High-Performance Rollers for Metals Processing
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 customers 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.
Your Partner for High-Performance ROLLERS in Aluminum, Carbon Steel, Stainless and Non-Ferrous Coil and Sheet Metals Processing

HOT & COLD ROLLING

THERMOPROCESS FURNACES

CARBON STEEL

STAINLESS STEEL

ALUMINUM

NON-FERROUS

STRIP PROCESS LINES

AUTOMOTIVE PRESS & BLANKING LINES
Almost 50 years ago, Osborn developed a revolutionary technology using brushes in the continuous rolling process in order to optimally regulate the oxide film on working and back-up rollers in hot rolling mills. As a result, hundreds of hot mills worldwide have been equipped with Osborn technology.

To date, specially designed wire qualities, abrasive multi-filaments, individually camber ground surfaces and extensive experience in optimizing the use of brushes in numerous individual applications have secured a major technological advantage for us in this field. The benefits from this we can pass on to our customers worldwide.

Osborn’s Helimaster brush rolls are perfect for cleaning work and back-up rolls in wet or dry operated rolling and skin-pass mills. They have been fitted to technological developments worldwide for decades, both in online lines integrated in strip lines as well as stand-alone off-line rolling stands.

The rollers can work sporadically or continuously when designed as a wire or an abrasive brush. Each brush is neutrally ground at the radius and gets axially. This means that it gets either a cylindrical camber ground or, for offsetting the computed roll deflection, a positive and/or negative camber ground.

In the meantime, with Lipprite® abrasive rollers, an alternative technology, has also been developed and manufactured in-house for skin-pass roller cleaning. The brush roller itself is only part of the solution. This technologically demanding application can only be optimally implemented with a precise matching of the brush tool to operational and process parameters. The reproducibility of the specified corrosiveness and brush effect as well as constant tool performance play a crucial role from the first point of use to the exchanging of the roller.

### Brush Roll Applications

Almost 50 years ago, Osborn developed a revolutionary technology using brushes in the continuous rolling process in order to optimally regulate the oxide film on working and back-up rollers in hot rolling mills. As a result, hundreds of hot mills worldwide have been equipped with Osborn technology.

To date, specially designed wire qualities, abrasive multi-filaments, individually camber ground surfaces and extensive experience in optimizing the use of brushes in numerous individual applications have secured a major technological advantage for us in this field. The benefits from this we can pass on to our customers worldwide.

Osborn’s Helimaster brush rolls are perfect for cleaning work and back-up rolls in wet or dry operated rolling and skin-pass mills. They have been fitted to technological developments worldwide for decades, both in online lines integrated in strip lines as well as stand-alone off-line rolling stands.

The rollers can work sporadically or continuously when designed as a wire or an abrasive brush. Each brush is neutrally ground at the radius and gets axially. This means that it gets either a cylindrical camber ground or, for offsetting the computed roll deflection, a positive and/or negative camber ground.

In the meantime, with Lipprite® abrasive rollers, an alternative technology, has also been developed and manufactured in-house for skin-pass roller cleaning. The brush roller itself is only part of the solution. This technologically demanding application can only be optimally implemented with a precise matching of the brush tool to operational and process parameters. The reproducibility of the specified corrosiveness and brush effect as well as constant tool performance play a crucial role from the first point of use to the exchanging of the roller.

