

*Ultimate
protection
against wear
and tear...*



*Resistant against
abrasion, cuts, cracks,
oil and chemicals:
Hawiflex® saves you
time and money ...*

habermann materials – the ultimate protection!

The name HABERMANN stands for nearly 90 years of experience in the field of hydraulic transport of solids and is a brand well-known in many industries. With the introduction of the **original Hawiflex®** brand over 50 years ago, HABERMANN established wear-reducing polyurethane technologies for moulded parts and coatings, used in particular, where a long service life and ultimate abrasion resistance are required.

Hawiflex® convinces due to its excellent resistance against abrasion and wear, oil and chemicals and has consequently proven itself time and time again – in actual operation, such as in HABERMANN pumps and suction dredgers or in nearly all major makes of concrete mixing plants.

Competitors have often tried to emulate the brand but the company managed to further extend its technological advantage and to continuously secure its position as the market leader. Today, Hawiflex® products of Habermann materials are successfully used by many industries and in nearly every industrial application and offer a clear cost structure as well as a considerable advantage for industries, such as:

- Pump manufacture
- Mechanical engineering
- Plant construction
- Recycling
- Agricultural engineering
- Automotive industry
- Textile industry
- Plastics production
- Bulk materials industry
- Materials handling
- Concrete and mixing technology
- Timber industry
- Printing and paper industry
- Construction industry
- Shipbuilding and marine industry

And to ensure that you always have an advantage, we have at all times provided our planning and production from the same **production site in Witten**. We can thus guaranty that all our products are “Made in Germany”. Also those individually developed together with our clients.

Discover our solutions for extreme applications!

Our material Hawiflex®

We have developed a low wear polyurethane to such an extent that we can offer it as a finished moulded part with different levels of hardness.

The properties of Hawiflex® allow it to be used anywhere, where considerable abrasion is to be expected or where dynamic loading causes extreme stressing.

Below, we introduce our solutions against wear in selected industries. Even if your industry should not be listed, we will find solutions for reducing your wear and tear costs.

Actual definitive suggestions for reducing wear and tear costs can be provided as part of a personal meeting. We are happy to arrange this at any time.

Do challenge us.

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Quality, research and development. 30



Mixing tools for the concrete industry are described under “The perfect mix”.





Our solutions for extreme situations

Hawiflex® – excellent properties for a wide range of requirements

Our polyurethane-based Hawiflex® plastic extends service life many times over. Special hot-casting processes and an automated production allow us to produce a continuous properties profile.

With nearly 50 years of experience in high-performance elastomers, we can today offer a large variety of special formulations tailored to meet your requirements. This is achieved by special measures, such as the specific introduction of additives into our formulations of the initial raw materials. Our permanently further developed “intelligent materials construction kit system” offers designers and engineers solutions for small and medium-sized production runs in mechanical engineering.

Physical properties

Hawiflex® materials systems have been created for use under the most extreme conditions: High abrasion resistance with excellent tensile strength combined with maximum dynamic loading requirements. Hawiflex® offers a considerable range of levels of hardness:

Shore class	min	max
Shore A	35	95
Shore D	58	80

Temperature range

The properties of Hawiflex® are naturally not temperature-dependent. For dynamic loading, the temperature limit for our standard systems is approx. +80°C to ensure no material breaks and cracking. Brief peak loadings up to +120°C are possible and permitted. But our company also offers special formulations for permanent loads above +80°C. As the temperature decreases Hawiflex® becomes less elastic, but applications up to -40°C are easily possible without the materials becoming brittle.

Chemical properties

Hawiflex® offers an excellent resistance against oil and grease, petrol and different solvents. Hawiflex® is not changed by weather effects such as sunlight, oxygen and ozone. We even offer standard products resistant to considerable hydrolytic and microbial attacks.

Acoustic properties

The sound-absorbing properties of Hawiflex® are particularly apparent where bulk material is transported. Your staff will be delighted that noise levels are reduced by up to 50%.

Hawiflex® advantages for moulded parts or coatings:

- resistant against cuts
- resistant against wear and tear
- resistant against oil
- easy to clean
- gentle on coatings
- gentle on bulk material
- reducing noise levels by up to 50%
- energy saving
- extending service life





Universally used in mechanical engineering

We are always fascinated to find out for which mechanical engineering applications Hawiflex® is used – from ultra large to minute applications. The emphasis is always on preventing wear and thus producing considerable potential savings. But sometimes it is also a question of offering resistance against aggressive chemical substances or high temperatures. No problem for Hawiflex®, which meets all of these requirements.



1 Wheel and roller coatings

- for exceptional requirements in coal mining, steel and aluminium industry
- ability to absorb high loads with significantly longer service life compared to rubber-coated rollers

Capacities:

- up to 2.500 mm diameters
- up to 3.500 mm length
- up to 10.000 kg weight of individual pieces

2 Wheels and rollers

- special Hawiflex® systems for applications requiring high loading capacity, speed and impact resilience

