brush core

PRODUCT INQUIRY FORM CUTBACK BRUSHES





| Sender | | | |
|-------------|------------|--|--|
| Company: | Post code: | | |
| Name: | City: | | |
| Department: | E-Mail: | | |
| Street: | Phone/Fax: | | |

| Dimensions / Material | | | |
|-----------------------|-----|-----|--|
| Bore dia d1: | d2: | d3: | |
| Brush dia D1: | D2: | D3: | |
| Length L1: | L2: | L3: | |
| Angle α: | β: | d4: | |
| Keyway h: | b: | L4: | |

CHECKLIST

- What is the diameter (min./max.) of the pipes?
- At what speed does the pipe rotate (RPM)?
- At what speed does the brush rotate (RPM)?
- · How much pressure does the brush apply to the pipe?
- What is the capacity of the motor driving the brush?
- How many Cutback brushes are to be used?
- Is there an internal cooling system?





Two station brush cutback system

Clockwise/ anti-clockwise knotted brush section

REFILL BRUSH SYSTEM

Osborn offers a wide choice of refill brushes for self-assembly at the customer's site. Single section brushes are available from 200 - 465 mm diameter with various fill densities, arbor holes and wire types. The brush core (available on request) can be reused and refilled several times.

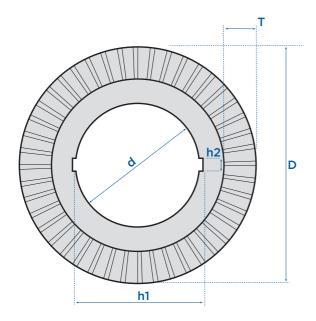
A hydraulic 50 ton press and balancing equipment must be available on site to assemble single brush sections to the final roller brush. The Osborn refill brush system reduces process costs as the brush core can be reused. This cutback system offers a high level of flexibility because the customer can define the width of the brush.

Brush Section for Refill system Cutback



| Dia mm | Dia Inch | steel 0,50 mm / 0,20" | steel 0,60 mm / 0,25" | steel 0,80 mm / 0,35" | steel 1,0 mm / 0,40" | stainless steel |
|--------|----------|--------------------------|--------------------------|--------------------------|-------------------------|-----------------|
| 200 mm | 8" | available | available | available | on request | on request |
| 250 mm | 10" | available | available | available | on request | on request |
| 300 mm | 12" | available | available | available | on request | on request |
| 390 mm | 15 1/4" | available | available | available | on request | on request |
| 405 mm | 16" | available | available | available | on request | on request |
| 420 mm | 16 ¹/₂" | available | available | available | on request | on request |

PRODUCT INQUIRY FORM REFILL BRUSHES





| Sender | |
|-----------------------|--------------------|
| Company: | Post code: |
| Name: | City: |
| Department: | E-Mail: |
| Street: | Phone/Fax: |
| Dimensions / Material | |
| Brush dia (D): | Wire dia: |
| Bore dia (d): | Wire type: |
| Keyways (h1, h2): | Quantity of knots: |

CHECKLIST

- What is the diameter (min./max.) of the pipes?
- At what speed does the pipe rotate (RPM)?
- At what speed does the brush rotate (RPM)?
- How much pressure does the brush apply to the pipe?
- What is the capacity of the motor driving the brush?
- How many Cutback brushes are to be used?
- Is there an internal cooling system?





Weld Cleaning

Osborn products are unsurpassed in value and service life. Using Osborn brushes in pipeline construction for weld cleaning has a lower thermal impact on pipe surfaces as well as significant overall quality benefits including lowering the chances of corrosion, grooving and micro fissures.

WELDING TECHNOLOGY

Testing that compared the use of typical abrasives to Osborn brushes for cleaning welds, found that the micro surfaces of the welds cleaned with Osborn brushes were virtually identical to the original surfaces and kept the material's structure intact. The testing also found that

welds treated with Osborn brushes allowed carbon to settle in a magnetite layer during the dissolution process, which boosted the surface's protective properties, slowing further dissolution.