### Hot & Cold Rolling

<table>
<thead>
<tr>
<th>Application category</th>
<th>Metallurgic field</th>
<th>Process line</th>
<th>Description of application</th>
<th>OSBORN product range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll cleaning and polishing</td>
<td>Carbon steel</td>
<td>Skin Pass Mill, Continuous Hot-dip Galvanizing Line</td>
<td>Removal of oxides, dirt and rolling residuals</td>
<td>Helimaster® Brush rolls, abrasive or wire-filled; Non-abrasive Brush rolls; Lipprite® abrasive Non-woven rolls</td>
</tr>
<tr>
<td></td>
<td>Stainless steel</td>
<td>Skin Pass Mill, Temper Mill</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aluminum</td>
<td>Cold Roll Mill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll coating control</td>
<td>Aluminum</td>
<td>Hot Reversing Mill, Hot Reversing Finishing Mill, Hot Finishing Mill</td>
<td>Control of the oxide layer and removal of oxides</td>
<td>Helimaster® Brush rolls abrasive or wire-filled</td>
</tr>
<tr>
<td></td>
<td>Non ferrous</td>
<td>Hot Continuous Mill</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Osborn has a value-add-cooperation with company NCCM, River Falls/WI, United States for manufacturing and service of high-tech Non-woven Mill Rolls. Since 2009 NCCM has the exclusive rights to the original premier yellow non-woven material from 3M Company anywhere in the world. NCCM own a unique technology in the manufacturing of roll coverings using the original 3M high-tech material.

Osborn is engineering individually customized High performance Non-woven Rolls for Quality and Process improvement in Coil and Sheet Metal processing in Strip Process Lines, Rolling Mills and automotive press- and blanking systems, using the leading NCCM technology in combination with our comprehensive application know-how. We are assembling, finishing and servicing the original premier yellow rolls in our wide-face Roller manufacturing centers around the world.

NCCM® Premier Yellow Neutral Mill Rolls are the finest general-purpose, Non-woven roll covering for primary metal and original equipment manufacturer (OEM) stamping operations.

NCCM® Premier Yellow Neutral Mill Rolls are porous to absorb debris that can mar the metal strip surface. Once absorbed, the roll heals over so fewer repairs that reduce productivity are required. If a problem does occur, the rolls can be quickly and easily repaired instead of replaced.

Porosity also makes the NCCM roll compressible which maintains consistently tight contact across the metal strip to wrink uniformly. Chemical tank to tank carry-out and the need for auxiliary drying is reduced. The rolls have up to 24 times greater coefficient of friction compared to rubber or urethane rolls to improve material control by reducing metal coil slippage and hydroplaning. One NCCM® Premier Yellow Neutral Mill Roll can last as long as up to 100 rubber rolls making it an exceptional value for the money spent, especially when costly line downtime is taken into account.

NCCM® Mill Roll premium roll covering products optimize countless metal sheet processing applications in primary metals and OEM (automotive original equipment manufacturer) stamping plants. They also show exceptional value in other industries such as lithography.

NCCM® Mill Roll technology is designed to replace traditional roll coverings such as rubber, urethane, Non-wovens and various fabrics. NCCM® Mill Roll technology has features and properties that no other Non-woven rolls offer.

Compared to Felt Wipes Rubber or Cork, NCCM® Mill Wipes offer:

- Longer life
- Better cleaning, “scrubbing”, and wiping action
- Less waste
- Easier operation
- Best value

For the cleaning of deflector, shape control or thickness measurement rolls, special wear-resistant non-abrasive plastic filaments are used. They ensure an equally thorough removal of solids and liquid materials without damaging the roll surface or altering the roughness. At the same time, the filament type and bristle diameter are dependent on the surface hardness and the degree of pollution of the roll that requires cleaning.

The individually adapted camber ground of the brush roller body is one of the most important prerequisites for guaranteeing uniform brushing across the entire width of the roll. Depending on the construction of the working or back-up rollers to be brushed and the calculation of the optimum crown, convex or concave contours are ground. Osborn, of course, also grinds brush rollers with a CVC contour on CVC technology mills for roller gap adjustment.

NCCM® brand is a trademark of NCCM Company.
Temper Mill

Line-Diagrams for many different applications can be found online at: www.osborn.com/metals

Non-woven Mill Roll
Brush Roll
Bridle S-Roll
Cold Reversing Mill

Line-Diagrams for many different applications can be found online at:
www.osborn.com/metals
The tempering of hot mill plates made of precipitation hardening aluminum alloys through the process of solution annealing, serves the purpose of attaining higher strength and strain values along with a good level of corrosion resistance. Today, this is required for structural parts in aircraft in accordance with the strict requirements of standards AMS 2750D, AMS 2750C and AMS-H-6088.

