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# —STEEL—BELTS—FOR FOOD—PROCESSING— —AND—OTHER— —HYGIENE—CRITICAL —APPLICATIONS—



# ——MINIMISE RISK WITH STAINLESS STEEL — THE SAFE CHOICE

Stainless steel is the material of choice for handling food, pharmaceuticals and other materials when absolute hygiene must be maintained. It is essentially inert, posing no risk of cross contamination, tainting, chemical reaction, toxicity or corrosion.



Its smooth, hard, non-absorbent surface enables a wide range of effective cleaning options. And its unique thermal qualities – remaining unaffected by extreme heat, cold, and rapid changes from one to the other – allow it to be used in applications where no other material could realistically be considered.

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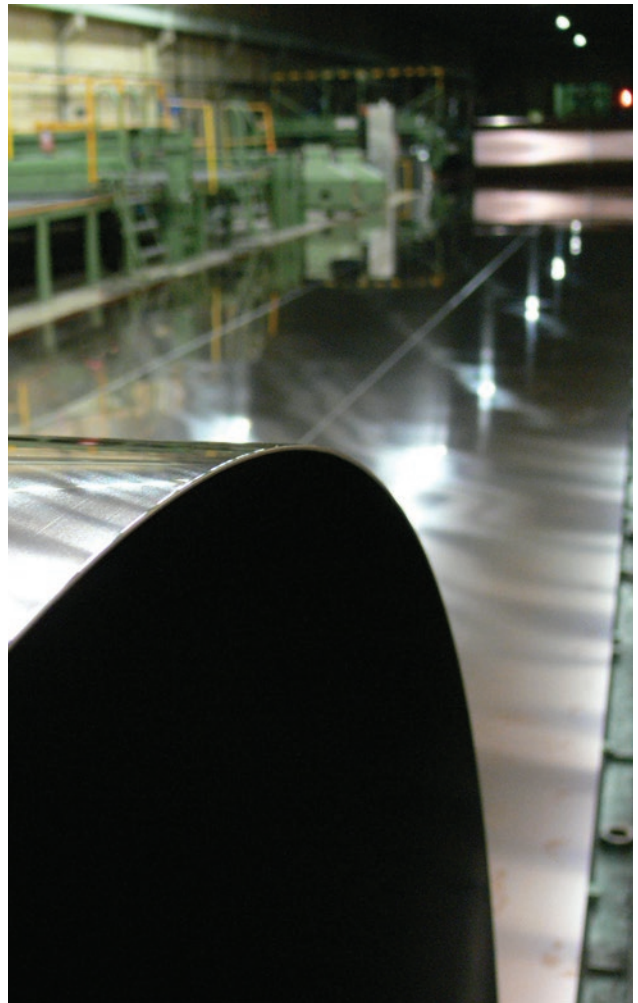
It is for this reason that stainless steel is the default solution in applications ranging from holding and handling to producing and processing. Silos, tankers, ovens, freezers, washers, dryers, pipework, framework, pans and knives; no other material comes close to stainless steel in either performance or price.

And it is for all these reasons that many of the world's leading food and pharmaceutical processors choose IPCO stainless steel belts.

### **World leaders in steel belt technology for the food industry**

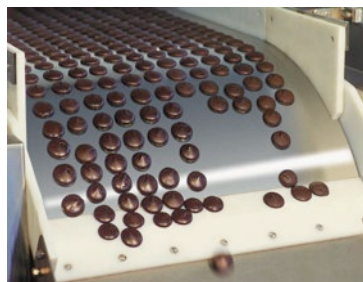
We produced the world's first steel conveyor belt in 1901 and commenced production of stainless steel 20 years later. Since then we have been responsible for introducing stainless steel belt-based processing to food applications from fish cutting and meat boning to ice cream freezing and chocolate conveying. Today, food products as diverse as fruit, vegetables, nuts, confectionery, meat, shellfish, poultry, cookies, tea, coffee, fats, emulsifiers and more are processed on our stainless steel belts.

It is a material with quite remarkable properties. On the one hand, it is extremely strong and resistant to damage, on the other it is also incredibly flexible, undergoing constant changes in stress as it passes around the drums



of a conveyor thousands of times a day, often undergoing a similar number of cooling and heating cycles at the same time. And doing so day after day, week after week, year after year.

Stainless steel isn't in itself inherently clean; while its smoothness will resist the build-up of soiling, germs can of course find their way onto its surface. But the perfect flatness of a steel belt means there is nowhere for bacteria to hide. And the use of stainless steel enables thorough and effective cleaning by pressure wash, steam, heat, detergents, brushes, sterilising agents or any combination of these.



# Ensuring best practice and highest standards in meat processing



The food industry is facing up to the challenge of meeting ever more demanding regulations in terms of health, hygiene, safety and traceability, and nowhere does the spotlight shine as brightly as on the meat industry.