3 Sealing element

- excellent pressure deformation resistance
- resistant against hydrolysis



4 Coupling collar

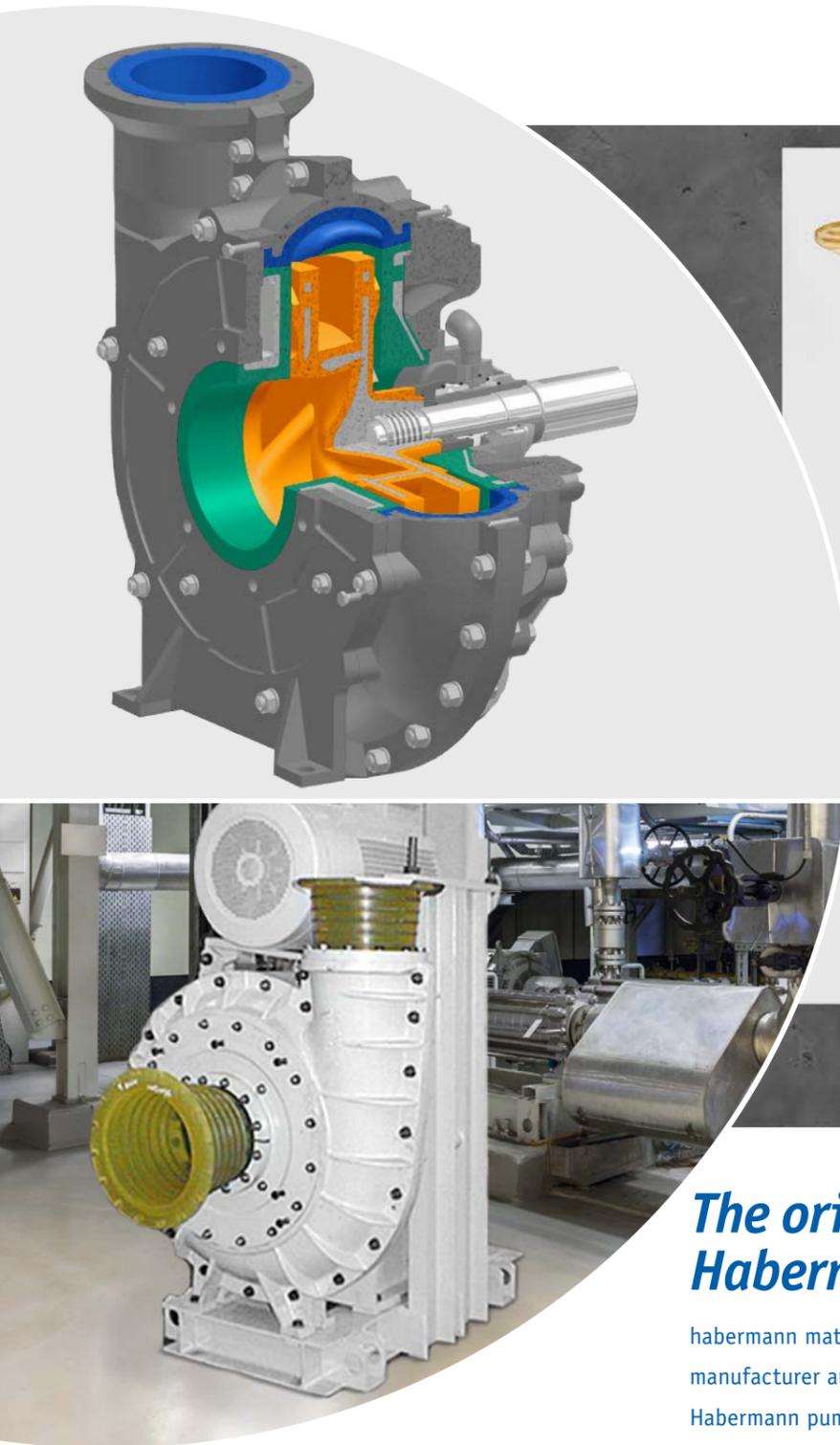
- exact reproduction of complex shapes in couplings requiring high levels of precision
- also suitable for high torque transmission Application example:
- Very smooth running dialysis machine

5 Seals

- resistant against numerous media to be sealed

6 Machine elements

- a variety of components and assemblies for mechanical engineering



The original for Habermann pumps

habermann materials GmbH is the only world-wide manufacturer and supplier of original spare parts for Habermann pumps, made from Hawiflex® polyurethane. For decades, Habermann pumps in particular, have offered the advantage of a long service life and durability under high