

# Low Insertion Force Coating

SnTOPTM®: a tin-silver coating with low friction coefficient for high pin count signal connectors



## Wieland's solution for reducing mating forces

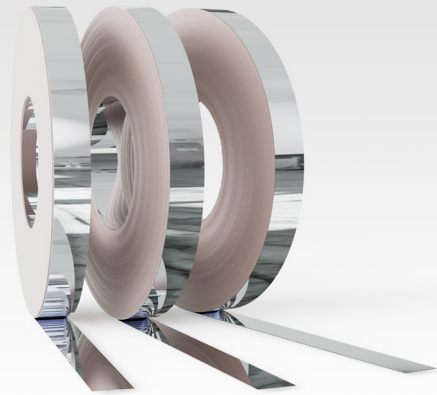
*Strip coated with SnTOPTM®*

Many automotive connectors are assembled manually by workers on automakers' assembly lines. For ergonomic reasons the mating forces must remain below a specified threshold. In particular this applies to high pin count signal connectors. A high circuit connector's mating force is the sum of mating forces needed to connect each single pin to its respective receptacle.

The goal is to reduce the mating forces to a level below the forces that are typical of interconnects coated with pure tin. This is a difficult challenge since simultaneously a reliable electrical contact must be achieved while the spring forces (normal forces) are kept at a low level.

The solution is a "low insertion force coating" named "SnTOPTM®".

SnTOPTM® is an enhanced high-performance hot-dip coating based on the well-established SnTOP coating system. SnTOPTM® consists of a hard Cu-Sn-matrix and silver-rich particles on the surface. Those particles cause the reduction of both, the mating forces as well as normal forces at the same time.



# SnTOPTeM®

## Your benefits

- SnTOPTeM® provides low insertion forces.
- At the same time the spring forces may remain at a low level and still achieve a reliable electrical contact.
- SnTOPTeM® is based on the well-established hot-dip tin-silver coating process and thus provides an economic solution .



### Do you want to know more about Wieland SnTOPTeM®?

Please visit our website and see our information brochure

➔ [wieland.com/hot-dip tin coated strip](http://wieland.com/hot-dip%20tin%20coated%20strip)

### Do you want to test the mating forces of your connector made of Wieland SnTOPTeM coated strip?

Please contact the Technical Marketing of the Business Unit Rolled Products:

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## Low insertion forces for high pin count connectors

Trends like autonomous driving necessitates simultaneous transfer of increased number of signals. As a consequence, the pin count increases and measures must be taken to keep insertion forces of the complete connector reduced. At the same time the reliability of the electrical contact must be maintained.

Our solution is to use the "low insertion force" coating SnTOPTeM® on the strip. Subsequently the stamping of the pins and the assembly of the connector is completed. As a result every single pin is coated and contributes to reducing the total insertion force of a high pin count connector.

The development is based on the well-established hot-dip tin-silver coating SnTOP. The new coating system named SnTOPTeM® reduces mating forces and is suitable even for low spring forces.

## The beneficial effect of a few percent of silver

SnTOPTeM® contains the elements tin and silver applied with the well-established hot-dip tin-silver coating technology. An additional thermal treatment is applied after the coating process and allows the silver to migrate to the surface, forming silver-rich particles which reduce the mating force and enable a reliable electric contact.

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