Best practices must be maintained, hazard prevention plans implemented, and every precaution taken to minimise risk of bacterial build-up. In terms of equipment, anything that could come into contact with meat products – directly or indirectly – must be easy to clean and, where necessary, disinfect (both in terms of ‘cleanability’ and ease of access) and in reasonable condition, i.e. not scored or worn.

This is why the steel belt conveyor remains the conveying medium of choice for so many processors, despite the availability of materials with a lower initial investment cost. And our experience in belt design and understanding of the physical and chemical properties of different belt grades is why we’ve been meeting the needs of this market since the 1950s.

## **Solid, durable and easy to clean**

In broad terms there are three types of meat conveying material to choose from: solid stainless steel, solid plastic and modular plastic.

Stainless steel’s chemical and bacterial neutrality with food means it poses no threat to either human health or to the taste of food. Durability and corrosion resistance are other important factors; stainless steel systems last for years, even decades.

For meat conveying, the structure of the steel belt is another key advantage. Flat and solid, there are no gaps or textures in which bacteria can hide. Steel belts are installed in what is called ‘endless’ form, meaning the two ends are welded together to form the conveyor loop, then ground to remove any trace of the joint.

Furthermore, stainless steel is far more resistant to knife damage or impact on cutting/deboning lines, and therefore less likely to suffer cuts, again where microbes can develop.

But most important of all is its ability to be cleaned and sanitised quickly and efficiently.

Recent years have seen growing awareness of the threat to human health posed by E. coli, Listeria, Salmonella and Staphylococcus. As a result, food processors have had to consider every aspect of their operation, and when hygiene is critical, stainless steel really does have no equal.

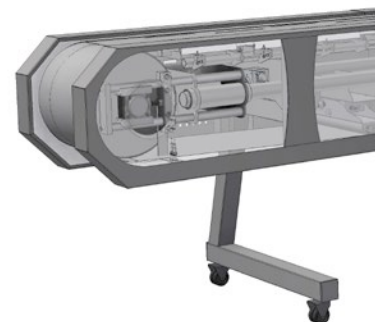
## Stainless steel’s chemical and bacterial neutrality with food means it poses no threat to either human health or to the taste of food

### **Effective cleaning for maximum productivity**

Cleanliness isn’t just a health and hygiene matter; it can also impact on productivity. The ease and efficiency with which a steel belt can be cleaned can result in significant savings in both time and cost.

One German company operating in the prime beef market has reported savings of more than 60% in cleaning times since upgrading to stainless steel belts. This has also translated into reductions in the consumption of water and cleaning chemicals / detergents, and also means high availability, vital for multi-shift operations.

The other area in which the qualities of stainless steel are immediately apparent is durability. The strength of a stainless steel conveyor ensures a long working life – far longer than other materials – with low maintenance and repair requirements.





#### **Complete conveying systems**

As well as supplying our steel belts to 3rd party OEMs and equipment suppliers, we can also design, manufacture and install complete conveying systems. These represent best practice in terms of hygiene:

- Open design enabling easy access for cleaning.
- Minimal use of horizontal surfaces that might lead to water 'pooling' after cleaning.
- Appropriate mechanical components.
- Food approved lubrication.
- IP65 standard protection on gear motors.

# Steel belt conveyors – scientifically proven to be more hygienic

Stainless steel is made of a number of elements: iron, chromium, manganese, silicon, carbon and, often, significant amounts of nickel and molybdenum too. These elements react with oxygen from water and air to form a very thin, stable film that consists of such corrosion-resistant products as metal oxides and hydroxides.

This film acts as a barrier to limit oxygen and water access to the underlying metal surface, resisting corrosive materials like blood, fatty acids and salt.

The second factor behind the unsurpassed hygienic qualities of stainless steel is its cleanability. One of the greatest threats to a sanitary production environment is the formation of biofilm on work surfaces, and unless cleaning is complete and effective, this can lead to the growth of harmful bacteria and pathogens.

## Laboratory-tested and proven cleanability

In 2010, Finnish food laboratory VTT Expert Services Ltd published research confirming that the risk of problems caused by bacterial build-up can be reduced, simply by upgrading to a stainless steel belt conveyor.