loading when transporting abrasive and corrosive media. One reason for this is the fact that the pump elements are lined with Hawiflex® polyurethane. As an experienced manufacturer and supplier, operating our own polyurethane casting facilities and using original moulds, we always ensure that original spare parts for your Habermann pumps are available at all times

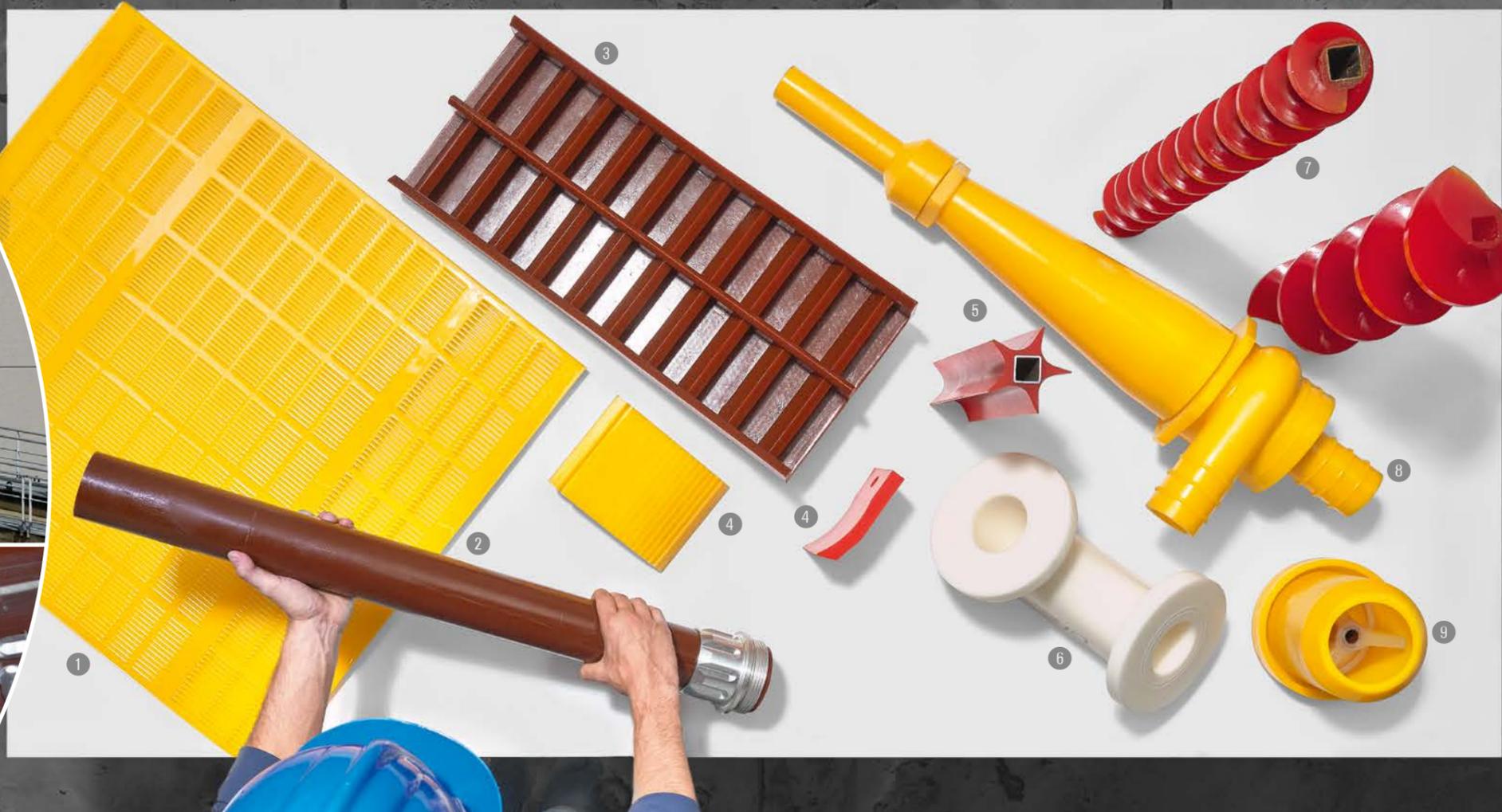
throughout the world – and not only in the short term but over many years. For replacements due to wear or other reasons: We only recommend original Hawiflex® polyurethane spare parts for your Habermann pumps, provided by our qualified cooperation partners together with a competent service. This is the only way to ensure CE conformity of your pump. Irrespective of what other companies are promising.

