

TATA STEEL



Advantica®

Pre-finished steel for refrigerated trailers





ADVANTICA® PRE-FINISHED STEEL FOR REFRIGERATED TRAILERS

Tata Steel produce an innovative range of steel products for use in dry storage, closed box and refrigerated commercial vehicles. We are dedicated to ensuring the world's leading trailer manufacturers get the best from our pre-finished steel solutions.

Utilising our knowledge and expertise from both the construction and manufactured goods sectors we have re-engineered our Advantica® pre-finished steel to provide a ready to use, optimised solution for inner and outer layers of composite panels in the construction of refrigerated trailers.

These products have been specifically developed to offer improved adhesion and create a superior bond. This ensures the insulated panels are capable of coping with the most demanding environmental forces.

Our pre-finished steel provides the material of choice to help trailer manufacturers meet the challenges they face to provide clients with superior vehicles that offer benefits including:

- Light weighting.
- Durability.
- Thermal efficiency.
- Accredited food safe compliance.
- Ease of cleaning.
- Aesthetic finish.
- Sustainability.
- Flexible and economical processing.

How does Advantica® support trailer manufacturers?

Advantica® supports production efficiency and legislation compliance with:

- Manufacturing efficiencies achieved through an automated steel production process.
- Ease of use and bonding capability.
- Ready to use solution that requires no overpainting.

What are the benefits for the trailer owner?

Advantica® supports reduced running costs, resulting in lower cost of trailer ownership:

- Provides excellent thermal efficiency and minimal permeability therefore reducing cooling costs.
- Abrasion and corrosion resistance on external face and robust internally to provide a longer-lasting and durable trailer panel solution.
- Robust and moisture tight, providing consistent performance even when damaged.
- Easy to clean internally and externally.
- Reduced CO₂ for better in-use performance.
- Responsibly sourced, pre-finished steel is a truly sustainable material that is lightweight, long-lasting and fully recyclable.

ESSENTIAL COMPONENTS - DEDICATED PERFORMANCE

Advantica® pre-finished steel provides a tried and tested solution that has been specially developed for use in refrigerated trailer vehicles. We offer a range of products that have been optimised for the unique needs of the external and internal sides of the composite panels used. Our knowledgeable and experienced team of experts are here to help you select the best products to meet your requirements.

Advantica® SDP 35 TR – external

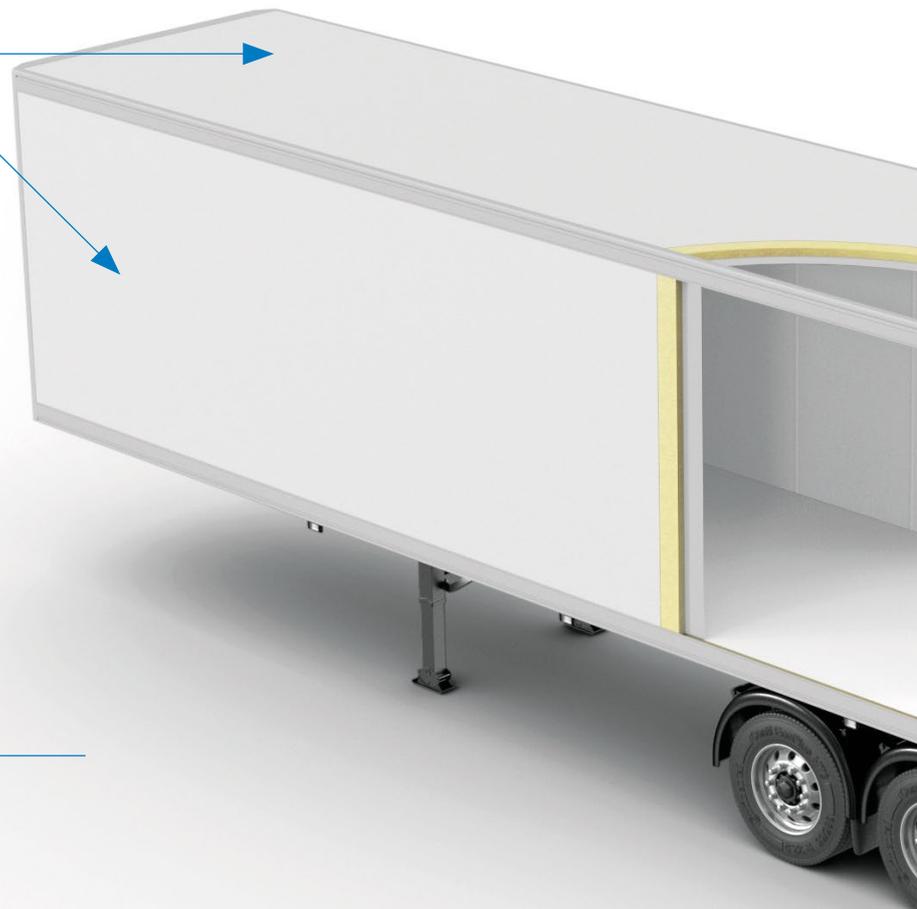
Used for external exposed areas including lateral side, roof, providing good resistance to:

