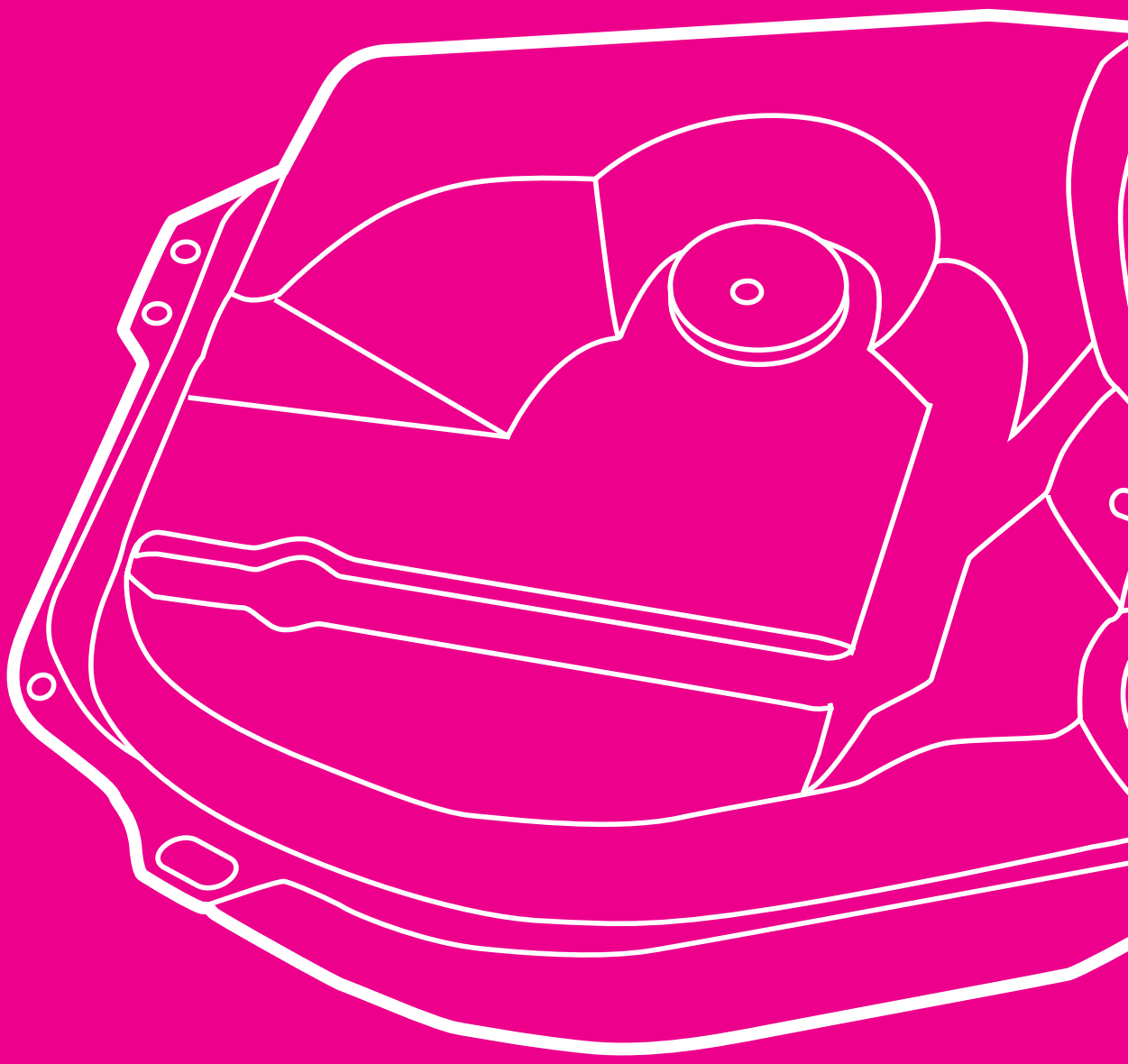
Corus Strip Products UK

Ternex hot-dip lead-tin alloy coated steel

Proven reliability and economy for automotive fuel tanks



Ternex

Description

Ternex is cold-rolled steel with an electrodeposited 'flash' coating of nickel and a subsequent hot-dip coating of lead-tin alloy.

Application

Automotive fuel tanks.

Benefits

Ternex has a high degree of external corrosion resistance together with excellent resistance to aggressive fuels, including fuels contaminated with water. It has the strength that is vital for safety, with excellent impact resistance, and is stable at high and low temperatures.

With over a quarter century of successful use in the automotive industry, Ternex is a well-established material with well-understood processing properties and performance. Its consistency and ease of handling allow high press rates, fast assembly, and consequently low unit costs.

