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Resilient Riding Fun for Cool Cruisers

Longboard wheels of polyurethane for stable running with high quality components from BASF

May 4, 2016
P189/16
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- **Versatile plastic**
  Soft segment of PolyTHF® provides elasticity
- **Variable requirements**
  Experienced manufacturers produce wide range of wheels
- **Balanced skating**
  Material for wheels based on renewable raw materials

Of course, in most cases it's the kids who are cruising laid-back through the streets on their longboards. But why shouldn't people who aren't quite so young also use this climate friendly form of mobility? So pad your elbows and knees, put your helmet on and slowly get rolling. If your inner balance is okay, your outer one will be fine too.

About one meter long, these hip longboards also offer enough space and stability for non-artists. Broad wheels of elastic plastic provide good ground contact and absorb any shocks from uneven surfaces. And these wheels can even become a science of their own for advanced longboarders.

High-quality longboard wheels of the kind produced by the Californian manufacturer AEND Industries, for example, are made from polyurethane cast elastomers. These plastic systems combine resilient elasticity, mechanical load bearing capacity and high abrasion resistance in an almost ideal manner. With the polyurethanes of known versatility, it is the combination of selected components that unites the apparently contrasting properties. The MDI molecules commonly present in polyurethanes usually act as the hard segment in the plastic, while PolyTHF® from BASF is used by the Californian specialists as the soft segment for this ambitious application.

PolyTHF is known by its full name polytetrahydrofuran especially from its use in Spandex and elastane fibers which, for example, make sportswear and leisurewear comfortable and elastic. Its good dynamic mechanical properties even in variable temperatures, however, are also making PolyTHF increasingly interesting for other applications, for example in sports shoes or automobiles.

Processing of the high value polyurethane cast elastomers is relatively uncomplicated for the user. At low processing temperatures of about 50 degree Celsius, the wheels are cast in metal molds and can be reworked directly after ▶

cooling and hardening. This naturally makes it much easier for the manufacturer to offer a broad range of longboard wheels of different sizes, widths and strengths. In this way, every young or young-at-heart individualist can find the wheels to meet their own needs.

On rough surfaces broader wheels provide the desired smooth ride.

Smaller wheels can be accelerated faster and braked more easily. On the other hand, they run less steadily over long distances and the ball bearings heat up faster. Larger wheels enable higher final speeds and more stable running. Even more stable, especially on rough surfaces, are broader wheels which, however, also lose some speed because of the higher rolling friction. Anyone wanting to slide perfectly, however, should give preference to narrower wheels. The diameter of the longboard wheels is usually between 60 and 80 millimeters, while the width of the running surface can measure from 25 to above 55 millimeters. Naturally, the size of the wheels must also match the height of the board to prevent the dreaded wheelbite, the contact between the board and the wheel.

The other important property of the wheels which depends directly on the plastic used is their hardness. The higher the content of the described hard segments of the polyurethane in relation to the elastic PolyTHF soft segments, the harder the material becomes. Harder wheels are somewhat more stable and faster, but engage less well with asphalt than softer wheels. As a guide, the manufacturers offer a numerical scale (A) which goes from 78 A (soft) to 101 A (hard). The comfortable longboard wheels usually come between 78 and 90 A. The edge of the wheels, known as the lip in longboard jargon, can be either angular in the grippy wheels for cruising and carving, or rounded for sliding when freestyle riding is preferred.

The perfect all-round wheels for every riding purpose therefore cannot exist. Every skateboarder has to find the individually preferred compromise between opposed properties such as grip and slide behavior. Beginners who first have to try out their preferences should use balanced complete boards with components matched to each other by experienced experts. For a little California feeling, perhaps first a pintail, in other words a longboard with a shape still reminiscent of its surfboard origins.

Fully suitable for balanced gliding on four wheels, BASF as the world's leading supplier of PolyTHF has also offered this material based on renewable resources since the beginning of 2015. The starting product 1,4-butanediol (BDO) is manufactured for this purpose by a fermentation process from dextrose licensed by the Californian company Genomatica. Customers of the BASF Intermediates division like wheel specialist AEND ▶

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The appropriate protective equipment is essential when racing downhill with the speed of up to 60 km/h.