The careful transportation of these aluminum plates in ‘hard metal and hard material technology’ roll hearth furnaces takes place as a batch or continuous process at temperatures of up to 600°C on brush transportation rolls. In close cooperation with leading equipment manufacturers, numerous furnaces around the world have been equipped in recent years with Osborn’s sophisticated technology. In the process, plates with thicknesses of up to 400mm, lengths of 20 metres and weights of over 10 tonnes do not present a problem for us. Tolerances have been continually reduced and product features optimised, so that now more than ever, the brush roller is an integral and technologically superior component in the overall design of the line.

With brush furnace transportation rolls, Osborn customers can today place their trust in several decades of experience and well known global references. In the complex production of the rolls, some with a total length of over 6000mm and 4000mm of brush length, the highest level of precision and reliability are required in all manufacturing processes.

After the rolls have been manufactured, the later course of the sheet is accurately simulated in advance in our factory. For roll assemblies in new furnace lines, this allows Osborn to guarantee an optimum course of the sheet within tight tolerances even when starting up the run.
In order to guarantee the lowest possible sheet tracking with the ‘re-brushing’ of entire furnace zones the transpor-tation of the sheets is simulated on an in-house test rig just like new lines.

This advanced technology provides a convincing argument for why brushing with heat resistant wires is increasingly establishing itself as a roller cover for furnace transportation rolls.

Aside from the production of new rolls, the recovering and replacement of worn brushes in older lines is also one of our core competences.

**PROPERTIES AND ADVANTAGES**

- Temperature resistance of up to approx. 1250°C
- Shaft construction with internal cooling
- Extremely dense and accurate neutrally ground surface of the rolls
- Significantly better heat transfer characteristics of the tips of the wires in comparison to full metal surfaces
- No scale pick up (formation of spots) on account of the absorption properties of the exposed brush surface

**CAPACITY OPTIMIZATION AT OLDER FURNACE INSTALLATIONS**

*Plate tracking in initial state*

<table>
<thead>
<tr>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
</tr>
</thead>
</table>

*Plate tracking after optimization as per Osborn recommendation*

<table>
<thead>
<tr>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
</tr>
</thead>
</table>

By precisely measuring the course of the plate as well as the state of the individual rolls within the furnace by means of self-developed test equipment, we are able to optimise plate tracking if needed, which maximizes the output of the entire system.

Roll coverings made from extremely dense stainless steel wires in special alloys and resistant to high temperatures provide specific product features and strong advantages compared to uncoated transportation shafts or furnace rollers with ceramic coatings. These can be used in different horizontal heat treatment lines for strips of steel, stainless steel or non ferrous metals.

**No Pick Up with Osborn!**

**PICK-UP WILL NOT FORM ON THE BRUSH SURFACE**

- Scale / Iron particles

**OSBORN FURNACE ROLL**

**NO PICK UP**

**CONVENTIONAL FURNACE ROLL**

**PICK UP PROBLEMS**

**Reduced maintenance**
- Particularly careful transportation of the plates and reduction of damage to the surface
- Very low wear to the rolls with significantly longer lifespan than ceramic coatings or other roll coatings

By precisely measuring the course of the plate as well as the state of the individual rolls within the furnace by means of self-developed test equipment, we are able to optimise plate tracking if needed, which maximizes the output of the entire system.

Roll coverings made from extremely dense stainless steel wires in special alloys and resistant to high temperatures provide specific product features and strong advantages compared to uncoated transportation shafts or furnace rollers with ceramic coatings. These can be used in different horizontal heat treatment lines for strips of steel, stainless steel or non ferrous metals.
Thermoprocess Furnaces

Line-Diagrams for many different applications can be found online at:

www.osborn.com/metal
The demands relating to the quality and the technical product characteristics of flat rolled steel in the form of cold rolled steel, tin plated steel, electrical steel, galvanized strips or other refined surface materials are steadily rising. Along with increasing processing speeds, optimising the tempering, refinement or coating process of the upstream strip cleaning section also increases.

