FRICTION INSERTS

SECURE AND OPTIMIZE BOLTED AND PRESS FITTED JOINTS FOR THE AUTOMOTIVE INDUSTRY

- Increase static friction coefficients significantly
- Transmit higher shear forces and torques
- Allow lighter, more compact part designs
- Enable new material combinations
- Reduce noise and vibrations
- Profitable same part strategies feasible

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INNOVATIVE FRICTION ENHANCEMENT TECHNOLOGY

With the demand for higher performance, bolted and press-fitted joints are exposed to increased forces and torques. This applies especially for engines as well as powertrain applications in electric vehicles. Freudenberg provides a solution for those higher demands with Friction Inserts.

By using Friction Inserts between two joining parts, static friction coefficients up to μ=0.95 can be achieved. This not only enables higher transmission of shear forces and torques, but also lighter and more compact component design without sacrificing performance. Friction Inserts reduce the number and/or size of the bolts used and prevents micro-vibrations.

Materialica Design + Technology Award 2017
German Innovation Award 2018

KEY BENEFITS

Static friction coefficients up to **μ= 0.95**

Significant increase in torque and shear forces

Unique low deviations of the achievable static friction coefficient enables usage as a design element during the pre-development phase

No impact on tolerances of the parts, which enables same part strategy or retrofitting.

Broad particle portfolio guarantees significant friction enhancement **- even on corrosion-protected parts**.

Color contrast between Friction Inserts and the part surface enables imaging-based quality assurance.

Use of **100% inert** materials; no impact on the corrosion behavior in the joint

Rely on **fast and flexible service as well as technical support** from our highly qualified experts during your design phase and for the industrialization of your solution.

APPLICATIONS

Engine
Torsion vibration damper, Engine carrier, Oil pan, Sprockets, VVT, Engine housing...

Chassis
Rubber bearing, Wheel carrier, Tailgate hinge, Traverse control arm, Supporting frame to body, Tie rod...

Powertrain
Flexplate, Differential housing, Clutch housing, Gearbox housing, Drive shaft

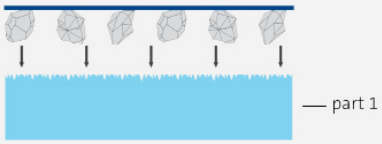
HOW DO FRICTION INSERTS WORK?

Friction Inserts technology is based on a special nonwoven carrier material, which is coated on one side with hard particles and placed between a friction joint. This allows the hard particles to penetrate into both surfaces and create a micro interlock.

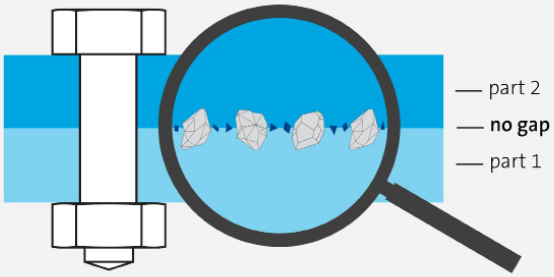
Unlike existing hard particle technologies, Friction Inserts have a thin material profile that does not impact the tolerance of the parts and can be easily retrofitted to existing connections.

PRODUCT STRUCTURE

DIRECTION OF PRODUCT APPLICATION



PRODUCT IN THE FRICTION JOINT



Material properties

- Hard particle sizes [µm]: 10 / 35 / 55 / 85 / 115
- Particle distribution [%]: 5 - 30
- Thickness of carrier [µm]: ≈ 20

The particle portfolio ranges from 10 µm to 115 µm to guarantee a sufficient friction increase on coated parts and components (e.g. e-coating). The desired performance can be achieved with the particle distribution, which is specific for the material combination of the joint.

Customizable cutting designs

The possibilities of individual cuttings are very wide. The shape of Friction Inserts are specified and customized for each project.

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This product meets the criteria of the ECO-CHECK as defined by Freudenberg Performance Materials.
www.freudenberg-pm.com/eco-check

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