

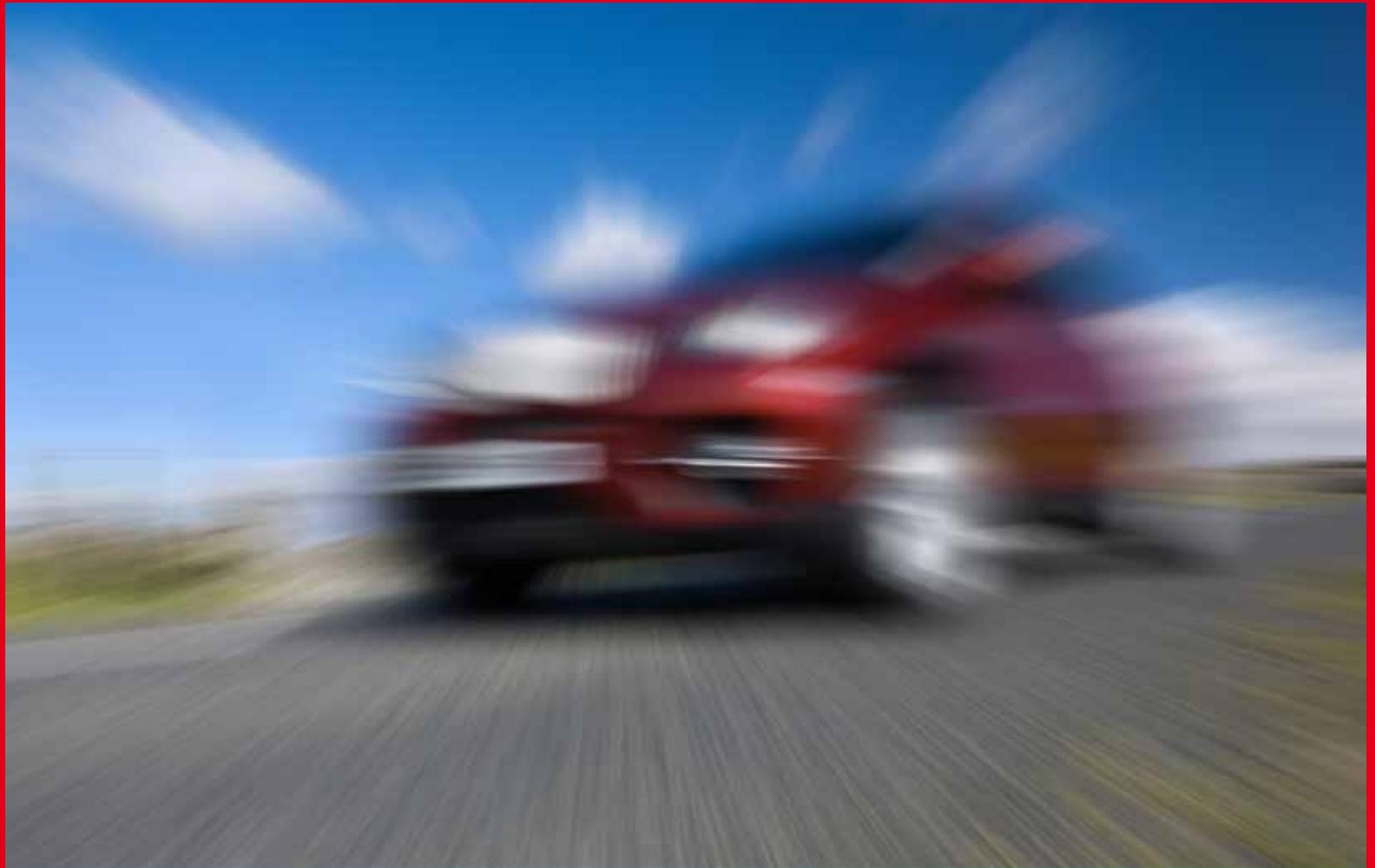
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a SAFEROAD company



Safe, safer, SafeEnd™

Birsta SafeEnd



Facts about Birstaverken

BIRSTAVERKEN AB was founded in 1961 as an engineering company with its own equipment for hot dip galvanizing.

Our production facilities and headquarters are located in Sundsvall, Sweden. We have local offices in Arboga, Västerås and Borås.

We design, manufacture, assemble and sell road and bridge parapets.

Our mission statement is: "We will meet the needs of the Swedish market for quick and reliable deliveries, ancillary services and propose solutions in these product areas."

About SafeRoad

SAFEROAD is a leading provider of products and solutions for road safety. Our three main business areas are infrastructure, signage and road markings.

Our business involves multiple solutions, such as road signs and technical traffic solutions, road markings, street lighting, road guide rails and bridge parapets, and the securing of rock walls and tunnels.

Safety and design are crucial aspects of our solutions. In cooperation with external experts, our designers have been the driving force behind a number of important innovations on the market. Consequently, we have complied with the strict requirements set by both authorities and the market in terms of road safety, durability and performance.