Manual testing in one of the Osborn labs

Osborn is a driving force in product testing and is therefore able to create innovative solutions providing the best values. Constant improvement has created products that are specifically tailored to work better on harder and lighter-weight steel pipe. Osborn's disc-center brushes have been improved to meet the high demands of X 100 and X 120 steel pipe. The brushes are designed with hardened, tempered wire and high-Rockwell hardness, making them ideal for removing silicates.

Did you know?

IPLOCA MEMBER

IPLOCA is the key association of the world's major international onshore and offshore contractors with some 240 Regular Members and Associate Members. It was founded in 1966. IPLOCA's mission is to provide value to members through a forum for sharing ideas, engaging the industry and its stakeholders, facilitating business opportunities and promoting the highest standards in the pipeline industry. Osborn is a longtime associate member and frequently takes part in IPLOCA meetings.

www.iploca.com



Welding Brush matrix

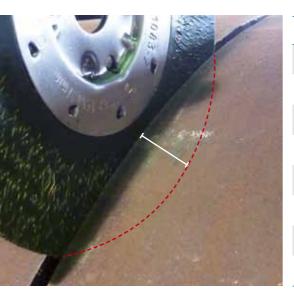
As an undesirable by-product welding creates all sorts of debris on the surface of the work-piece. Osborn wire-brushes are predestined to clean away this debris. They are non-stock removing and leave the welded surface untouched while debris is being taken off layer by layer. The following product finder indicates which brush is to be used for which weld cleaning process.

MMA TIG/MIG/MAG **PLASMA Spatter** Blue colour Slag **Silicates** Left over debris Silicates become **Grinding Discs** Oxide layers, mainly remains appearing apparent, if silicon, use of Anti found after welding as electrodes wear present in most Spatter spray of stainless steel. steel alloys, burns recommended. during welding and becomes SiO2. ~ 0,50/0,80 mm ~ 0,30 - 0,50 mm ~ 0,15 - 0,35 mm 4 mm 4 - 6 mm Grinding disc 4 mm 4-6 mm Plastic bonded Plastic bonded steel / stainless Root & Hot twist knot crimped wire pass brushing ~ 0,50/0,80 mm 6-8 mm ~ 0,30 - 0,50 mm ~ 0,15 - 0,35 mm Grinding disc 6 - 13 mm 13 mm 13 mm twist knot twist knot steel / stainless Fill layers ~ 0,50/0,80 mm 6-8 mm ~ 0,15 - 0,35 mm ~ 0,30 - 0,50 mm Grinding disc 13 mm 6 - 13 mm 6 - 13 mm twist knot twist knot steel / stainless Cap layers ~ 0,50/0,80 mm Grit 40 - 60 mm ~ 0,30 - 0,50 mm ~ 0,15 - 0,35 mm 13 mm Flap disc 13 mm 13 mm twist knot twist knot steel / stainless Surface



| Wall thickness | | Wheel brush Ø |
|----------------|---|---------------|
| 10 mm | - | 100 / 115 mm |
| 15 mm | - | 115 / 125 mm |
| 20 mm | - | 150 mm |
| 25 mm | - | 180 mm |
| 30 mm | - | 180 mm |
| 35 mm | - | 230 mm |

BRUSH DIAMETER AND WALL THICKNESS RECOMMENDATION



| Grinder bru | | brus | sh Ø | wall thickness |
|-------------|-----|---------------------------------|------|----------------|
| 4" | 100 | 4" | 100 | 10 mm |
| 4 1/2" | 115 | 4 1/2" | 115 | 15 mm |
| 5" | 125 | 5" | 125 | 15 mm |
| 6" | 150 | 6" | 150 | 20 mm |
| 7" | 180 | 6 ¹ / ₂ " | 165 | 15 mm |
| 7" | 180 | 6 ¹ / ₄ " | 171 | 20 mm |
| 7" | 180 | 7" | 178 | 25 mm |
| 9" | 230 | 9" | 230 | 35 mm |

SPARK EMITTANCE

When working in a cramped space like a tent on a pipeline construction site or on board a pipe laying ship, sparks are a serious safety issue, particularly when several people are working together. Brushes produce more than 95% fewer sparks, than abrasive discs.