The same also applies for industrial pumps of major manufacturers: We make your pumps resistant to wear – using best Habermann materials quality.

Hawiflex® for pumps ...



Name	Colour	Temperature range	pH range	Specially suited for
● H3807-01	Natural colour/yellow	-30° to +80° C	0 to 14	Use with acids and alkalynes
● H3911-04	blue	-30° to +95° C	0 to 14	Use with acids and alkalynes
● H2707-00	green	-30° to +80° C	5 to 9	High-wear applications



Rugged for the materials handling and bulk materials industry

Irrespective of what material you handle, process, mine or pour – Hawiflex® offers you the advantage of protecting your valuable resources against wear, considerably extending service life, and significantly reducing downtimes and thus increasing availability.

Hawiflex® has been successfully used in

- Crushed rock, sand and gravel works
- Coal and steel works
- Mining
- Cement works

- 1 Slotted-hole screen mat**
 - produced acc. to drawing or customer specification
 - permanent elastic
 - wear resistant
 - non-stick surface

- 2 Concrete spraying nozzle**



- 3 Dead box**

- 4 Conveyor scraper**
 - easily clears bulk material from conveyor
 - very high-duty under extreme conditions
 - available with different Shore hardnesses
 - For application in: Mining, gravel works, quarries

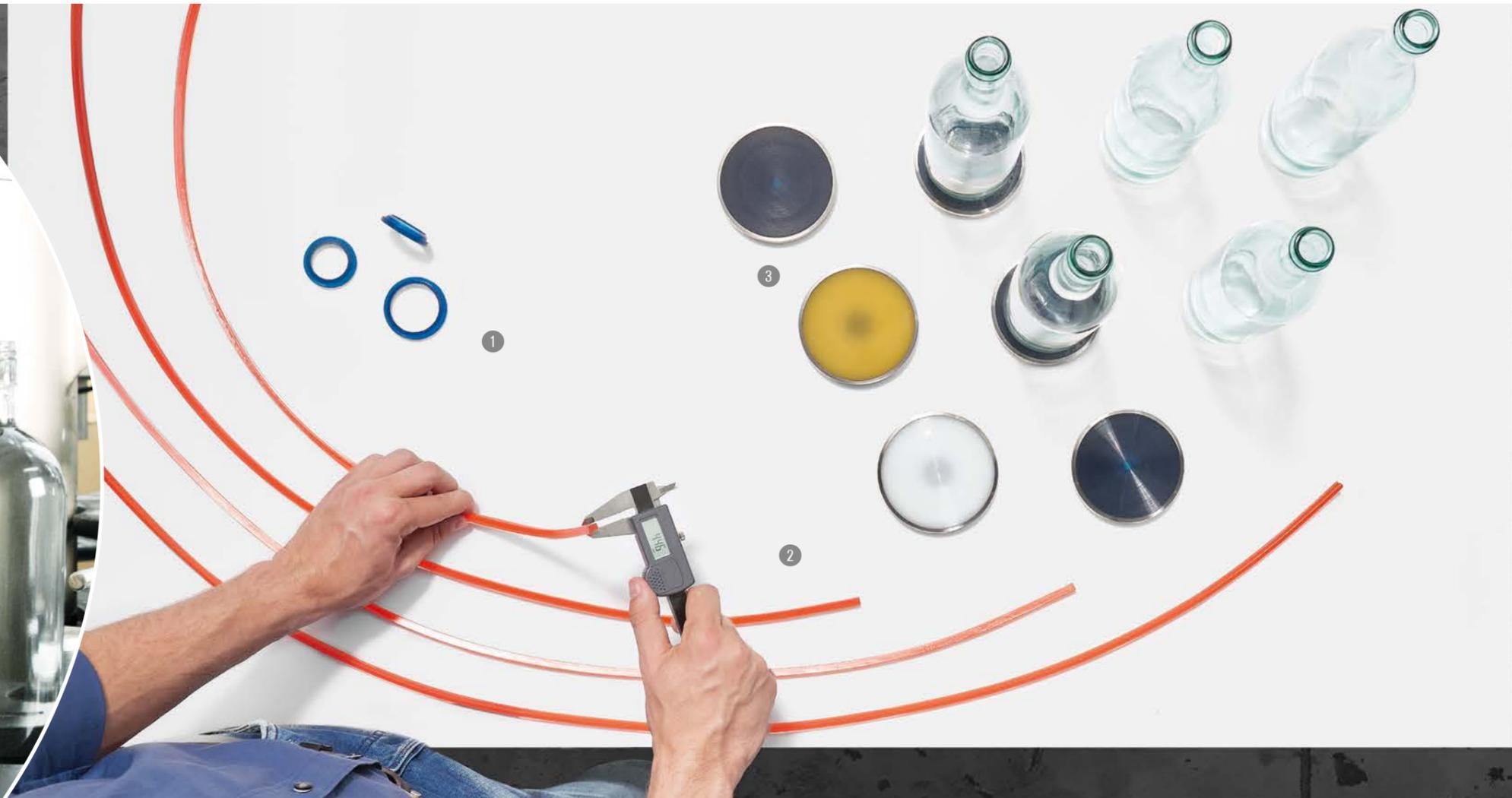
- 5 Rotor of a cellular wheel sluice**
 - wear-resistant
 - easy to clean