- Robust nominal 35 micron product provides optimal protection from weather and road debris.
- Sunlight and UV.
- Humidity and corrosion, assessed through VDA tests.
- Specific chemicals such as diesel, pancreatin.
- Cleaning agents, washing brushes and steam jet.
- Stone chips.
- Permits easy washing of dust and debris.
- Smooth surface optimised for structural bonding. Allows fixing of stickers or transfers.

Advantica® PR TR (HA) – intermediate parts

High adhesion – dedicated for use on hidden parts of the trailer's structure, including tool boxes and side rails:

- Corrosion resistance provided with a nominal 7 or 15 micron high-performance epoxy primer.
- Epoxy surface supports very high adhesion on both sides.
- Customer specific development to meet manufacturers needs.



Each year over
30,000,000m² of
Tata Steel's
pre-finished
steel goes into
composite panel
construction



Advantica® L Control – internal

Food safe – used for the internal elevations including the walls, ceiling and internal doors:

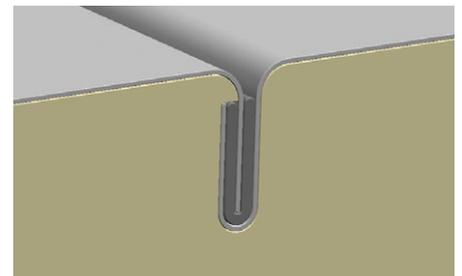
- Robust product with nominal 120 or 150 micron film, supports intensive loading/unloading (dependent on requirements).
- Adapted and certified for contact with foods.
- Excellent resistance to humidity and corrosion.
- Supports common cleaning and disinfection process.
- Meets food safety certification EU No.10/2011 and standard EN 1186-1.
- Supports structural bonding and sealing.
- VOC certification to EN ISO 16000-9 (A+ rating).

For more information on the specific Advantica® products please refer to our product technical datasheets which can be found on our website or contact our Advantica® team:
T: +33 (0) 607 588 220
E: advantica.connectioneu@tatasteelurope.com

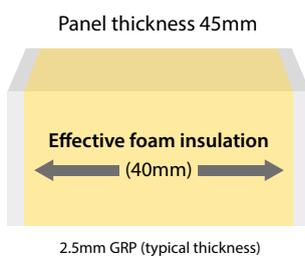
PROVEN SOLUTIONS INSIDE

Advantica® pre-finished steel for refrigerated trailers has been subjected to extensive testing and is well-proven in a wide variety of applications. Our products which are fully REACH compliant and chrome free, have been designed to provide exceptional performance, meeting the highest industry standards as required by end-users.

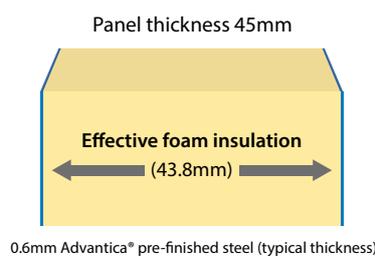
Typical composite panel joint



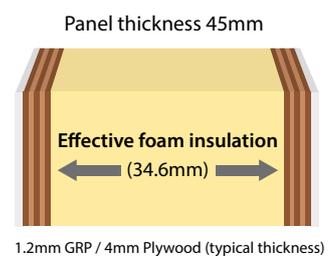
Refrigerated trailer panel manufactured with GRP



Refrigerated trailer panel manufactured with Advantica® pre-finished steel



Refrigerated trailer panel manufactured with Plywood/GRP



9.5% more foam compared with the GRP option resulting in 7% improvement in effective insulation

ADVANTICA®

26.5% more foam compared with the Plywood/GRP option resulting in 18.5% improvement in effective insulation



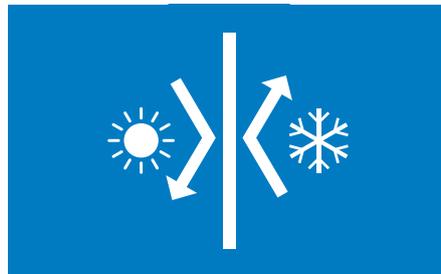
High strength steel for low weight trailers



Composite panels manufactured from thin gauge pre-finished steel provide exceptional rigidity at a relatively low weight compared to other alternatives.