Wire brush, almost spark free

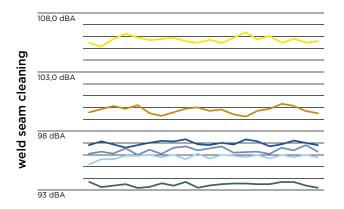


Grinding disc, high spark emmitance

MATERIAL SENSITIVITY

Wire brushes are nonstock removing tools. They remove all kinds of debris like slag, silicates or oxide layers, leaving the original surface completely intact. This saves both time and cost!

NOISE COMPARISON



Cup brush 60 mm
Disc Center 115x12 knotted steel wire
Disc Center 115x6 knotted steel wire
Grinding Disc 125x6
Flap disc 125
Grinder without tool

According to studies Wire brushes are in comparison to grinding tools approx 6-8 dB/a less noisy - this is a significant reduction and an important improvement in work safety. A 3 dB/a increase (or decrease) means that the intensity of a sound is doubled (or divided in half).

ACOUSTIC SOURCE NOISE LEVEL IN DB(A) Pain threshold Entertainment Car Truck Compressor Grinder Cupbrush Flap Disc Wire brush **Grinding Disc** Pneumatic hammer Jet Bolting tool dB/a 60 100 140 70 90 110 120

WORK SAFETY

Osborn's priority is to make the usage of our products safe. Expecially in a world where more and more products come from dubious sources, it is important to focus on quality and safety. Osborn has succeeded in certifying more than 650 Osborn brushes from European Production by TÜV-SÜD and we continue to work on this.

OSBORN: OFFICIALLY GOOD!

A TÜV seal means "tested without compromise" and indicates quality at the first glance. Osborn is the only manufacturer in its sector to obtain this certification. This sets Osborn clearly apart from its competitors. A resounding commitment for the consumer.







METER PERFORMANCE

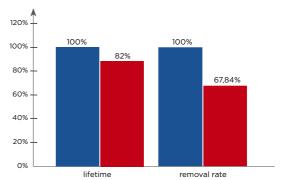
Our products are frequently tested in our own laboratories. Several state of the art robot cells perform tests on service-life and meters brushed.

PERFORMANCE TESTING AND COMPARISON

Quality standard, design, material and meter performance are not the only tests our high-quality brushes continuously undergo on the test bench.

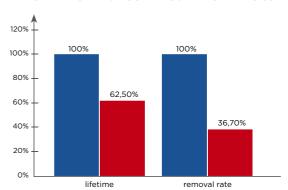
We repeatedly test to ensure that our tools also meet all performance and design criteria.

PERFORMANCE TEST DISC CENTER WHEEL BRUSH Ø 115 X 12 MM



Test results for Osborn knotted wire wheel brush.

PERFORMANCE TEST CUP BRUSH KNOTTED Ø 65MM



Test results for Osborn knotted wire cup brushes.

Lifetime
Removal Rate
Osborn brushes

other manufacturer

Wheel brushes for weld seam cleaning knotted Osborn wire



| | | | | | | Silicate | Silicate | Silicate | Silicate | Silicate |
|---------------------------------|-------------|------------|--------------|--|---------------------------|------------------------|-----------------------|-----------------------|----------------------|----------------------|
| For Hot-Pass, Fill & Cup layers | | | | | | Blue colour | Slag | Slag | Blue colour | Blue colour |
| Dia mm | Dia Inch | Face mm | Face Inch | Grinder size | wall thickness up to > | steel 0,35 / 0,014" | steel 0,50 / 0,20" | steel 0,80 / 0,35" | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
| 100 | 4" | 6 | 1/4" | 100 mm / 4" | 10 mm | available | available | available | available | on request |
| 100 | 4" | 13 | 1/2" | 100 mm / 4" | 10 mm | available | available | available | available | on request |
| 115 | 4 1/2" | 6 | 1/4" | 115 mm / 4 ½" | 15 mm | available | available | available | available | on request |
| 115 | 4 1/2" | 13 | 1/2" | 115 mm / 4 ¹ / ₂ " | 15 mm | available | available | available | available | on request |
| 125 | 5" | 6 | 1/4" | 125 mm / 5" | 15 mm | available | available | available | available | on request |
| 125 | 5" | 13 | 1/2" | 125 mm / 5" | 15 mm | available | available | available | available | on request |
| 150 | 6" | 6 | 1/4" | 150 mm / 6" | 20 mm | available | available | available | available | on request |
| 150 | 6" | 13 | 1/2" | 150 mm / 6" | 20 mm | available | available | available | available | on request |
| 165 | 6 1/2" | 6 | 1/4" | 180 mm / 7" | 15 mm | available | available | available | available | on request |
| 171 | 6 3/4" | 6 | 1/4" | 180 mm / 7" | 15 mm | available | available | available | available | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | available | available | available | available | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | available | available | available | available | on request |
| 178 | 7" | 13 | 1/2" | 180 mm / 7" | 25 mm | available | available | available | available | on request |
| 230 | 9" | 6 | 1/4" | 230 mm / 9" | 35 mm | available | available | available | on request | on request |
| 230 | 9" | 13 | 1/2" | 230 mm / 9" | 35 mm | available | available | available | on request | on request |