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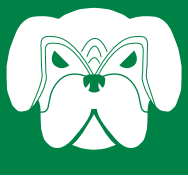
In Lima, the bulldog Otto rode his skateboard through a tunnel of the legs of 30 people.



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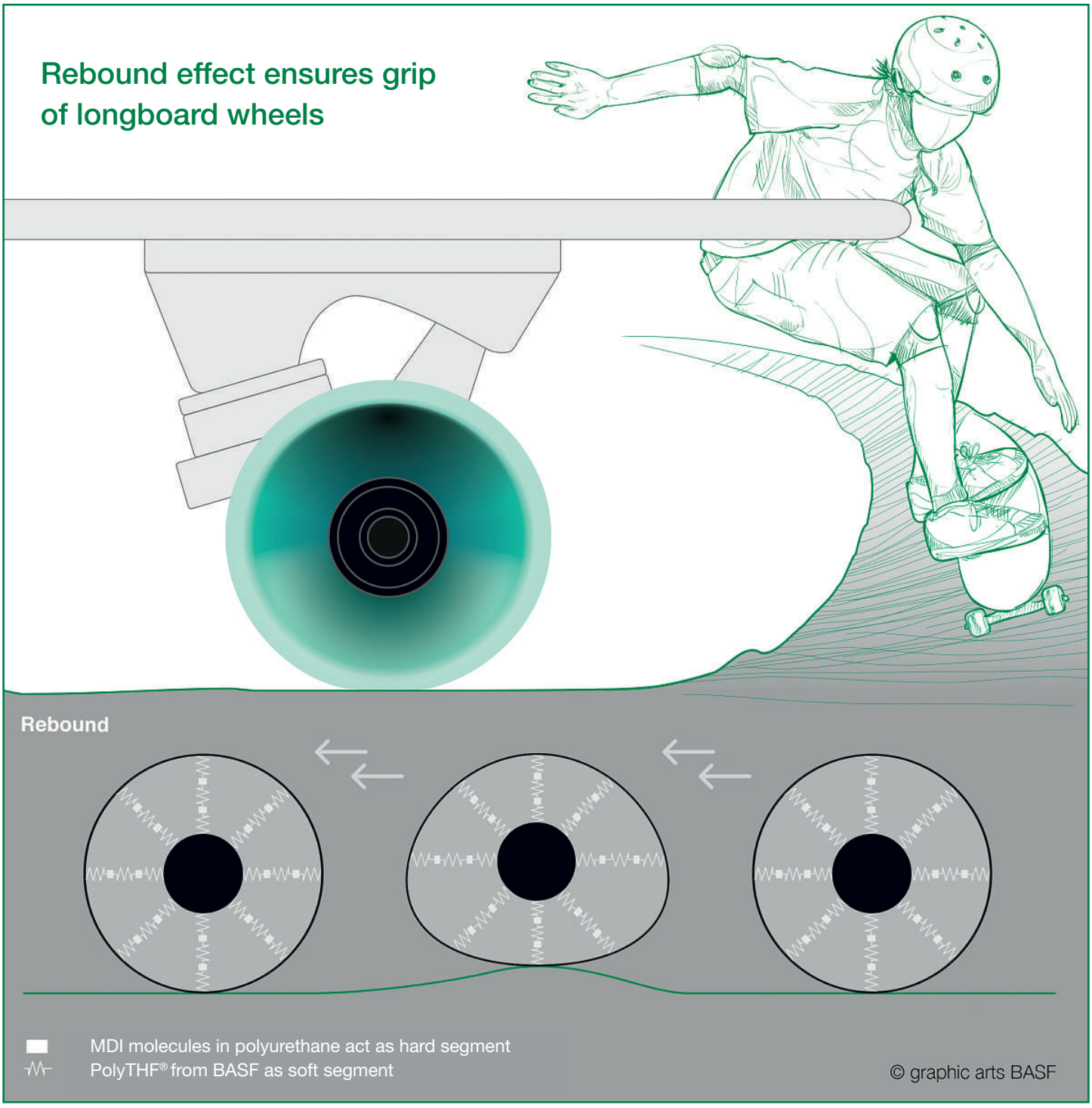
The largest skateboard in the world is more than eleven meters long and was unveiled in 2009 in California.