Allows trailer manufacturers to offer reduced weight vehicles which in turn reduces fuel consumption and CO₂ emissions, making them more efficient to operate.

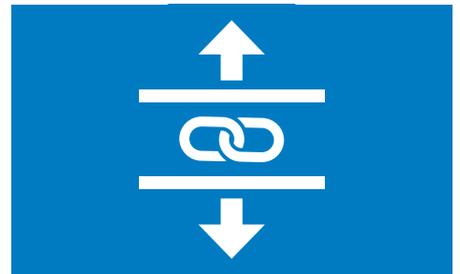
Superior thermal performance



When used for construction of the internal and external sides of composite panels, our pre-finished steel products offer increased thermal performance over alternative materials.

This in turn can allow reduced energy costs to power the refrigeration unit, providing fuel savings and reduced operating costs to the customer.

Strong and durable bond



Through continuous product testing and working with leading trailer manufacturers we have developed a proven adhesion system that ensures excellent strength for efficient panel processing and a rigid structure for a lifetimes service.

Advantica® pre-finished steel supports high adhesion on both sides of the product. Due to the excellent properties, a durable bond with other materials is achieved, whilst a high level of corrosion protection is maintained. Advantica® PR TR (HA) offers enhanced adhesion properties, and is designed specifically for ancillary areas of the trailer where adhesion to intermediate parts is critical.

ADVANTICA® HAS IT COVERED

Highly resistant to the daily pressures (transporting, loading and unloading) that will be placed upon the internal and external faces of the main trailer, Advantica® pre-finished steel products offer excellent levels of resistance to corrosion, damage, scratching/abrasion and wear and tear.

Robust in use

Internally, steel's robustness makes it the ideal choice for providing a long-lasting composite panel solution that will cope excellently with the extensive day-to-day loading operations it will endure.

Externally, steel offers excellent abrasion and corrosion resistance and is capable of withstanding the wear and tear it can be subjected to, including demanding weather conditions and road debris.

Moisture resistant

Unlike other material options, Advantica® pre-finished steel composite panels have superior moisture ingress resistance. Even if damaged the integrity of the panel is uncompromised as the robust steel layer will not allow moisture to enter and compromise the insulation and surrounding surface area.

This characteristic ensures that the trailer operator can have lasting confidence that the trailer will still operate to its required performance.

Premium aesthetics

Designed to provide peace of mind for longer-lasting aesthetics, steel composite panels will continue to retain their original appearance for many years.

Using Advantica® pre-finished steel provides a ready to use solution with no need for post painting or over spraying. This allows for a more efficient manufacturing process with no compromise on aesthetics.

Easy to clean

The risk of contamination from one cargo to another is always a concern but can be dealt with easily through a routine cleaning procedure that is simple and effective.

Advantica® products can be cleaned with high pressure water and mild detergent without any risk of corrosion. A thorough rinse with clean water will remove any residual detergent left by the cleaning agent. Please contact Tata Steel for advice on chemical resistance.

Easy to repair

Advantica® pre-finished steel offers benefits for trailer maintenance and repair. The use of pre-finished steel as part of a composite panel system gives trained professionals the option to repair damage with cost-effective sectional repair, or full panel replacement.

External facing products can be overpainted and decals applied to give a new lease of life or meet clients change in aesthetic needs.



Added reassurance with full VOC and food safe certification

Independently tested and certified for volatile organic compounds (VOC) and fully compliant with EN 16000-9. Advantica® L Control achieved an A+ rating.

Subjected to rigorous industrial testing Advantica® L Control meets stringent requirements for continuous food contact. Tested by an independent accredited laboratory to EN 1186, EN 13130 and CEN/TS 14234 standards.