Safety wheel brushes for weld seam cleaning high performance knotted Osborn wire, plastic bonded, regular shape

+20% more service life



| 100 | TINE S | | | Silicate | Silicate | Silicate | | |
|--------|----------|---------|-----------|-------------|------------------------|---------------------|----------------------|----------------------|
| | | For | Root & Ho | Blue colour | Blue colour | Blue colour | | |
| Dia mm | Dia Inch | Face mm | Face Inch | Grinder | wall thickness up to > | steel 0,38 / 0,014" | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
| 150 | 6" | 6 | 1/4" | 150 mm / 6" | 20 mm | available | on request | on request |
| 178 | 7" | 4 | 1/6" | 180 mm / 7" | 25 mm | available | on request | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | available | on request | on request |

Safety wheel brushes: Plastic bonded for Hot-Pass cleaning knotted steel wire pointed model

+20% more service life



| - 27 | ALCO DE | 100 | | | | Silicate | Silicate | Silicate | Silicate |
|-----------|-------------|------------|--------------|-----------------|------------------------|------------------------|-----------------------|----------------------|----------------------|
| | | F | or Root & F | Hot-Pass layers | | Slag | Slag | | |
| Dia mm | Dia Inch | Face mm | Face Inch | Grinder size | wall thickness up to > | steel 0,35 / 0,014" | steel 0,50 / 0,20" | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
| 100 | 4" | 6 | 1/4" | 100 mm / 4" | 10 mm | on request | available | on request | on request |
| 125 | 5" | 6 | 1/4" | 125 mm / 5" | 15 mm | on request | available | on request | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | on request | available | on request | on request |

Safety wheel brushes: Plastic bonded, regular for fill layer cleaning crimped steelwire



| For Root & Hot-Pass layers | | | | | | Slag | Slag | | |
|----------------------------|-------------|------------|--------------|--------------|------------------------|------------------------|-----------------------|----------------------|----------------------|
| Dia mm | Dia Inch | Face mm | Face Inch | Grinder size | wall thickness up to > | steel 0,35 / 0,014" | steel 0,50 / 0,20" | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
| 100 | 4" | 6 | 1/4" | 100 mm / 4" | 10 mm | on request | available | on request | on request |
| 125 | 5" | 6 | 1/4" | 125 mm / 5" | 15 mm | on request | available | on request | on request |
| 178 | 7" | 6 | 1/4" | 180 mm / 7" | 25 mm | on request | available | on request | on request |

Silicate

Abrasive flap discs



Grit size determined by application



Trim and material

Silicate



Silicate

| Dia mm | Dia Inch | model | Grinder | application | grit 40 | grit 60 | grit 80 | grit 120 |
|--------|----------|-------------|--|--------------|-----------|-----------|-----------|------------|
| 115 | 4 1/2" | 12° beveled | 115 mm / 4 ¹ / ₂ " | edge, corner | available | available | available | on request |
| 115 | 4 1/4" | O° flat | 115 mm / 4 ½" | surface | available | available | available | on request |
| 125 | 5" | 12° beveled | 125 mm / 5" | edge, corner | available | available | available | on request |
| 125 | 5" | 0° flat | 125 mm / 5" | surface | available | available | available | on request |
| 178 | 7" | 12° beveled | 180 mm / 7" | edge, corner | available | available | available | on request |
| 178 | 7" | 0° flat | 180 mm / 7" | surface | available | available | available | on request |