- 6 Pipe bends**
 - innovative wear protection
 - long service life and reliable
 - Hawiflex® counteracts impact wear arising in pipe bends

- 7 Screw conveyor**
 - produced acc. to drawing or customer specification
 - permanent elastic
 - wear resistant
 - non-stick surface

- 8 Hydrocyclone**
 - specially adapted Hawiflex® systems
 - optimum classification due to minimum inflation and excellent wear resistance
 - UV and ozone resistant
 - physical properties remain during entire service life
 - resistant to hydrolysis

- 9 Discharge valve**
 - with rotating paddle sensor for sand classifiers
 - Special formulation for sand and gravel industry
 - high wear and pressure resistance



Hygienic for the beverages industry

In the beverages industry, Hawiflex® is used for protecting products and systems. Noise can also be reduced by up to 50%. Hawiflex® easily withstands the considerable chemical loading during cleaning processes.

We have developed special materials systems for the required high speeds and extraordinary dynamic processes. Hawiflex® is thus precisely the right material for transporting foodstuff – and is even used in the medical industry. Hawiflex® discharges no contaminants but fulfils the strictest EU guidelines.

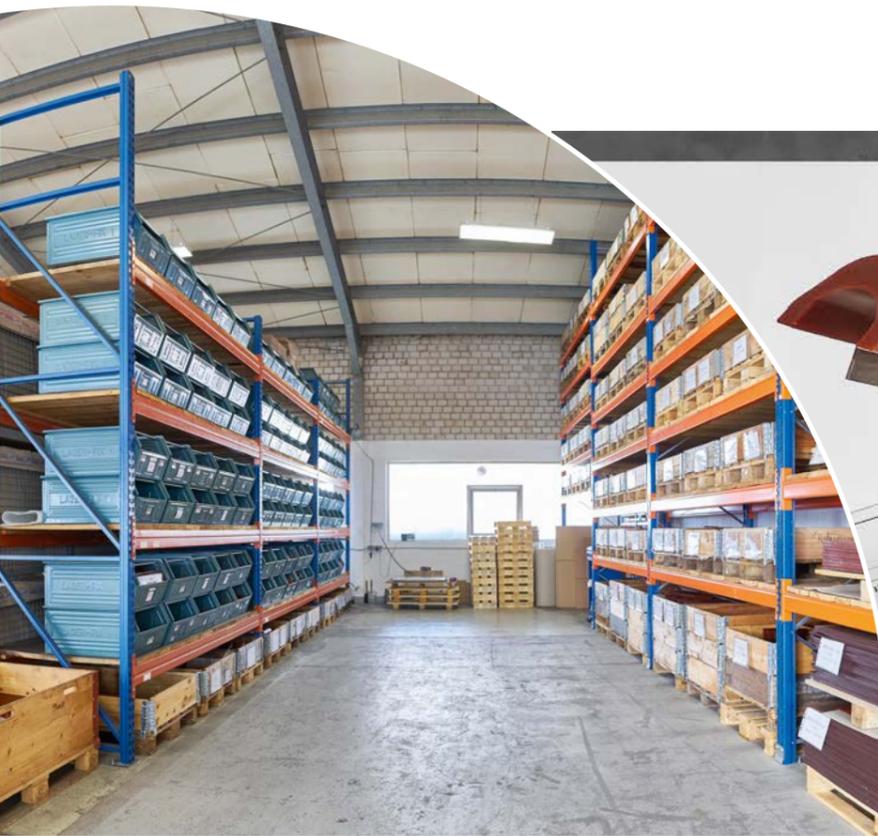


- 1 Seals**
- Precision seals produced to your specifications

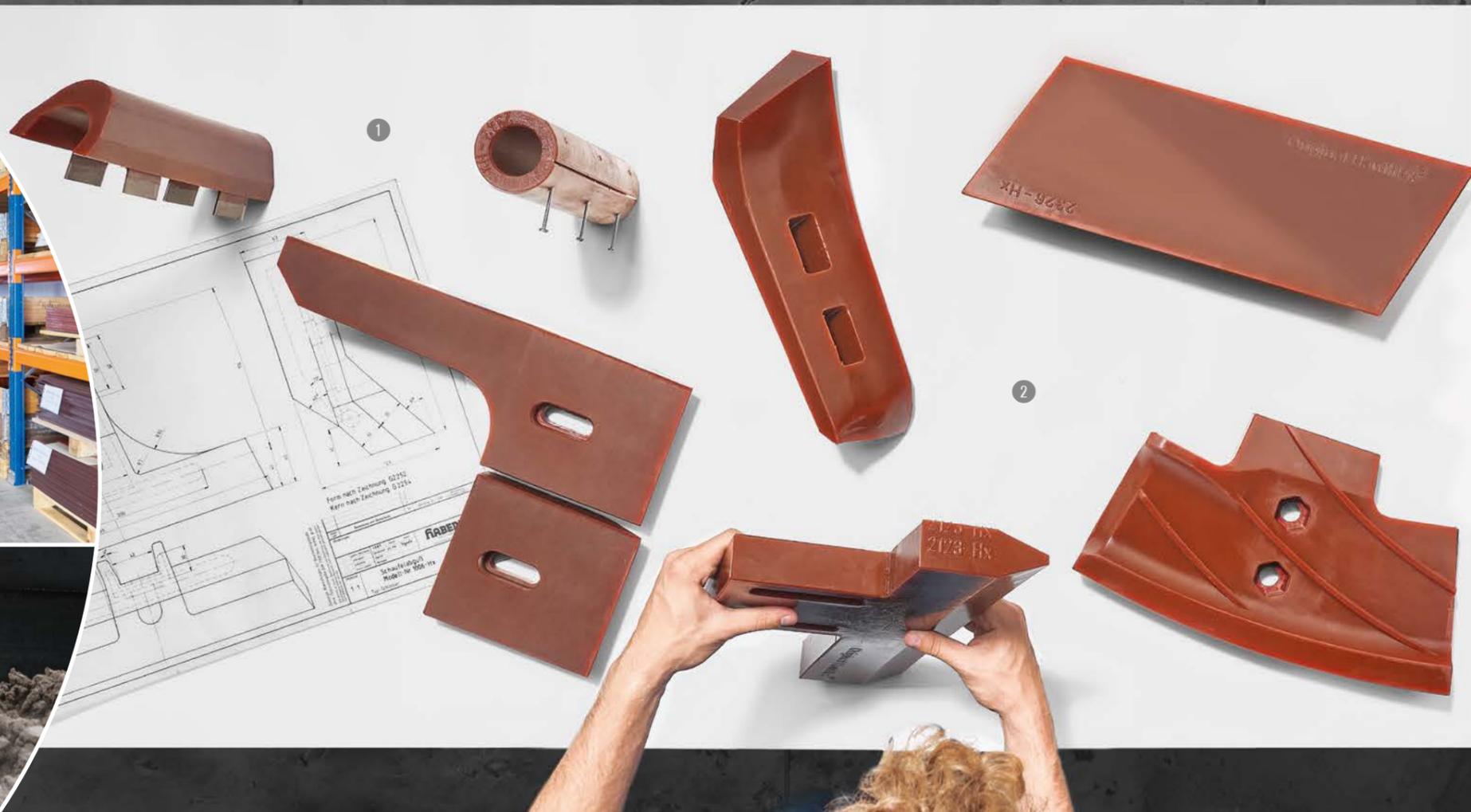


- 2 Anvil strip for labelling machines**
- excellent dynamic behaviour
 - excellent pressure deformation resistance
 - long service life due to excellent wear resistance

- 3 Bottle carousels**
- High abrasion resistant
 - high adhesion and grip
 - excellent resistance to cleaning agents
 - good damping ability
 - reduction in glass breakage
 - noise reduction



Click for the entire range:
www.habermann-materials.com



Standard in mixer technology

Over 50 years of experience of Hawiflex® in concrete mixers ensure decisive advantages in service life compared to other PU systems. The Hawiflex® special formulation meets the high requirements of the concrete industry such as, for instance, abrasion by sharp-edged chippings, steel fibres and chemical stresses by aggregates on concrete. A large variety of parts are available at all times ex works throughout Europe. Find our extensive range of products at: www.habermann-materials.com/en/online-catalog

In addition, we also produce spare parts according to your specification.

- 1 Arm guards**
 - low-cost, effective optimisation of mixer arms
 - wear reduction
 - reduced concrete adhesion
 - welded or bolted connection available
- 2 Mixing blade**
 - less stressing in wear area due to patented guide ribs



- 3 Truckflex patented composite product:**
 - inside: soft wear-resistant layer
 - outside: cut-resistant harder layer

- Coneflex Discharge funnel in cement works**
 - two-coloured design facilitates preventive maintenance
 - different colours as indicators for wear

Mixing tools for the concrete industry are described under "The perfect mix".