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ERQ/PRCD-PR-091-DOC03-C

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FRANCE

Cestas, le 11 octobre 2013

RAPPORT D'ESSAIS RÉVISÉ REVIEWED TEST REPORT RES 116535 A62 Rev1	
Nos Réf.	MICHAS/BONH/145305/RES 116535 A62 Rev1
Référence Client <small>Customer's reference</small>	Advantica® L Control
Référence du rapport <small>Test report reference</small>	RES 116535 A62 Rev1 Annule et remplace le rapport RES 116535 A62, que nous vous demandons d'avoir l'obligeance de détruire ou de nous retourner ; les modifications ont été effectuées page 5, et de 7 à 19 <small>Cancels and stands in for report RES 116535 A62, we ask you to kindly destroy or return ; amendments were made page 5, and from 7 to 19</small>
Objet de l'essai <small>Test object</small>	AIR INTERIEUR - PARTIE 9 : DOSAGE DE L'EMISSION DE COMPOSES ORGANIQUES VOLATILS DE PRODUITS DE CONSTRUCTION ET D'OBJETS D'EQUIPEMENT - METHODE DE LA CHAMBRE D'ESSAI D'EMISSION <small>INDOOR AIR - PART 9 : DETERMINATION OF THE EMISSION OF VOLATILE ORGANIC COMPOUNDS FROM BUILDING PRODUCTS AND FURNISHING - EMISSION TEST CHAMBER METHOD</small>
Norme / Méthode / Cdc Client <small>Standard / Test method / Customer's specification</small>	NFENISO16000-9 (08/2006)
Technicien Essais <small>Test Technician</small>	Chef d'Unité Analyse Sensorielle <small>Sensory Analysis Unit Manager</small>
Ludovic BONHOMME	Annabelle SCHNEIDER
<p><i>Non valide sans code de sécurité</i> <i>Invalid without security code</i></p> <p>Code de sécurité Security Code: N3042776</p>	<p><i>Non valide sans code de sécurité</i> <i>Invalid without security code</i></p> <p>Code de sécurité Security Code: N6144886</p>
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SERCO



Case study Serco, South Africa

Products of Tata Steel:

Advantica® L Control and
Advantica® SDP 35 TR.

Where used:

Roof panel and internal and external
side walls.

Benefits provided:

These 18m long refrigerated trailers were converted from fibreglass to steel using Advantica® pre-finished steel products. Tata Steel offered detailed technical support working with Serco and their supply chain to offer a thermally efficient, aesthetic and durable solution.

Tata Steel's global reach and awareness of the market allowed for robust logistics, fully supporting the co-ordination of the steel supply chain from Europe to South Africa.

**Advantica®
pre-finished
steel was key to
improving the
refrigerated trailers
thermal efficiency
by over 30%**



LIGHTWEIGHT CORETINIUM® FOR DRY FREIGHT TRAILERS

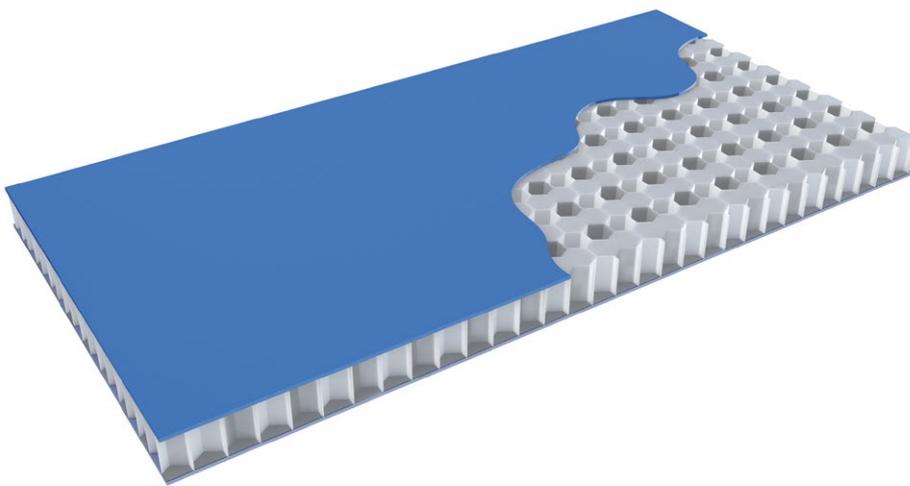
In addition to Advantica® pre-finished steel for refrigerated trailers, Tata Steel's portfolio of products for the commercial vehicle sector also includes Coretinium® for dry freight trailers.

Coretinium® is made from two high performance materials; Colorcoat Prisma® pre-finished steel skins and a rigid honeycomb core that combine to make a lightweight composite sheet that is ideal for upper structure parts.

The impressive strength and rigidity to weight ratio of Coretinium® allows it to replace heavier plywood based composites, helping reduce vehicle unloaded weights, contributing to fuel saving and cutting CO₂ emissions.

A sustainable material solution

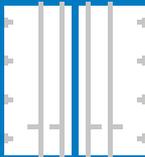
Coretinium® is made on a new to the world coil fed production line in Shotton, North Wales. Based on Econcore's patented production technology the Coretinium® line creates an exceptional composite sheet from minimal raw materials.



Recyclability

With typically 85% of product weight coming from the Coretinium® steel skins; at its end-of-life the composite sheet can be considered as steel scrap and recycled back into the steel making process without the need to separate the core from the skins.