With the development and introduction of the HDL® brush roller, Osborn has found an answer to these demands, in comparison to conventional brush rollers. HDL® sets new standards in the degreasing and cleaning of strip surfaces. Through the consistent development of quality, by looking at fill material, brush construction and fill density, we achieve significant improvements in efficiency and performance.
improvements in terms of the brush lifetime / cleaning performance. This results in reduced operating and maintenance costs for our customers.

For descaling strip surfaces after hot and cold mill processes, our brush rollers have been setting standards for years. OSBORN’s developments and innovations in both brush constructions and filaments have in set the international standards in annealing and pickling lines or bright annealing lines for stainless steel strip. With the development of acid resistant fill materials, it has been possible to achieve tremendous quality and improvements relating to service life on numerous strip lines. This results in substantial reduction of total cost for our customer. The parallel optimisation of the brush/ shaft design and operational parameters through targeted assistance on site is another important Osborn competence based on our long-standing worldwide experience. Give us a challenge!

LIPPRITE® – THE ABRASIVE COMPLETION FOR A PERFECT SURFACE

When it comes to the optical finishing of strip surfaces in the form of polishing, satinising, finishing or decorative grinding and brushing, you’re in good hands with Osborn. Decades of experience in the machining of steel, stainless steel, aluminium and other ferrous or non-ferrous surfaces have given us a technological advantage, from which our customers benefit worldwide today.

Our Lipprite® product series represents a completion to brush rollers with wire or abrasive bristle coating. Different combinations of adhesive and abrasive together with nylon web generate diverse products to meet different demands. An absolutely uniform fine final grind and a corresponding homogeneous surface finish can be achieved with the special web construction. With the correct contact pressure, the flexible roller web adapts to the surface like a suspension and is in a position to offset any slight unevenness of the strip (spring action, see picture below).

Various grades of synthetic fibre and abrasive grit are combined and bonded with special resin, firmly fixing the grit particles to the non-woven fibres. The result is an open, flexible structure. The material is self-dressing and suitable for wet and dry processes. New abrasive particles are continually exposed to the surface for a consistent and uniform finish.

Based on many years of experience or by individual tests on our test lines, we are able to specify the right product in a targeted way for almost any surface roughness required. Contact our application engineers.

OVERVIEW OF THE ROLLER COVERINGS AND MATERIAL SPECIFICATIONS FOR LIPPRITE® ABRASIVE ROLLERS

For orientation, the following approximate values for the achievable surface roughness (Ra) are:
- A4 (medium) = 3.1 - 3.9 µm
- A6 (fine) = 2.9 - 3.6 µm
- A7 (very fine) = 1.1 - 1.8 µm

Roughness values vary depending on diameter, pressure, cutting speed, feeding speed, density, etc.

Treatment with synthetic resin stiffens the LIPPRITE® roller improving performance and extending its suitability for a range of applications.

RECOMMENDATIONS CONCERNING THE USE OF ROLLERS:
- Use in wet or dry operations
- Optimum cutting speed 15-25 m/s
- Line (strip) speed or feed speed up to 30 m/min. (max.)
- Processing in the opposite direction to the running direction of the material feed
- Optimum depth of immersion 2-6 mm, depending on the roller diameter and hardness
- Oscillation improves the uniformity of the machining profile

TECHNICAL DATA AND PRODUCT CHARACTERISTICS
- Standard roller width up to 2000 mm
- Standard roller diameter up to 450 mm
- Versions available with or without impregnation
- Rollers are dynamically balanced in accordance with DIN EN ISO 1940
- Oversized rollers can be made per customer request

Examples of achieved finishing with standard Lipprite®: GALVANIZED STEEL

BEFORE
- Fine finish: Ra: 1.270 µm, Rs: 6.42 µm
- Medium finish: Ra: 1.370 µm, Rs: 6.96 µm
- Coarse finish: Ra: 1.390 µm, Rs: 7.37 µm

