



DOMEX®
DOCOL®
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**Lighter
Stronger
Smarter**

Tipper

SSAB
SWEDISH STEEL

A tipper of advanced high strength steel can do it

A yellow CAT 330C excavator is shown in the process of loading a blue tipper truck. The excavator's bucket is raised, dumping a load of dark, rocky material into the truck's bed. The scene is set in a quarry or construction site during the "blue hour" of dusk, with a deep purple and blue sky. The ground is uneven and covered with piles of excavated material. The excavator has "CAT" and "330C" markings on its side. The tipper truck is a heavy-duty model with multiple axles and its headlights are on.

Tipper bodies come in many shapes and sizes. In the past, all manufacturers developed their own unique design and solution to make the tipper body tough, reliable and economical.

Today, producing the best tipper body is very much a matter of choosing an appropriate material right from the start and adapting the design to the properties of the material.

This is why advanced high strength steel has had such a profound impact on tipper design over the past few years. An ever-increasing number of manufacturers around the world

have introduced high strength steel tippers that are far superior to tippers made of traditional material.

By using advanced high strength steel for vital parts of both the chassis and the

tipper body itself, manufacturers can produce tippers with a number of advantages that improve their competitiveness.

The main advantage is of course lower weight. Advanced high strength steels enable the thickness to be reduced without sacrificing strength. Less steel is needed and the number of steel grades in the design can often also be reduced and stocks of steel can be minimized.

The need for reinforcements on the tipper sides and on other parts is often eliminated. This results in

a much simpler production process – fewer parts, and less welding and joining are needed. At the same time, a new, more streamlined design with smooth surfaces reduces drag and lowers the fuel consumption.

The most obvious use of advanced high strength steel is for the chassis and tipper body, but great savings are also possible in other parts, such as the landing gear, underrun protections and suspension.



High strength steel makes everyone in the tipper business a winner

Manufacturers benefit from:

- Less steel needed
- Lower costs of stocks
- Simplified production
- Higher quality
- More attractive design
- Improved competitiveness
- Higher profitability

Tipper operators benefit from:

- Increased payload
- Reduced maintenance
- Lower fuel consumption
- Better reliability
- Higher profitability



Weight cut by one third

The weight reduction depends on the type of tipper and its design, but as a rule of thumb, the weight can be reduced by 25–30 percentage – both in structural parts of the chassis and in the tipper body.

Switching from mild steel to advanced high strength steel does not require any investments in new production equipment. In fact, production is often simplified. At the same time, the working environment is improved, since there are fewer and lighter parts to handle by the workforce.

The formability and weldability of extra high strength and ultra high strength steels are equal to or better than those of mild steels. Tolerances and variations in properties from batch to batch of steel are extremely small, since the production process for advanced high strength steel is very tightly controlled.

Higher payload, less fuel and a minimum of maintenance

The benefits of high strength steel to the haulier or end user are also great, the most obvious being increased payload when

fully loaded and lower fuel costs when partially loaded. The number of journeys is reduced, profitability is improved and the impact on the environment is reduced.

Operating costs are also reduced by the much lower maintenance costs. High strength steel withstands wear and tear much better than traditional materials. A tipper trailer of advanced high strength steel is ideal for abrasive materials and for off road operations.

A world leader

SSAB Swedish Steel is a world leading producer and a pioneer in high strength steels. The experience we have gained from applications such as containers, truck bodies and heavy construction equipment has already been put to use by a number of the world's most successful manufacturers of tippers.

Domex, Docol and Dogal – the right choice of steel

Domex hot-rolled steel and Docol cold-reduced steel have set the standard for the use of advanced high strength steels in the automotive industry, and for trucks and trailers. Dogal is an ultra high strength steel that is hot-dip galvanized for protection against corrosion.

Domex, Docol and Dogal are used wherever a stronger steel is needed to reduce weight and increase the payload capacity of vehicles. Dent and wear resistance are significantly increased due to the strength of the material, which reduces the maintenance costs and increases the product life.

Domex, Docol and Dogal have consistent mechanical properties and dimensional tolerances, which ensures a minimum of adjustments in the production flow.

These steels have excellent formability and good weldability. Lean analysis renders the steels resistant to heat sensitivity and hot cracking. Welding without preheating may be carried out using all standard methods and filler materials.

Laser and plasma cutting, shearing and punching, often together with roll-forming, are preferred methods for achieving optimised structures when using advanced high strength steels.

High strength steel can save tonnes on semi-trailer tippers

By using the right type of steel and intelligent engineering, the total weight of a semi-trailer tipper can be reduced by up to 3 400 kg. The examples below give an indication of the weight savings attainable on various parts:

- 11 m chassis -500 kg
- 6 m chassis -300 kg
- 63 m² tipper body -3 000 kg
- 17 m² tipper body -1 200 kg
- Bumpers and underrun protection -50 kg

Save 13.600 €/year by using advanced high strength steel

Income increase

Example	Traditional tipper	Advanced high strength steel tipper
Weight	11.700 kg	8.300 kg
Freight income per tonne	€ 10	€ 10
Number of shipments per year	400	400
Percentage fully loaded	85 %	85 %
Income increase per trailer	-	€ 11.560 /year