The objective of **SAFEROAD** is to become the natural choice of partner for road operators, wholesalers and major construction companies throughout Europe.

Innovative crash cushions from Birstaverken

Birstaverken's designers have developed an ingenious solution to the crash cushion for parapets in the form of a completely new type of energy absorber. The name is SafeEnd™.

The energy absorbers currently on the market have proved expensive, complex and difficult to repair. Birstaverken's SafeEnd™ now comes as an option where a single product can deliver the maximum possible safety at a very low cost. There are other smaller versions of crash cushions on the market, but none of them are in the same class as Birstaverken's SafeEnd™, which is one of Birstaverken's patented and protected solutions.

A new generation

SafeEnd™ is one of the first parapet ends that has been tested in accordance with the coming standard and thereby belongs to the next generation of energy-absorbing parapet ends. Birstaverken's SafeEnd™ ensures that all the energy is absorbed by the end in the event of a collision without the parapet deforming. This end can also be used as an anchoring for parapets with a capacity class higher than N2.

SafeEnd™ is installed by being fixed with a pipe into the asphalt or gravel. There is no need for casting.

Many advantages with SafeEnd™

SafeEnd™ has a very sleek, smart and simple design. It is as narrow as the parapet which means it can even be installed in confined spaces.



The steel box contains a flat steel plate mounted around a number of rollers. When a collision occurs, the box slides up along the parapet beam while the flat steel plate is pulled around and out through the rollers. The energy from the collision is thereby absorbed, and the vehicle stops in a very safe and controlled manner.

Moreover, no heavy and expensive concrete foundation is necessary. SafeEnd™ also serves as an anchor.

SafeEnd™ is lightweight and is very easy to install and repair. For repairs, you do not need to close the road for too long, which reduces the risk of long queues and traffic jams.

The design requires little material and it also means a very low cost compared to the alternatives.

At Birstaverken's test track at the former Sättna airport north of Sundsvall, you have the ideal platform to perform standardised crash tests.





Birsta SafeEnd

Lower price compared to traditional crash cushions

Smart and simple design

No concrete foundation

No complex wheel structure

Less material consumption

Lighter in weight

Easy and quick to repair

Slim design, easy to use in confined spaces

No stops for traffic

Can replace a regular anchor

Brilliant test data

Birstaverken's patent pending crash cushion, SafeEnd™, is tested according to the prEN 1317-7 standard. This means, among other things, driving into the parapet end in a passenger car weighing 1,500 kg at a speed of 110 km/h. A total of six different tests are performed.

The table below shows that SafeEnd™ belongs to capacity class P4 which is the highest class.

The S and T values are measures for the product's remaining lateral deformation. SafeEnd™ achieved excellent results in the crash test, i.e. low S and T values.

The Z value is a measure of the movement of the vehicle after a collision with the crash cushion, and here SafeEnd™ produced a very low value.

The Acceleration Severity Index (ASI) is a measure of the acceleration that a human body has at the moment of a crash. This ASI value then gives different damage classes. The test gave SafeEnd™ the ASI value of 1.1, resulting in damage class B.

Test fact for SafeEnd™

Capacity class	Deformation of parapet after collision	Deformation of parapet after collision	Speed of vehicle after collision	Acceleration Severity Index	Damage class
P4	X1	Y1	Z1	1.1	B

Benefits of SafeEnd™

- Quick installation
- Low price compared to traditional crash cushions
- Smart and simple design
- No concrete foundation
- Less material consumption
- Lighter in weight
- Easy and quick to repair
- Sleek design, easy to use in confined spaces

Number one in the world!

Sweden is the best in the world when it comes to road safety. Swedish roads claim only 3 fatalities per 100,000 inhabitants per year.

The trend in recent years has been quite unique and you have to go back a hundred years in time to find fewer road deaths. There are several reasons for this, but the main factor is that more roads have centre parapets and side regions protected by railings.

Leading development

Birstaverken designs, manufactures, tests, sells and installs world-class road and bridge parapets as well as crash cushions.

Over the years we have built up our technical skills and development of proprietary new products all the way from design to finished product which is a key success factor for Birstaverken.



Own test track

Our own test track and our close cooperation with customers means that the products are both well tested and highly customised.



Birsta K



Birsta W2



Birsta W



Birsta 2P



Birsta 3P



Birsta BV



Birsta 3p/h4b



Birsta Modul



Birsta Noise Barriers

Safety and quality

The innovative power of the Birstaverken AB engineering company has enabled it to develop into a global leader in the road safety sector.

In addition to Birsta SafeEnd, the company has also designed a wide range of high-quality products all with excellent delivery reliability. more about the company and its products. You'll also find contact information, news and lots of product images and drawings that can be freely downloaded.

Visit our website!

At the Birstaverken website (www.birsta.eu) you can read more about the company and its products. You'll also find contact information, news and lots of product images and drawings that can be freely downloaded.

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