AFTER
Non-woven Applications

Non-woven rolls can be used in all strip lines or rolling mills for steel, stainless steel, aluminium and non-ferrous metals. They include:

- Hot-dip galvanizing lines
- Continuous annealing lines
- Annealing and pickling lines
- Cold rolling mills
- Skin-pass mills
- Colour and/or organic coating systems
- Electrolytic galvanizing lines
- Cleaning or degreasing lines

and a whole range of other types of line. They also significantly contribute to improving product and process quality.

MATERIAL COMPRESSIBILITY OF NON-WOVEN

<table>
<thead>
<tr>
<th>Osborn Mill Rolls</th>
<th>Rubber Rollers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made with NCCM Materials</td>
<td></td>
</tr>
<tr>
<td>Advantages</td>
<td></td>
</tr>
<tr>
<td>• Long Life – Compressible resist cutting for more uptime</td>
<td></td>
</tr>
<tr>
<td>• Line Speed – Porous, open surface for consistent strip contact can allow higher line speeds</td>
<td></td>
</tr>
<tr>
<td>• Repairable for better return on investment</td>
<td></td>
</tr>
<tr>
<td>• Self-healing for superior fluid control</td>
<td></td>
</tr>
<tr>
<td>• High coefficient of friction on many surfaces, even wet, for better strip control</td>
<td></td>
</tr>
<tr>
<td>• Cuts propagate causing excessive fluid pass-through and reduced life</td>
<td></td>
</tr>
<tr>
<td>• Low coefficient of friction on wet/oiled surface conditions</td>
<td></td>
</tr>
</tbody>
</table>

CO-EFFICIENT OF FRICTION

<table>
<thead>
<tr>
<th>Material Condition</th>
<th>Osborn Mill Rolls</th>
<th>Rubber Rolls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry steel</td>
<td>0.52</td>
<td>0.36</td>
</tr>
<tr>
<td>Oiled steel</td>
<td>0.36</td>
<td>0.01</td>
</tr>
<tr>
<td>Dry aluminium</td>
<td>0.52</td>
<td>0.36</td>
</tr>
<tr>
<td>Oiled aluminium</td>
<td>0.23</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Benefits

- Compressible
- Self-healing
- Porous
- Uniformity
- High Coefficient
- Friction
- Solidity
- Repairable

Did you know?

LOAD RUNNERS

Heavy-Duty Idler Rollers and Rails for High-Capacity Precision Load Handling

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 Osborn Load Runners® are the ultimate heavy-duty load rail and idler roller solution in the industry, providing precision performance across numerous applications. Load Runners are specially designed to tolerate both radial and thrust loads and are available in all standard configurations - either metric or imperial, stud- or yoke-style – ranging in rolling sizes up to 12 inches. Load Runners® help reduce your design time and lower overall material handling system costs.

Manufactured in the USA, Load Runners® feature heat-treated specialty steel, precision bearings, a maintenance-free lubrication and seal system. Osborn Load Runners® are designed and manufactured using exacting engineering principles with an emphasis on achieving:

Benefits

- Better balance
- Increased bearing life
- Less tread/outer shell wear
- Reduced power consumption
- Smoother operation
- Quieter operation

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

Find more information and CAD-drawings/models for easy incorporation into your designs on: www.loadrunners.de
Or have a look at our new catalogue at:
Continuous pickling

REDUCE CHEMICAL SOLUTION ON STRIP, AVOID CHEMICAL CARRY OUT, LONGER LIFE TIME

LESS MOISTURE ON STRIP, EXTENDED SERVICE LIFE, REDUCED DRYING ACTION = LOWER ENERGY CONSUMPTION

UNIFORM OIL FILM, REDUCE CONSUMPTION OF OIL

Line-Diagrams for many different applications can be found online at: www.osborn.com/metals
Cleaning