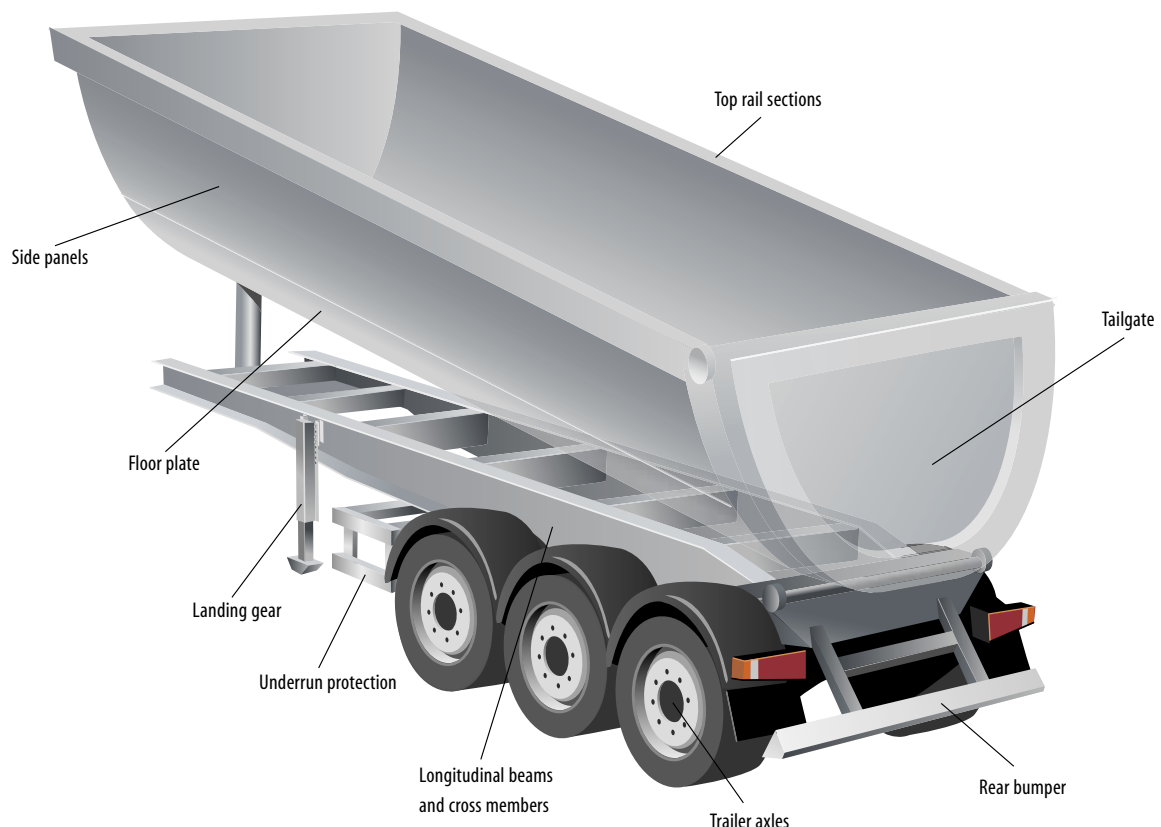
Fuel savings

Example	Traditional tipper	Advanced high strength steel tipper
Fuel savings (0.6 l/100km per tonne saved)	-	2.04 l/100 km
Distance travelled per year	100.000 km	100.000 km
Annual fuel saving	-	2.040 l
Fuel cut cost per year	-	€ 2.040 /year*

**Based on diesel oil price of 1€/l*

Total added value

Annual gain per trailer from increased payload	€ 11.560
Annual gain per trailer from fuel cost savings	€ 2.040
Total annual gain per trailer	€ 13.600



Questions about advanced high strength steels?

Our Knowledge Service Center and the web based information service www.ssabdirect.com have been developed to meet the needs of companies that specify high strength steels to make their products lighter, stronger and safer.

Instant information

The Knowledge Service Center provides in-depth knowledge and facts concerning high strength steels through personal contact with our application engineers and material experts.

Assistance and technical support for all types of machining, working and design matters are available

through our helpdesk or by e-mail. Instant support around the clock is available on the web at www.ssabdirect.com. This is a very comprehensive information database containing detailed product facts, downloadable auxiliary programs, material graphs and other information that simplifies analysis and design work.



Our Knowledge Service has all the answers

Printed matter and manuals can be ordered from the Knowledge Service Center or directly via www.ssabdirect.com.

Our manuals – the Sheet Steel Handbook, the Sheet Steel Forming Handbook and the Sheet Steel Joining Handbook – contain a

wealth of information on all aspects of design and manufacture using advanced high strength steels.

Contact us at www.ssabdirect.com or by phone +46 243 729 29

SSAB Tunnpåt AB is the largest Scandinavian sheet steel manufacturer and a leader in Europe in the development of high strength, extra high strength and ultra high strength steels.

SSAB Tunnpåt is a member of the SSAB Swedish Steel Group, has a turnover of SEK 12 billion, and has around 4200 employees in Sweden. The company produces about 2.6 million tonnes of sheet steel annually.

Our environmental policy involves continual improvements to the efficiency of production processes and environmental care plants, and development of the environmental properties of our products from the life cycle perspective.

We produce the following steels in our modern, high-efficiency production lines and rolling mills for strip products:

DOMEX[®]

hot-rolled steel sheet

DOCOL[®]

cold-reduced steel sheet

DOGAL[®]

metal-coated steel sheet

PRELAQ[®]

pre-painted steel sheet

Registered trademarks of
SSAB Tunnpåt AB

We assist our customers in selecting the steels that are best suited for improving their competitiveness. Our strength lies in the quality of our products, our reliability of supply, and our flexible technical customer service.

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