Cutting Disc



| Dia mm | Dia Inch | Model | Grinder size | Application | Circonia | Aluminium Oxide |
|--------|----------|-----------|---------------|-------------|-----------|-----------------|
| 115 | 4 1/2" | depressed | 115 mm / 4 ½" | Cutting | available | available |
| 125 | 5" | depressed | 125 mm / 5" | Cutting | available | available |
| 178 | 7" | depressed | 180 mm / 7" | Cutting | available | available |
| 230 | 9" | depressed | 230 mm / 9" | Grinding | available | available |

Grinding Disc

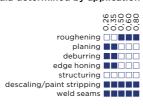


| Dia mm | Dia Inch | Model | Grinder size | Application | Circonia | Aluminium Oxide |
|--------|----------|-----------|---------------|-------------|-----------|-----------------|
| 115 | 4 1/2" | depressed | 125 mm / 5" | Grinding | available | available |
| 125 | 5" | depressed | 180 mm / 7" | Grinding | available | available |
| 178 | 7" | depressed | 115 mm / 4 ½" | Grinding | available | available |
| 230 | 9" | depressed | 125 mm / 5" | Grinding | available | available |

Cup brushes knotted wire



Wire dia determined by application



Trim and material



| Dia mm | Dia Inch | Grinder size | carbon steel wire, knotted | 1.4301 / AISI 304 | 1.4401 / AISI 316 |
|--------|----------|-------------------|-------------------------------|-------------------|-------------------|
| 65 | 2 1/2" | 100-125 mm / 4-5" | available | available | on request |
| 75 | 3" | 100-125 mm / 4-5" | available | available | on request |
| 80 | 3" | 150 mm / 6" | available | available | on request |
| 100 | 4" | 180 mm / 7" | available | available | on request |
| 120 | 5" | 230 mm / 9" | available | available | on request |



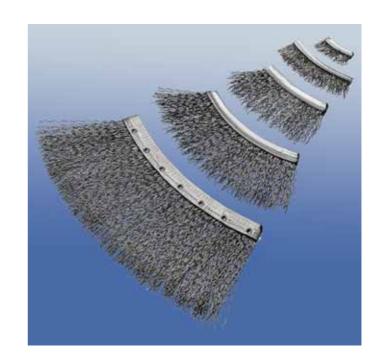


Pigging

To assist in the cleaning and inspection of pipelines Osborn has a wide variety of capabilities to equip cleaning and inspection pigs with the right materials. Whether you need to clean off rust, wax, oxides, organic residue or sand, we have the right solution at hand. Arc brushes, straight strip brushes, coils or open pitch helical brushes etc. are available in different configurations and sizes.

BRUSHES FOR CLEANING PIGS

Crimped wire is generally used in the cleaning of the pipe due to the aggressive nature of the crimp. Also crimped brushes allow good flow for all liquids. This combination makes it the perfect product to clean your Pipeline. No matter what your specific requirements are, we are happy to support you. Please contact Osborn for further inquiries.



Did you know?

PPSA MEMBER

The Pigging Products and Services Association (PPSA) is an international trade organization servicing the pipeline industry, founded in 1990. It has over 100 members from all over the world representing the pigging industry. It has set its goal "to promote the knowledge of pigging and its related products and services by providing a channel of communication between the members themselves and with users and other interested parties". Osborn is an associate member of the organization and frequently takes part in events and exhibitions.

www.ppsa-online.com



Crimped wire brushes

BRUSHES FOR MFL INSPECTION TOOLS

Osborn is also used in the MFL inspection market of the pipeline sector. Osborn currently offers various sizes of pencil brushes in configurations to meet your needs. With Osborn MFL inspection brushes there are choices that fit your budget. Osborn does not only offer the highly detailed pencil brush, but offers a lower cost straight strip wire configuration as well.