Strip Process Line

Non-woven Mill Roll
Brush Roll

Line-Diagrams for many different applications can be found online at:
www.osborn.com/metals
Annealing

HIGH CLEANING PERFORMANCE, EXTENDED SERVICE LIFE, VERY PRECISE BRUSHING

LESS MOISTURE ON STRIP, EXTENDED SERVICE LIFE, REDUCED DRYING ACTION, LOWER ENERGY CONSUMPTION

BETTER FRICTION, HIGHER TENSION, LESS SLIPPING

HIGH CLEANING PERFORMANCE, HIGH CONTACT DENSITY

Line-Diagrams for many different applications can be found online at:
www.osborn.com/metals

Non-woven Mill Roll
Brush Roll
Bridle S-Roll
Electro-galvanizing

Line-Diagrams for many different applications can be found online at:

www.osborn.com/metals

Non-woven Mill Roll
Brush Roll
Bridle S-Roll

Strip Process Line
Hot Dip galvanizing

LESS MOISTURE ON STRIP, EXTENDED SERVICE LIFE, REDUCED DRYING ACTION = LOWER ENERGY CONSUMPTION, AVOID SLIPPING ON BRIDLE ROLLS

HIGH CAPACITY WRINGER JUST AFTER SKIN PASS, LESS MOISTURE ON STRIP, REDUCED DRYING ACTION = LOWER ENERGY CONSUMPTION

BETTER FRICTION, HIGHER TENSION

LINE-DIAGRAMS FOR MANY DIFFERENT APPLICATIONS CAN BE FOUND ONLINE AT:

www.osborn.com/metals

Non-woven Mill Roll
Brush Roll
Bridle S-Roll
Tinning

**REDUCE THE QUANTITY OF OIL TO AVOID COLLAPSE DEGREASING**

**EXTENDED SERVICE LIFE OF HOLD DOWN ROLLS, HIGH GRIP, BETTER WRINGER**

**REDUCE CHEMICAL SOLUTION ON STRIP: EXTENDED SERVICE LIFE**

**LESS MOISTURE ON STRIP, EXTENDED SERVICE LIFE, REDUCED DRYING ACTION = LOWER ENERGY CONSUMPTION**

**BETTER FRICTION, HIGHER TENSION, LESS SLIPPING**

**REDUCE THE QUANTITY OF OIL TO AVOID COLLAPSE DEGREASING**

**Line-Diagrams for many different applications can be found online at:**

[www.osborn.com/metals](http://www.osborn.com/metals)

- Non-woven Mill Roll
- Brush Roll
- Bridle S-Roll

---

38 39
Organic Coating

Non-woven Mill Roll
Brush Roll
Bridle S-Roll

Line-Diagrams for many different applications can be found online at:
www.osborn.com/metals
Hot Annealing & Pickling

Better friction, higher tension, less slipping

Eliminates pick-up, extended service life

Less moisture on strip, extended service life, reduced drying action = lower energy consumption

High cleaning performance, high contact density

Non-woven Mill Roll
Brush Roll
Bridle S-Roll

Line-Diagrams for many different applications can be found online at:
www.osborn.com/metals
Cold Annealing & Pickling

**Benefits:**
- **Better Friction, Higher Tension, Less Slipping**
- **High Cleaning Performance, Extended Service Life, Very Precise Brushing**
- **Less Moisture on Strip, Reduced Drying Action, Lower Energy Consumption**

**Applications:**
- Non-woven Mill Roll
- Brush Roll
- Bridle S-Roll

Line-Diagrams for many different applications can be found online at: [www.osborn.com/metals](http://www.osborn.com/metals)
Bright Annealing

- **Reduce chemical solution on strip, extended service life.**
- **High cleaning performance, extended service life, very precise brushing.**
- **Less moisture on strip, extended service life, reduced drying action, lower energy consumption.**

Line-Diagrams for many different applications can be found online at: www.osborn.com/metals

- Non-woven Mill Roll
- Brush Roll
- Bridle S-Roll
Copper & Brass Pickling

- UNCOILER
- FLATTENER
- SHEAR
- WELDER
- DEGREASING MACHINE
- RINSING
- RINSING
- NON-WOVEN MILL ROLL
- BRUSH ROLL
- HARSH TANK 10-15%
- RINSING
- BRUSHING MACHINE
- RINSING
- RINSING
- DRYER
- COILER

Reduce chemical solution on strip, avoid chemical carry out, extended service life.