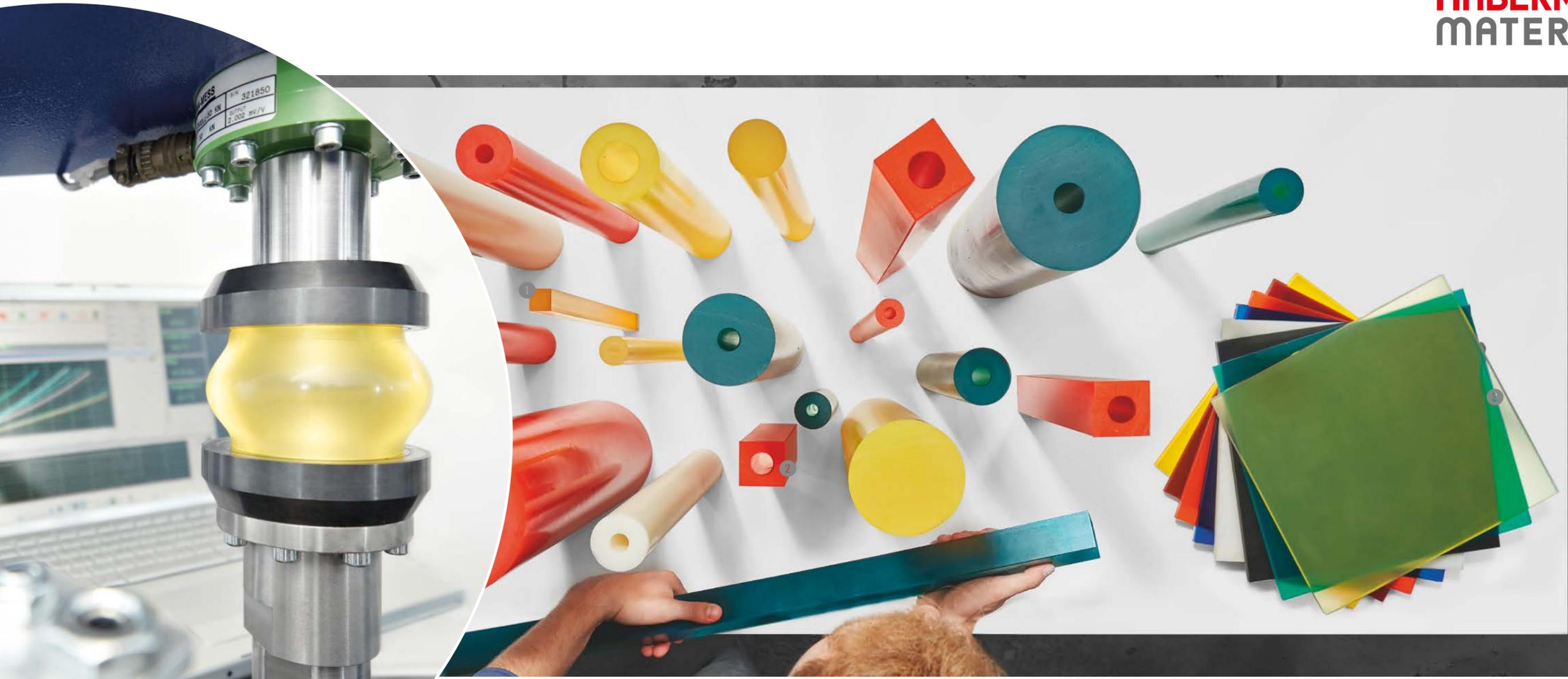




Abrasion-proof for glass – without metal residue

The transportation of raw materials for glass production requires extreme wear-resistance of machines. Whether used for sharp-edged glass pieces or fine silica sand: When coated with Hawiflex® glass pieces carts, hoppers and conveyors can withstand erosive material influences many times longer, thus reducing downtime and production costs – to your advantage. As **HAWIFLEX® prevents metallic abrasion, there is hardly any residue in the end product glass.** At the same time, the noise level is reduced by up to 50%.

- 1 Mixing blade**
 - Special formulation resistant against high temperatures
 - Used in mixing process with raw materials for the glass production
- 2 Shard card**
 - excellent cutting resistance
 - ideal for applications in the glass recycling industry
- 3 Hopper lining**
 - single-part cone
 - simple installation
 - no infiltration
 - easy to fix
 - excellent gliding properties
 - extremely long service life
- 4 Impact plate**
 - Standard plate (see page 21)
- 5 Transfer point for broken glass**
 - spray coated (see page 26)
- 6 Vibrating chute**
 - reduced adhesion
 - extended service life



Whatever you need: PU semi-finished products

In the sheet metal working industry, Hawiflex® PU semi-finished products provide a cost-effective alternative, in particular for small production runs. Our ongoing development work allows us to provide suitable PU semi-finished products for increasing cycle rates in production. Even surface-finished steel plate can be processed with tools coated with Hawiflex®.

1 Plates

- optimum elasticity
- thermal load up to 120°C possible
- excellent resistance against lubricants used in metal working
- available in a wide range of colours

2 Dies

- high elasticity
- high continued tear resistance
- available in nearly all geometrical shapes



- ideal for stringent requirements in material moulding

3 Hollow rods/rods

- high elasticity
- high continued tear resistance
- seals, spacers, sliding rings, etc. can be produced by cutting
- Boards in different thicknesses

Working with
Hawiflex®
plates



Hawiflex® plates are available as

- standard plates
- welded plates
- perforated metal plates
- expanded metal plates
- functional plates

All wear plates can be processed and fixed with conventional tools. Fixing is simple, e.g. by bolting. Additional fixing accessory is available (see page 23).

To ensure optimum wear protection the **selection of the Shore hardness** is an important criteria. During production, the hardness of Hawiflex® plates can be set to between 65 and 90 Shore A depending on the application. Hawiflex® wear plates can be produced in any size or shape and in many colours **as per your information or drawings.**

We are happy to provide you with special plates

- other hardnesses
- dimensions up to 5800 mm
- several plates welded together
- special cuts
- fixing holes
- providing one rough side for better adhesion

Specification

- wear-resistant material
- resistant against all atmospheric influences
- noise-reducing
- non-stick
- easy to clean with water
- no material ageing

Flexible and easy to process – standard plates

The cost-effective manner for installing effective wear resistance, e.g. as spray protection in mixers (3 mm plates), as anti-protection cladding in hoppers, holding vessels (10–15 mm-plates) or as impact protection (25–30 mm plates)

The board is **very flexible and can be easily cut to size and processed** on site.

Dimensions:

- 3000 x 1000 x 1–40 mm,
- 2000 x 1000 x 1–40 mm
- and on request



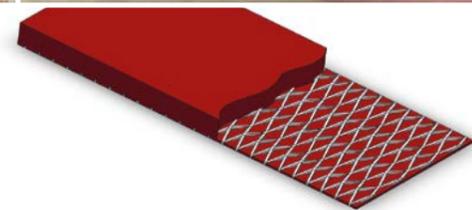
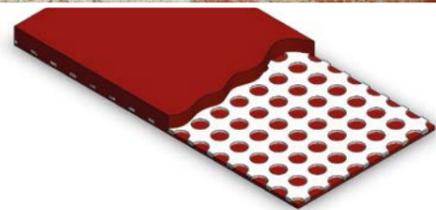
Quick installation – high-strength connection: welded plates

Hawiflex® welded plates with pre-configured welding points provide a quick, high-strength welded connection, e.g. as cladding for drums, hoppers, vessels. The plates are fixed at welding points (12 per m²). The welding holes are quickly and permanently sealed using stoppers. And as there are no protrusions, no reworking is required.

Dimensions:

- 1000 x 1000 x 15 mm,
- 1000 x 1000 x 25 mm
- and on request.

Tip: expensive components are not drilled.



Simple assembly using bolted connections and sturdy, perforated steel plates

The perforated steel panel cast into the Hawiflex® plate reduces extension, compression and re-shaping to a minimum. This board is therefore ideal for cutting, e.g. as side guide of conveyor belts or cladding for tubs, troughs and slides. In some cases, the design stiffness of the board allows a more cost-effective frame-like design instead of expensive sheet steel designs.

Dimensions:
2000 x 1000 mm in e.g. 12, 15, 20, 25 mm and on request

Tip: self-tapping bolt

Easy adaptation of difficult shapes: expanded metal sheet plates

The cast inserted expanded metal of the board provides a solid structure, offering the additional option of flexibly and easily adjusting the board to cone-shaped and oval components, e.g. hoppers and troughs.