Industries in Huntington Beach can test the innovative product and convince themselves that the quality is comparable to that of its well proven petrochemical counterpart.

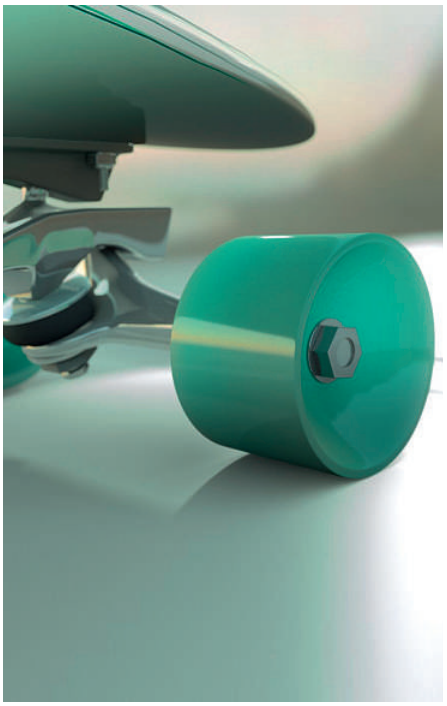
Skateboard companies that prefer to purchase not individual components for their self-devised wheel recipes but rather the complete polyurethane system at once, will also find what they are searching for at BASF. In the USA, the experts of the Performance Materials division offer specially suitable cast elastomers (Elastocast) made of three components (including PolyTHF) which is used, for example, by the long-established company Skate One in Santa Barbara. Their products, such as wheels of the Bones brand, are frequently decorated by grim-looking skull artwork intended, perhaps, to remind us to make a wide detour around unnecessary risks and not to ride with your teeth chattering in the slipstream.

Rebound effect ensures grip of longboard wheels



“The perfect balance between rebound effect and abrasion resistance”

Interview with Neal Piper, the founder of AEND Industries



How has AEND become the largest producer of performance recreational wheels in North America?
We have been making wheels since 1985, which gives us a strong historical reputation and a lot of experience. In all these years, we have been strongly committed to the market. I personally dedicated my entire career to the manufacturing of recreational wheels. However, to remain successful it will be crucial for us to stay committed especially to development and research.

What is the importance of PolyTHF from BASF for the performance of the wheels?
PolyTHF is the only material that guarantees the perfect balance between the ideal rebound effect of the wheels and a high abrasion resistance. All other materials provide either one or the other, but never both at the same time. This makes PolyTHF the best material for high-quality wheels.

The market for longboards in Europe is growing. How do you participate in that market?
We have been working in Europe for 30 years. In fact, our customers ship more products to Europe than they sell in the United States. So, I think it’s fair to say that we have been very active in the European market. Of course, we would like to stay very active there.

Riding style and terrain

Cruising / carving

Cruising, relaxed riding on a flat surface, is possible on many quiet side streets, and broader cycle paths are also suitable. In road traffic, longboarders are legally classified as pedestrians, and should therefore take things easy and adopt a defensive approach. As soon as an agreeable speed is achieved by pushing, rhythmic changes of direction allow the ride to play with centrifugal forces. This carving, in which the board follows the rotation of the upper body, is regarded as the basic movement of longboarding.

Freeriding / Sliding

In freeriding, rapid riding on downhill roads, more experienced skateboarders search for that special flow. However, the road should have a clear layout and the lowest possible traffic volume. For courageous skaters, an additional kick is offered by sliding, placing the wheels crosswise to the direction of travel for a short time, and sliding further downwards.

Downhill

Longboarding becomes a racing sport when traveling downhill on the switchbacks on a mountainside: the riders wear an integral helmet and reduce their body size to be as fast as possible. In the curves, riders go to the limit of the grip offered by their wheels. Whether this organized chasing of speed records is still a relaxed leisure activity appears at least open to question.

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