It can be easily deep drawn, welded and soldered. The coating retains its integrity during severe deep drawing and forming, acting as a lubricant during those operations.

Ternex is an excellent base for painting.

Reliable and economical, Ternex is the proven solution.

Standard and grade

Ternex is manufactured to British Standard BS 6582 : 1985.

The steel substrate is to EN 10130 : 1999 in the following grades.

DC01	DC04	DC06
DC03	DC05	

Basic properties

Mechanical properties

The mechanical properties of the substrate for Ternex meet the requirements of EN 10130 : 1999.

Chemical composition

The chemical composition of the substrate for Ternex meets the requirements of EN 10130 : 1999.

Coating

Constituents

Tin: 8% minimum.
Antimony: 1% maximum.
Lead: balance.

Thickness and mass

Nickel flash: Typically ≥0.1µm each side. Lead-tin alloy: 120g/m² minimum triple-spot average including both surfaces, which is equivalent to 6µm each side. For other coating weights, consult Corus.

Coil diameter

Wide coil

Inside, 610mm standard, 508mm by arrangement. Outside, 1600mm maximum.

Slit coil

Inside, 508mm standard, 610mm by arrangement. Outside, 1270mm maximum.

Coil weight

10 tonnes maximum, 2 tonnes minimum.

Cut lengths

2500mm maximum; longer by arrangement with Corus.

Re-sheared, re-squared and blanks are available by arrangement.

Dimensions

Table 1: Dimensions

Thickness		Width
≥	≤	Max
0.4	2.0	1300

Notes:

1. Dimensions are in millimetres.
2. For dimensions outside those shown, consult Corus.

Surface treatment

Ternex is available oiled or chemically passivated, or both. Corus is also developing a chrome-free passivation system. Consult Corus for more information.

Using Ternex

Forming and fabrication

Ternex is easy to form and fabricate. If you are in any doubt about your application, please consult Corus.

Welding

General

Ternex can be readily welded by the high-production welding processes, i.e. resistance spot, seam and projection welding. With only minor changes, all the techniques of resistance welding that apply to mild steel apply to Ternex.

Fusion welding is not generally recommended.

The paragraphs below touch on some aspects of welding Ternex. For more information, please consult Corus and the relevant standards.

Spot welding

Welding conditions similar to those used for mild steel are suitable for Ternex. Procedures for spot welding Ternex are summarised in BS 1140 : 1993. Spot welding Ternex influences electrode life, where in optimum circumstances 1500-2000 welds can be achieved. Truncated cone electrodes are preferred to domed electrodes, except where correct alignment is difficult to achieve, e.g. robotic installations. However, domed electrodes do not last as long as truncated cone electrodes. Each electrode should be water cooled with a water flow rate of at least 8 litres a minute. The criteria for choosing electrode materials are summarised in ISO 5182.

Seam welding

Resistance seam welding of coated steels is a critical process requiring very closely defined operating limits. Satisfactory weld seams and an economic wheel life can be obtained only if contamination of the electrode wheel is avoided or minimised.

The general procedures for seam welding Ternex are summarised in BS 6265 : 1982, but are for guidance only. The exact welding conditions will depend upon the design and end application of the component.

Projection welding

Ternex can be projection welded satisfactorily whether using embossed projections (singly or in clusters) or elongated projections, provided that projection dimensions and welding machine settings are controlled closely.

Stud welding

Capacitor discharge stud welding can be used readily on Ternex, with a variety of stud shapes and sizes.

Brazing and soldering

Brazing

Ternex can be readily brazed using a carefully selected brazing alloy and appropriate flux. Low temperature silver brazing alloys (approx. 700°C) are preferred to high temperature brazing alloys (850-900°C) such as silicon or manganese bronze alloys. Good brazing technique gives a wide heat spread with low temperature peaks and avoids overheating.

Soldering

Ternex has excellent solderability. Solders with at least 20% tin are customary. Those with 60% tin are preferred because of their ease of application, low melting temperature and excellent capillary flow.

Adhesive bonding

Many types of adhesive can readily bond Ternex. The choice depends upon the end application and requirements of the joint.

Painting Ternex

Ternex provides an excellent base for painting, but must first be suitably cleaned to remove oil and grease.

Health and safety

When welding, brazing or soldering Ternex, precautions must be taken to ensure that fume levels are within safe limits. *Product health and safety data sheet no.19* is available from Corus.

More information

For more information about this product, contact Corus at the address on the back cover.

www.corusgroup.com

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English language version

CSPUK13:1000:UK:11/2004