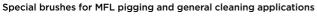
Straight crimped wire strip brushes can be run in very long lengths and in trim heights up to 7". This allows for much more flexibility.

Pencil brushes can be made to fit into numerous configurations and have a consistency of density that you would find hard to believe.











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High-performance machine brushes



Top-quality machine and special brushes for industrial applications

ATB disc brushes with abrasive filaments



Up to 4 times higher trim density than traditional disc brushes

Novofil Hightech brush



Abrasive nylon brushes with premium abrasives such as diamond, zircon, aluminium oxide, etc.

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Polishing tools and compounds for micropolishing

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Brushes and abrasives, tools and compounds for high-gloss polishing (for power tools and manual finishing)

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Self-centring honing tools for smooth grinding

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Stamped brushes for cleaning, deburring, transporting, sorting, washing and guiding

Product catalogue



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Brushes for the mechanical finishing of PCBs



Brushes for deburring, cleaning/ deoxidising, removal of resin, finishing and cleaning of sheet steel

Solutions for rolling mills and conveyor systems



Brushes, equipment and systems and Non-woven rollers for degreasing, washing, cleaning, activating or descaling metal strip. Transport roller systems for roller hearth furnaces, high-temperature areas and for noise reduction.

Osborn Sells Solutions

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Global Headquarters

Osborn International GmbH

Ringstrasse 10 35099 Burgwald

GermanyTel.: +49 64515880
Fax: +49 6451588206

Osborn International Ltda.

Rua Lemos Torres. 150 - Jardim Gagliardi 09890-070 São Bernardo do Campo

Tel.: +55 1143916559 Fax: +55 1143916550 osborn@osborn.com.br

Osborn Lippert (India) Pvt. Ltd. Plot No. E-66, MIDC Waluj Aurangabad - 431 136

India Tel.: +91 2402556538 Fax: +91 2402552530 sales@osborn-lippert.co.in

Osborn International SRL

Bd. Bucovina, Nr. 151 725300 Gura Humorului, jud. Suceava Romania

Tel.: +40 230234212 Fax: +40 230531785 sales@osborn.ro

Osborn International AB

Huskvarnavägen 105 56123 Huskvarna Sweden

Tel.: +46 36389200 Fax: +46 36133190

North American Headquarters

1100 Resource Drive, Suite 1 Brooklyn Heights, OH 44131-1854 USA

Tel.: +1 2163611900 Fax: +1 2163611913 brushes@osborn.com

Osborn International

Rm. 505, Tower H Huiyuan Int. Apartment No. 8 Beichen East Road, **Chaoyang District** Beijing, 100101

China
Tel.: +86 1084988191
Fax: +86 1064991863 cnsales@osborn.com

Osborn

Gavilanes S/N Parque Industrial San Ramon Nogales, Sonora, Mexico 84094 Mexico

Tel: +1 216-361-1900 x300 Fax: +1 216-361-0336

Osborn Singapore Pte Ltd

206 Tuas South Avenue 2 West Point Bizhub Singapore 637208 Singapore

Tel.: +65 6863 0318 Fax: +65 6863 4318 sales@osborn.com.sq

Osborn Unipol (UK) Limited

Avenue West Newhouse Farm Industrial Estate Chepstow NP16 6UD United Kingdom

Tel.: +44 1291643200 Fax: +44 1291643298 sales@osborn-unipol.co.uk

Osborn Unipol S.A.

Parc d'Activités Les Doucettes 23 Avenue des Morillons 95140 Garges Lès Gonesse

France
Tel.: +33 134450600
Fax: +33 139936711 contact@lippert-unipol.fr

Osborn Unipol Lda

Rua de Pardelhas 4805-062 Brito-Guimarães

Portugal

Tel.: +351 253479550 Fax: +351 253576629 osborn-unipol@osborn-unipol.pt

Osborn - Unipol, S.L.

C/ Ronda Norte, 320 (Polígono Industrial) - Apartado 169 46470 Catarroja (Valencia)

Spain

Tel.: +34 961325876 Fax: +34 961324602 ventas@osborn-unipol.es