Dimensions:
2060 x 1025 mm in e.g. 6, 8, 10, 12 mm and on request

Tip: Hawipair® joints (see page 28)



Patented Hawiflex®-functional plates – that simply work

The functional board has been particularly designed for transport buckets, impact walls, troughs, outlets. A special layer ensures an optimum joint between the component and the Hawiflex® system. The joint also forms the **predetermined breaking point**, allowing easy removal of the used lining at a later stage. **A new Hawiflex® functional board can be directly glued** onto the thin residual lining of the separated layer – without elaborate preparation of the base.

Dimensions:
1000 x 1000 x 8+2 mm,
1000 x 1000 x 5+2 mm,
1000 x 1000 x 8+5 mm (insulation)



Fixing material for Hawiflex® plates

- 1 Self tapping bolts**
 - Round-head metal bolt
 - Dimensions: 5.5 x 38
 - Material: steel galvanised
 - DIN 7981
- 2 Plate bolts**
 - Dimensions: M8 x 30
 - Material: 3.6
 - DIN 15237
- 3 Plate bolts with 5 mm Hawiflex® coating**
 - Dimensions: M8 x 30
 - Material: 3.6
 - DIN 15237
- 4 Counterboring set**

Consisting of:

 - Guiding pins D 8 mm
 - Counterbore D 30 mm
 - Pin holder

*Hawiflex®
optimises
your ideas*



*Precision fit,
long lasting and
easy to reproduce*

As part of our casting process we coat any product – including yours. In close cooperation with our clients, we select the option from our complete range of recipes that best matches your requirements (operating conditions, physical and chemical prerequisites and the respective processing process) and provide individual tailor-made solutions.

Especially for small and medium-sized series, the latest design and production processes allow for a **cost-effective mould construction**.

After production of the mould we produce the **first casting**, demonstrating the functioning and correct dimensions.

We use the latest machinery in order to provide products with a constant high **quality level**. Trained members of staff monitor, control and record our processes at all decisive points. Our quality management system complies with the standards of EN ISO 9001:2015.

Specials:

- At present we can produce pieces with a weight from a few grams up to 450 kg.
- On request, we will store your mould for later reproductions.

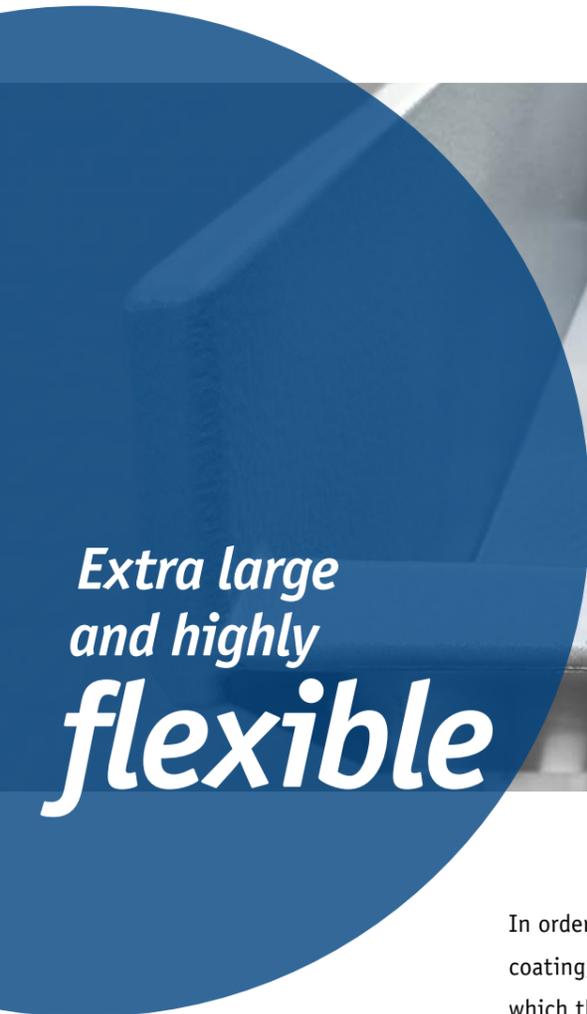
During casting

raw materials are prepared and provided by modern dosing systems. The actual casting process takes place in moulds in a near-pressureless environment. This results in considerably lower tool costs compared to injection moulding, as no pressure-tight tool construction is required. Materials with hardness of between 35 Shore A and 80 Shore D are available for processing.

During rotational moulding

the coating substrate is placed in a respective rotating device and the liquid plastic is inserted in the component whilst it is rotated. Centrifugal forces ensure that the material is distributed on the coating substrate. Several machines are available for coating rotation-symmetrical components.

As no inner mould core is required as in the casting process, tooling costs can be even more favourable.



Extra large
and highly
flexible



Sprayed Hawiflex®
the alternative to
rubber coating

In order to produce a large-surface coating, a spraying process during which the plastic is applied similar to the airless process, is ideal.

Coatings are seamless and do not form any points at which the coating could detach. Consequently, our spray coatings are particularly impervious to fluids.

More material can be applied to areas susceptible to wear. As a result of this material concentration, a marked longer service life can be achieved compared to cladding with board products, whilst the amount of material used is the same.

Components coated with Hawiflex® are extremely resistant against abrasion, corrosion and chemicals and offer excellent sliding properties. The sound-insulating effect provides a considerable noise protection.

The best non-stick properties ensure the quickest cleaning times. The optionally available structured surface is particularly effective against caking.