Rear doors



Properties:

10mm 0.55mm skins
600 micron core walls: 10.5kg/m²

Benefit:

50kg weight saving vs 19mm plymetal doors sets.

Side walls



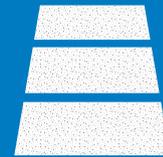
Properties:

10mm 0.40mm skins
600 micron core walls: 8.1kg/m²

Benefit:

6kg/m² weight saving vs 21mm GRP skinned plywood.

Floors



Properties:

28mm 0.55mm skins
600 micron core walls: 12kg/m²
+ over-coating

Benefit:

Typically >200kg weight saving vs 30mm plywood floors.



Lightweight and long-lasting steel, a sustainable solution for all trailer types and components

An expert in trailers

For decades Tata Steel in Europe has been a trusted partner for the world's most successful trailer manufacturers with a diverse range of leading products and services focused specifically on the unique needs of manufacturers and end users of trailers.

Customer focused

With a proactive and responsive team of experienced specialists dedicated to your needs in the trailer market you can rely on us. We deliver an excellent customer experience and develop long-term strategic partnerships.

Research and development

Our ongoing investment in research and development of advanced steels and processing provides a reliable manufacturing option for trailer components.

Distribution and processing network

Tata Steel offers further steel processing such as cutting sheets to required lengths, plasma/laser cutting and more. We hold a large variety of steel grades in stock – meaning we are ideally placed to meet our customers' needs with a well aligned network of warehouses and sales offices.

We offer just-in-time deliveries and our flexibility is combined with excellent geographical reach and technical expertise. This has enabled us to become the preferred route-to-market for both direct and indirect deliveries to original equipment manufacturers and their subcontractors.

Innovation and customer engineering

We recognise that OEMs are constantly challenged to improve the performance and competitiveness of their trailers and our advanced engineering team works closely with customers from the outset on design and development of new products and models.

By tackling factors including strength-to-weight ratio, fatigue levels, processing costs and machine performance, the design, manufacturing and materials used can be optimised while reducing costs and weight.

Sustainability

Working together, we are helping to improve the environmental impact of steel across the industry. Steel is unique, as it can be infinitely recycled. This means it can help us reach our environmental goals, by ensuring a responsible supply chain throughout the entire process.

Whether it is by improving fuel efficiency, payload, carbon performance, promoting zero waste, preserving resources or providing product circularity, we understand how to meet your sustainable objectives.

For more information, please contact:

**E: connect.engineering@tatasteel.com
tatasteel.com**

Products of Tata Steel in trailer applications

<p>Axle beam</p> 	<p>Mixer drum</p> 	<p>Closed box</p> 
<p>Products of Tata Steel: Celsius® structural hollow sections</p> <p>Benefit: Normalised steel with tight tolerances to ensure optimal machining, welding and fatigue performance.</p>	<p>Products of Tata Steel: Heat treatable boron hot rolled strip</p> <p>Benefit: Abrasion resistant and longer-lasting steel.</p>	<p>Products of Tata Steel: Coretinium®</p> <p>Benefit: Lightweight and durable solution for side walls, rear doors, bulkheads and floor.</p>
<p>Landing gear</p> 	<p>Refrigerated trailer</p> 	<p>Small trailer</p> 
<p>Products of Tata Steel: Hybox® structural hollow sections</p> <p>Benefit: Cold formed square profiles with consistent tight tolerances on shape and wall thickness for reliability.</p>	<p>Products of Tata Steel: Advantica® pre-finished steel</p> <p>Benefit: Optimised pre-finished steel used in the manufacture of composite panels inner and outer layers for increased thermal efficiency and exceptional rigidity at relatively low weight.</p>	<p>Products of Tata Steel: Metallic coated steel</p> <p>Benefit: Longer-lasting, corrosion resistant steel for side walls, floor base and chassis.</p>
<p>Timber haulage</p> 	<p>Tipper trailer</p> 	<p>Contact details</p> <p>Advantica®: ☎ +33 (0) 607 588 220 ✉ advantica.connectioneu@tatasteeleurope.com</p> <p>Coretinium®: ☎ +44 (0) 1244 892434 ✉ coretinium@tatasteeleurope.com</p> <p>General enquiries: ✉ connect.engineering@tatasteeleurope.com</p>
<p>Products of Tata Steel: Ympress® S700MC</p> <p>Benefit: High strength and lightweight racking system to maximise payload and reduce fuel consumption.</p>	<p>Products of Tata Steel: Ympress® S700MC and Valast® 450</p> <p>Benefit: Abrasion resistant and lightweight high strength steels for longer-lasting tipper bodies.</p>	

www.tatasteeleurope.com

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