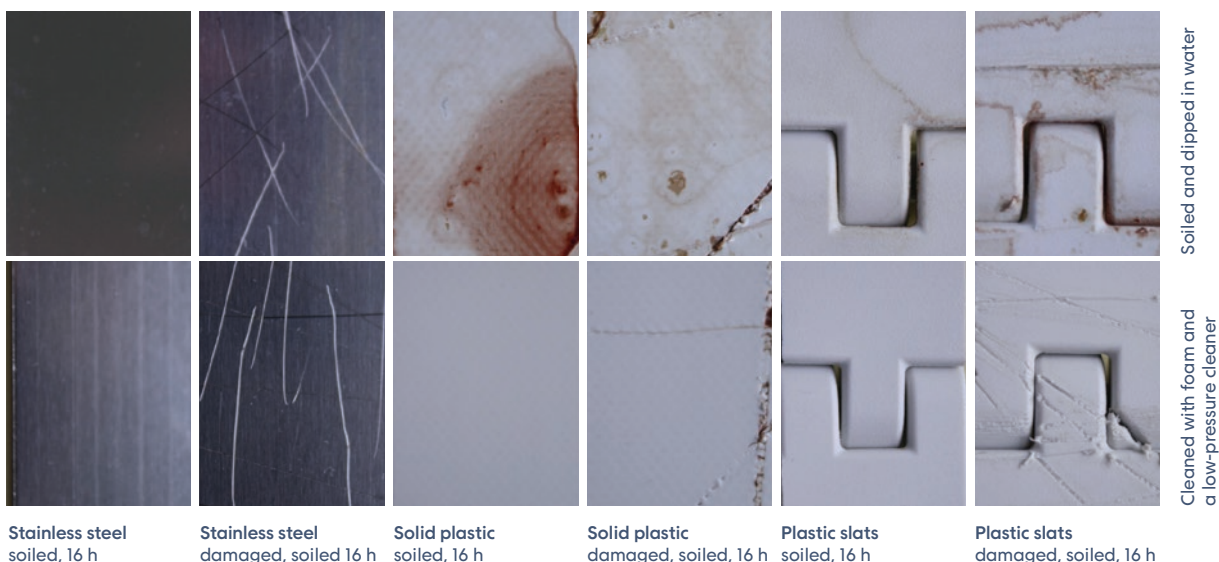
The research looked at the 'cleanability' of three types of conveyor: a stainless steel (AISI 301) conveyor belt, a solid plastic belt, and a plastic conveyor of slat construction. All three were tested in pristine condition and also with knife damage to replicate everyday wear.

A suspension of three types of microbes – *Pseudomonas fragi*, *Candida albicans* and *Listeria innocua*, chosen to replicate those found in meat processing facilities when cleaning is insufficiently thorough. *P. fragi* is known as a strong biofilm former and has properties similar to those of the pathogenic *Pseudomonas aeruginosa* bacterium; *C. albicans* is an opportunistic pathogenic yeast test strain; and *L. innocua* demonstrates behaviour similar to that of the pathogenic *L. monocytogenes*.

## VTT Expert Services' research scientists concluded that: "Stainless steel is more cleanable than the two different plastic surfaces"

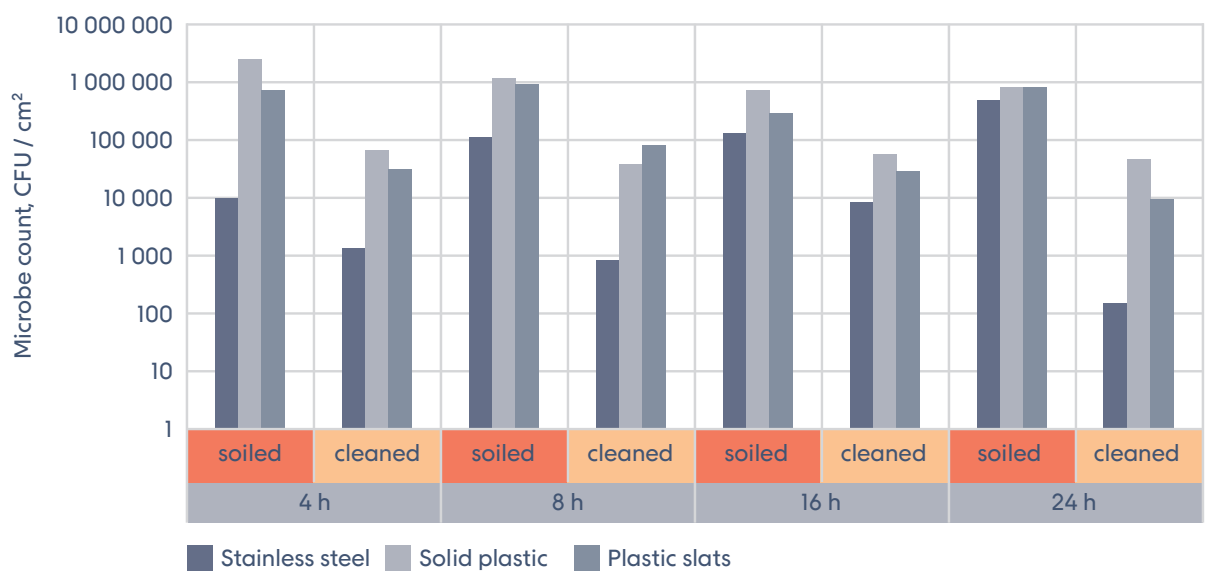
The suspension, which also incorporated cow's blood, was applied to the clean belts and left for predetermined periods. The various belt samples were then cleaned, visual observations made (dirt was clearly visible on the damaged plastic surfaces), swabs taken, and microbial loads assessed using scanning electron microscopy (SEM).

The results were clear. VTT Expert Services' research scientists concluded that: "stainless steel is more cleanable than the two different plastic surfaces tested according to the culturing results. The difference is more significant for damaged surfaces."





### Cultivation results for damaged surfaces





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