Less moisture on strip, extended service life, reduced drying action = lower energy consumption.

Line-diagrams for many different applications can be found online at:
www.osborn.com/metals
Automotive Press & Blanking Lines

Non-woven and Brush Roll Applications

Blank washing units remove dirt and deposits from the blanks and apply a protective film of oil. The Blank washers are constructed with three to four pairs of rolls (6-8 total). The first pair of rolls are Non-woven Rolls which are working as Feeder Rolls to control the blanks. The center rolls are brush rolls and provide the cleaning of the blanks. The exit rolls are Non-woven Rolls which are working as Feeder Rolls to control the blanks.

Osborn provides high performance Non-woven Wringer Rolls for precise coating application of the lubrication fluid and as Feeder Roll to pull in the blanks into the machine as well as brush rolls for optimized cleaning of blanks and sheets.

Our high-density Mill Roll material is considered the premium general-purpose roll covering for primary metal blanking lines and AOEM stamping operations.

EXPECTED MAXIMUM RESIDUAL OIL

Line speed: 120 m/min, Oil viscosity: 9 mm²/s (cStk)

<table>
<thead>
<tr>
<th>Line Pressure</th>
<th>Soft</th>
<th>Medium</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 N/mm</td>
<td>1.40 g/m²</td>
<td>1.00 g/m²</td>
<td>0.75 g/m²</td>
</tr>
<tr>
<td>15 N/mm</td>
<td>1.30 g/m²</td>
<td>1.00 g/m²</td>
<td>0.75 g/m²</td>
</tr>
<tr>
<td>19 N/mm</td>
<td>1.20 g/m²</td>
<td>0.95 g/m²</td>
<td>0.70 g/m²</td>
</tr>
<tr>
<td>23 N/mm</td>
<td>1.10 g/m²</td>
<td>0.90 g/m²</td>
<td>0.70 g/m²</td>
</tr>
<tr>
<td>27 N/mm</td>
<td>0.85 g/m²</td>
<td>0.65 g/m²</td>
<td>0.60 g/m²</td>
</tr>
<tr>
<td>32 N/mm</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
</tbody>
</table>

Cost Savings Advantages

Provide Highly Engineered Film Thickness
- Maintain film thickness longer over life of the roll
- Reduce hydrostatic stamping defects
- Reduce part rework
- Reduce paint rework

Drastically Reduce Oil Usage
- Reduce welding smoke
- Save oil costs
- Better part transfer
- Reduce excess oil in production line

Longer Life
- Best total value roll system
- More damage resistant
- More consistent performance

Global Network and Process Solutions Experts

Image courtesy MarkOne
Blank Washer

- Higher Grip
- Uniform Oil Film, Maximum Thickness of Oil

Line-Diagrams for many different applications can be found online at:
www.osborn.com/metals

Non-woven Mill Roll
Brush Roll
OTHER PRODUCTS FOR DOWNLOADING

IT’S THIS EASY:

For ease and simplicity, you can download our Osborn special catalogue from the Osborn website. If you have a smartphone or tablet PC, you can also scan the QR code using the app to reach the overview page.