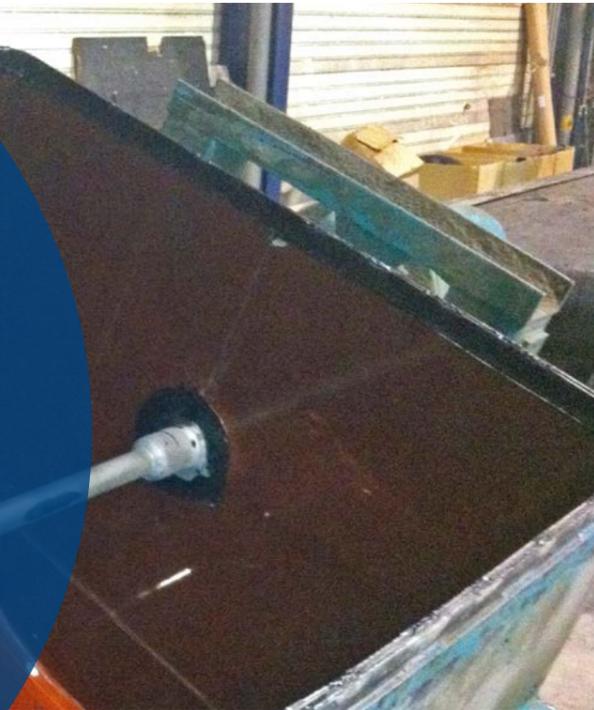
As there are no resulting tooling costs, the spray process is particularly suitable for prototypes and extra large work pieces.



Particularly suited for coating:

- Troughs
- Slides
- Chutes
- Rollers
- Drums
- Brakers
- Supporting rollers
- Conveying screws
- Mills
- Vessels
- Pipes
- Concrete buckets
- Mixers
- Cables
- Fenders
- Buoys
- Pump components
- Automotive parts
- Agitators
- Cyclones
- ...

Repairs using
Hawipair®



**Professional
in-house repairs
of elastic coatings**

Hawipair® is a polyurethane-based elastic material that can be applied with a trowel in order to repair worn coatings. It provides **excellent abrasion** values and can also be used as adhesive due to its great affinity with most materials.

Hawipair® can be easily used, allowing repairs to be carried out quickly on site without problems, thus drastically reducing downtimes. Hawipair® is also compatible with products of all manufacturers.

Hawipair® is furthermore excellently suited for grouting between the edges of Hawiflex® standard plates.

Hawipair® properties:

- wear-resistant
- excellent chemical resistance
- highly elastic
- microbe resistant
- hydrolysis protected
- seawater resistant
- excellent abrasion resistance

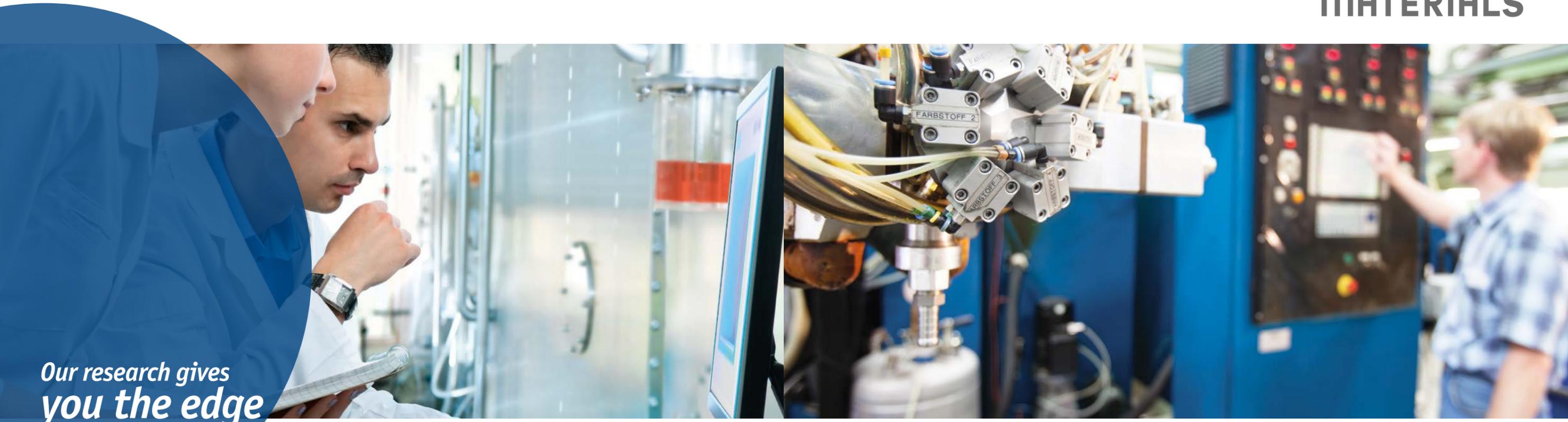


It can not be simpler:

With a **mixing ratio of 1:1** no scales are required. The **pot sizes correspond to the mixing ratio**. Incorrect dosing is thus not possible.

Properties	Value	Test method
Shore hardness	85 Shore A	DIN 53505
Abrasion value	30 mm ³	DIN 53516
Tensile strength	17 N/mm ²	DIN 53504
Elongation at break	450%	DIN 53504

The specified technical data represents guide values. They are determined under optimum conditions in the materials laboratory. We do not accept any liability as regards the suitability of the product for the intended use by clients. We recommend testing the suitability in initial tests. Please contact us in case of doubt.



*Our research gives
you the edge*

Producing the perfect mix for a high-strength and yet wear-resistant component using different elements, processing systems and special additives is a science in itself – using Hawiflex®, we have been doing nothing else but practising this science for over 50 years.

Experience that counts for our clients.

Our excellent position in the market is largely due to our permanent research for new, even more suitable materials and the further development of our existing product portfolio.

Combined with our sound know-how of all current and future standard process requirements, this interaction always guarantees product innovation and individual solutions for your applications

Naturally we also comply with statutory regulations.

We are looking at the minutest detail.

Using the latest measuring and analysis technologies we examine the interaction of all components and parameters under laboratory conditions and naturally in practical application down to minute details.

This informative test data and all feedback from our clients are used for new or further developments of our products and form the basis for their extraordinary quality.

A service that you will appreciate.

At our technical centre we not only test all our products but are also able to carry out close simulations of customer applications. This ensures that our products are optimised to the precise requirements of our clients.

Do not leave it to chance and continue to obtain the used optimum quality **Made in Germany.**

Our contact persons are happy to provide you with advice.

Made in Germany

**And what can we do for you?
Request our know-how and all-inclusive service.**



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We would be happy to personally introduce our range of products to you, assist with the selection of products suitable for your application and advise you, based on our know-how, when enquiring about individually produced wear-resistant plastic parts.

Contact us.

We are happy to assist you.

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