

Protact®

Optimised, efficient and sustainable laminated steel for packaging

Protact laminated steel from Tata Steel is a fully approved and controlled food-safe product. It is a proven material solution across a number of high performance canmaking applications and formats. Protact removes the need for complex, cost-intensive operations associated with the use of lacquer.

For example, using Protact to manufacture 2-piece drawn and wall ironed (D&I) food cans removes up to five unit operations. It also means the canmaking process consumes less energy and can be water-free. With Protact, there are no volatile organic compound (VOC) emissions during canmaking.

Product features

Protact comprises:

- packaging steel substrate
- a three-layer polymer coating system on each side of the substrate which has been optimised for food, aerosol and general line product applications.

Coating system

Protact's multi-layered polymer coating system can be tailored to meet a variety of needs. Depending on the application, the coating comprises polyethylene terephthalate (PET) or polypropylene (PP). Internal polymer layers have proven product contact performance for the products contained within Protact packaging. Protact is available with a total coating thickness ranging from 12 to 40 µm.

The three layers of coating on each side of the substrate comprise an adhesion layer, a main layer and a surface layer (see figure 1).

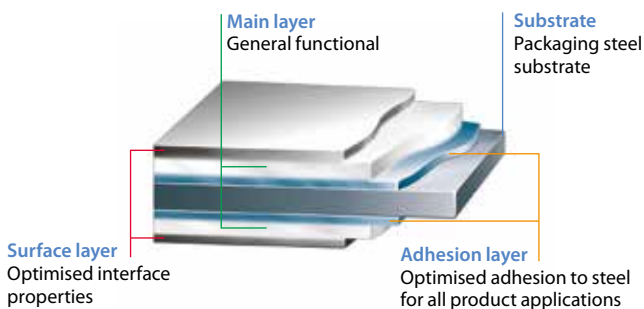


Figure 1. The independently optimised layers of Protact's coating system offer unique advantages. These include improved canmaking efficiency and enhanced product aesthetics for market differentiation.

Each layer in Protact's polymer coating system is independently optimised to meet can performance requirements and ensure efficient processing during canmaking (see figure 2).

Formability and canmaking

Both the internal and external three-layer coating systems enable high wall ironing ratios, so Protact does not crack or perforate during the D&I process in 2-piece can production. The coating, in conjunction with small modifications to the canmaking line, ensures wall ironing reductions of 50 - 55% are possible, as required for food cans. This has been proven in commercial production for D&I aerosol and beer and beverage cans where the coating remains robust and reliable after formation. Protact's containment performance is not compromised during forming. The unique build-up of Protact's coating layers delivers a non-abrasive material – minimising tool wear during canmaking.

Sustainability

Protact is a permanent available material that is infinitely recyclable with no loss of quality. It is a chlorine-free, fully integrated polymer coated laminated solution for packaging. Recycling and reuse of Protact material does not require complex separation techniques or special treatments.

Use of Protact in the canmaking process removes up to five unit operations related to lacquering. It eliminates emission of VOCs and significantly reduces energy consumption and related CO₂ emission – for an improved environmental footprint. Used in a dry canmaking process, water consumption is reduced. Tata Steel continually conducts company-wide life cycle analysis (LCA) against competitor materials and can provide insights on individual request.

Food safety

Protact is fully compliant with all relevant European Food Safety Authority and US Food and Drug Administration food contact regulations. Compliance is certified by the independent and respected European research institute, TNO Triskelion. Current food safety focus for cans is on Bisphenol A (BPA) in lacquers. Protact is BPA-free. The chemical substances used in Protact are also specifically formulated without bisphenol A diglycidyl ether (BADGE), novolac glycidyl ether (NOGE) or bisphenol F diglycidyl ether (BFDGE). Kosher certification is available with Protact.

Application	Adhesion layer	Main layer	Surface layer
Food	Optimised for sterilisation	Optimised for non-blushing performance or coating colour	Optimised for forming performance or content release
Aerosol	Optimised for heat resistance	Optimised for barrier performance or coating colour	Optimised for print
General Line (Paint)	Optimised for chemical resistance	Optimised for barrier properties or coating colour	
Beer and beverage	Optimised for adhesion	Optimised for barrier performance, deformation stresses and coating colour	Optimised for forming performance and print

Figure 2. Protact can be customised to meet specific applications and canmaking needs.

Corrosion protection

Protact's optimised layer system ensures a low level of porosity. Compared with lacquered cans, this delivers superior corrosion protection for corrosive and hard-to-hold substances such as solvents used in aerosols and other general line applications.

Print and colour

Protact is compatible with varnishes, UV and thermo-cured inks. It provides a good base layer for optimised print and improved branding performance. Protact is available in a range of base colours:

- white
- clear
- black
- gold

Dimensions

Protact comes in a range of widths and dimensions (see figure 3). Availability of some dimensions depends on the packaging steel substrate and relevant polymer coating for the product application. Please contact us to discuss your needs.

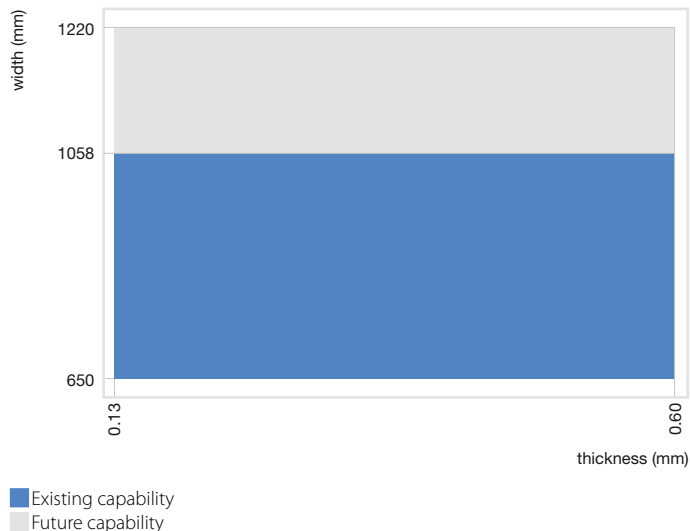


Figure 3. Protact dimensional capability.

Product support

Our material experts and customer technical support are there to support the deployment of our products in your individual can format and product application.

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