www.osborn.com/de-de/service/literatur.html

Our other product ranges

<table>
<thead>
<tr>
<th>Other Products</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-performance machine brushes</td>
<td>Top-quality machines and special brushes for industrial applications</td>
</tr>
<tr>
<td>Novofil high-tech bristles</td>
<td>Abrasive nylon brushes with premium abrasives such as diamond, zinc, aluminium oxide, etc.</td>
</tr>
<tr>
<td>Solutions for woodworking</td>
<td>Brush and abrasive rollers, tools and compounds for colouring (for hand tools and manual finishing)</td>
</tr>
<tr>
<td>ATB disc brushes with abrasive bristles</td>
<td>Up to 4 times higher trim thickness than conventionally manufactured disc brushes</td>
</tr>
<tr>
<td>Micro-polishing brushes</td>
<td>Polishing tools and compounds for micro-polishing</td>
</tr>
<tr>
<td>Novoflex-B</td>
<td>Self-centring honing tools for a gentle grinding process</td>
</tr>
<tr>
<td>Polishing products</td>
<td>Premium polishing tools, compounds and emulsions</td>
</tr>
<tr>
<td>Products for agriculture</td>
<td>Professional sweeping solutions for agriculture, plus livestock brushes</td>
</tr>
<tr>
<td>Turfly®</td>
<td>Special solutions for rail traffic: Snow- and sand-protection systems for turnouts</td>
</tr>
<tr>
<td>Load Runners®</td>
<td>Load-bearing rollers and heavy-load roller guides</td>
</tr>
<tr>
<td>Multizack</td>
<td>Stamped brushes for cleaning, deburring, transporting, sorting, washing, and guiding</td>
</tr>
<tr>
<td>Solutions for the oil and gas industry</td>
<td>Brushes for cleaning welds and special brushes for the pipeline industry (transport brushes, contact brushes and cutback systems)</td>
</tr>
<tr>
<td>Brush rollers for mechanical finishing of printed circuit boards</td>
<td>Brush rollers for deburring, cleaning/deoxydising, resin removal, plus finishing and cleaning and of press plates</td>
</tr>
<tr>
<td>Solutions for rolling mills and conveyor systems</td>
<td>Brush rollers, complete systems and installations: Felt rollers for degreasing, washing, cleaning, activating or descaling strip surfaces. Transport roller systems for roller hearth furnaces, high-temperature areas and for noise reduction</td>
</tr>
</tbody>
</table>

Droneco Product catalogue

The Droneco catalogue as PDF-Download: Scan the QR-Code and download the recent Droneco catalogue as PDF or view online.

www.osborn.com
Osborn Sells Solutions
The Global Leader in Surface Treatment Solutions and Finishing Tools

Global Headquarters
Osborn International GmbH
Ringstrasse 10
35099 Burgwald
Germany
Tel.: +49 64515880
Fax: +49 6451588206
info@osborn.de

Osborn International Ltda.
Rua Lemos Torres,
150 - Jardim Gagliardi
09890-070 São Bernardo do Campo
Brazil
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 23023422
Fax: +40 230531785
sales@osborn.ro

Osborn International AB
Husivaravägen 105
56123 Huskvarna
Sweden
Tel.: +46 36389200
Fax: +46 36153190
info@osborn.se

Osborn Unipol SAS
Parc Mall – Bâtiment Orion
24B avenue de la Demi-Lune
CS 80006
95735 ROISSY CH. DE GAULLE CEDEX
France
Tel.: +33 134450600
Fax: +33 139936711
contact@lippert-unipol.fr

Osborn Unipol Ltda
Rua de Pardelhas
4805-062 Brito-Guimarães
Portugal
Tel.: +351 253756229
Fax: +351 253756229
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

Osborn Unipol Ltd
206 Tuas South Avenue 2
West Point Bizhub
Singapore 637208
Singapore
Tel.: +65 6863 0318
Fax: +65 6863 4318
sales@osborn.com.sg

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.sg

North American Headquarters
Osborn
2350 Salisbury Road North
Richmond, IN 47374
USA
Tel.: +1 765 965-5333
brushes@osborn.com

Osborn International
Rm. 612, Tower B, Huiyuan Int. Apartment
No. 8 Beichen East Road,
Chaoyang District
Beijing, 100101
China
Tel.: +86 10 8498 6167
Fax: +86 10 6499 3009
cnsales@osborn.com

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