

Scrubbing machines

Vibraplast ensures for welt-free results

When working with scrubber driers, the cleaning result depends on a wide variety of factors. Were the brushes or pads selected that match the type of dirt and the floor covering? Is the cleaning agent used correct and has it been correctly dosed? The pace of work and the amount of cleaning solution also have an impact on the cleaning result. The cleaning professional knows, however, that the most important factor for a perfect end result of his work is an optimally functioning suction nozzle with first-class suction lamellas. What at first glance looks like an ordinary piece of rubber or plastic to a layperson is in many cases a piece of "hi-tech" from Aadorf, Switzerland.

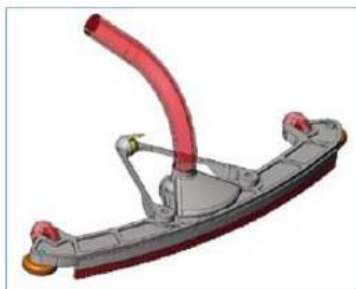
Vibraplast AG, founded in 1961, has built up know-how in the field of rubber slats for the cleaning industry over decades and is now one of the world's leading companies in this field. The most important international manufacturers of scrubber driers are among the customers of the Aadorf-based company. The specialist employs around 40 people, whose business areas also include the areas of noise protection, vibration isolation, foam technology, elastomer and plastic technology.

The company has been a partner of the cleaning industry for many years. Customers at home and abroad purchase components and complete assemblies for industrial cleaning machines. Custom solutions in each

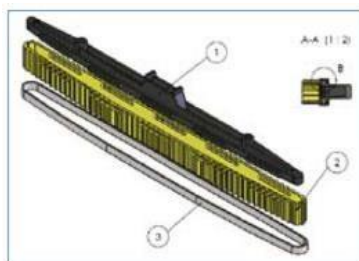
Manufacturing depth is one of the core competencies of the successful company.

The cleaning lamella

The successful cleaning of floor coverings ends with the complete collection of the loosened dirt particles. This is achieved with a vacuum generator equipped with appropriate cleaning lamellas.



Cleaning suction nozzle



Lamella body tipped with PUR.

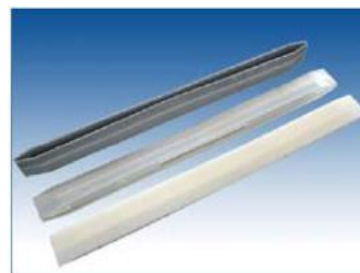
A basic distinction is made between two manufacturing processes. The punching of molded parts has become established. For cost reasons, some

Injection molded parts used. However, production below 70 Shore A is problematic. This procedure is therefore only used to a limited extent. Vibraplast AG is, however, able to offer both variants in the highest



To offer quality requirements.

Polyurethane stamped part.



Polyurethane injection molded part.

Years of experience in the cleaning industry have shown that individual parameters (e.g. hardness) are not viewed in isolation

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may be. A large number of mutually supporting properties make a high-quality slat:

➤ Coefficient of sliding friction	➤ Rebound resilience
➤ Microbe resistance	➤ Ozone resistance
➤ Abrasion properties	➤ Inclination angle
➤ Resistance to oil and lye	➤ Lubricating properties
➤ Thickness tolerance	➤ Shore A hardness

Polyurethane PUR

The starting material for cleaning lamellas consists of polyurethane (PU, DIN abbreviation: PUR). However, the designation has only a general character (analogous to wood, steel or rubber) and says little about the technical properties.

Polyurethanes are plastics or synthetic resins that result from the polyaddition reaction of diols or polyols with polyisocyanates.

Depending on the manufacturing process, the material can be hard and brittle, but also soft and elastic. The elastomers in particular have a comparatively high tear strength. In its foamed form, polyurethane is known as permanently elastic soft foam (e.g. for sports shoe soles) or as hard assembly foam.

Polyurethanes can have different properties depending on the choice of isocyanate and polyol. The density of unfoamed polyurethane varies between around 1000 and 1250 kg / m³. The later properties are essentially determined by the polyol component. Usually, to achieve the desired properties, it is not the isocyanate component that is adjusted, but the polyol component (chemically modified).

Technical data PUR

property			
Spec. Weight			

Cleaning lamellas may therefore only be compared for quality comparison, taking into account the identical raw material mixture. Otherwise there is a risk that "Apples to pears" can be compared. The manufacturing costs are significantly dependent on the additives used. However, exact mixing information is rarely available.

Test specifications

Polyurethanes can be tested relatively easily. An unknown material can be identified or characterized using thermal or FTIR analysis. Often in practice

If there are no measuring devices, the incoming goods inspection is limited to measuring the thickness (mm) and hardness (Shore A). These test parameters are very important for the successful use of a cleaning lamella - but they are not the only decisive factor. Long-term tests have shown that particular attention must be paid to protection against microbes and resistance to acids and oils. The reliability and service life of cleaning lamellas depend largely on the raw material and depends on the corresponding additives.



Side view microbe damage.

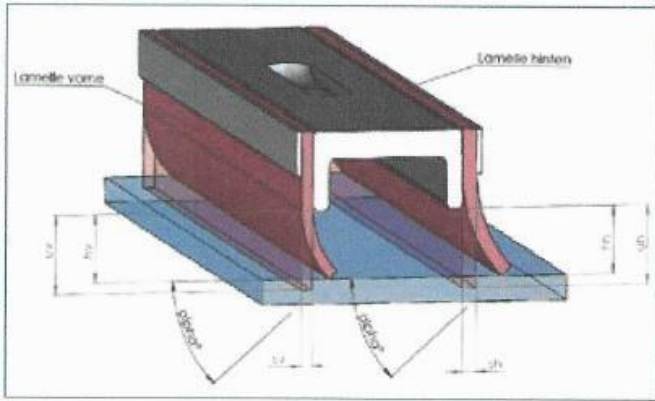


Side view microbe damage.

Optically perfect materials deform and decompose after a short period of use and are no longer suitable for cleaning. Cracks or deformations mean that collected dirty water cannot be completely sucked up. False air and the resulting water and dirt residues are the result. The cleaning result is unsatisfactory.

Stripping geometry

One of the main prerequisites for the proper function of a cleaning lamella is the correct contact pressure and angle of attack. These are given by the construction of the cleaning machine. With optimal deformation, a negative pressure (vacuum) results. The air flow sucks the dirty liquor into the dirty water tank. A rebound resilience corresponding to the floor compensates for unevenness of different floor conditions.

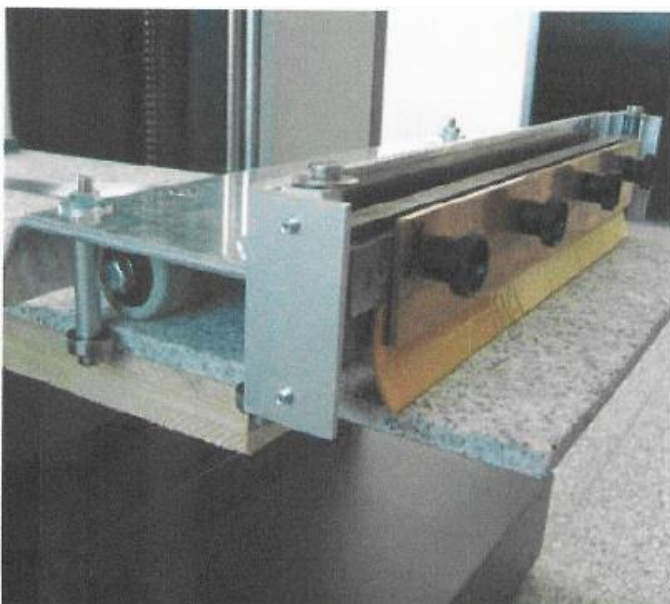


Wiping geometry of the cleaning lamella.

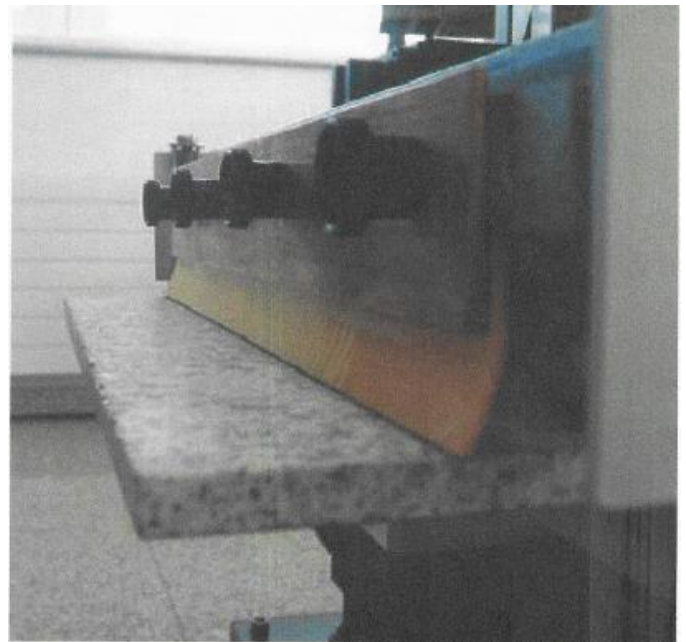
Another influencing factor for an optimal cleaning result is the correct selection of the appropriate slat combinations. The front and rear slats must be matched to one another. The front lamella is supposed to collect the dirty water and lead it to the suction nozzle. The rear lamella must be absolutely tight to ensure that the floor covering is dry after cleaning.

Selection criteria for practice

On our specially developed lamella test stand, we simulate the use of different cleaning lamellae on a wide variety of floor coverings. The setting of the suction nozzle depends on the one hand on the manufacturer and on the other hand on the intended use. Basically, the contact pressure is to be distinguished by height-adjustable support wheels or by the weight of the suction nozzle. Individual machine manufacturers also work with additional weights to increase the lamella pressure.



Measuring slide sliding test Zwick / Roell



Side view of the lamella test (Newton)

If the cleaning result is uneven, the setting of the suction nozzle must be checked. Before making any changes, make sure that the lamella is not too worn and / or that the suction nozzle is not damaged. The correct height setting is achieved when the scraping edge of the rear lamella lies across the entire width of the suction nozzle. The optimal angle of inclination is 45 degrees to the floor covering. A very important factor is the flawless lamella cutting edge - without interruptions or injuries.

The appropriate combination of lamellas must be selected depending on the nature of the surface, the amount of water, the oil and the fat content of the dirt. The selected hardness has a decisive influence on the ability to adapt to unevenness. Information on this can be found in the manufacturer's operating manual.

Vibraplast AG is certified according to ISO 9001: 2000 and, thanks to the most modern measuring devices, is able to maintain the narrowest tolerance fields in order to guarantee consistent quality and customer requirements together with the machine manufacturer.

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