

What Are Helical Thread Inserts Used For?

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Typical applications, the industries that specify helical thread inserts, and how to choose the right size, material and finish for the joint.

Helical Thread Inserts are used for reinforcing or repairing threads in aluminum, magnesium and plastics. They are manufactured to DIN 8140, and selection is driven by the thread size, the fit and tolerance the assembly requires, and the service environment.

Primary duty

Reinforcing or repairing threads in aluminum, magnesium and plastics

Governing standard

DIN 8140

Thread size range

M3 to M20

Category

Threaded Inserts

Application notes are general engineering guidance. Verify the property class and any approval requirement against your own design calculation.



Helical Thread Inserts (DIN 8140) are specified where the joint requires reinforcing or repairing threads in aluminum, magnesium and plastics. The sections below cover the typical end-uses by industry, the size and material decisions for each, assembly practice, and the applications this fastener type is not suited to. Stocked across roughly M3 to M20, they cover general to heavy-duty work.

Typical Applications for Helical Thread Inserts

The most common settings where these are specified:

- **Aerospace & motorsport:** lightweight alloy parts needing full-strength steel threads.
- **Field repair:** recovering a stripped thread without scrapping the part.
- **General machine building:** fastening covers, brackets, motors and sub-assemblies on production equipment.
- **Maintenance & repair (MRO):** a stocked size for servicing existing plant where the original fastener spec must be matched.
- **Fabrication & metalwork:** bench and on-site assembly of steel frames, enclosures and weldments.

How to Specify Helical Thread Inserts for Your Application

- **Size:** Match the nominal size to the mating thread or hole. This product spans M3-M20; check the full table below for the exact dimensions of each size.

- **Tap & length:** Drill and tap to the specified STI size, and pick insert length (commonly $1.5 \times D$ or $2 \times D$) for the load and parent material strength.
- **Environment:** For damp, coastal or chemical exposure prefer A4/316 stainless or a suitable coating; indoors, plated steel or A2 is usually sufficient.
- **Standard:** This product is supplied to DIN 8140. Quoting the standard on your order guarantees interchangeable dimensions between suppliers.

Installation & Assembly Practice

- Drill and tap with the specified STI tap — a standard tap will not produce the correct thread for the insert.
- Install to the specified depth (typically 0.25–0.5 mm below the surface) and remove the tang where the design requires it.

Common Selection Mistakes with Helical Thread Inserts

- Fitting an insert into strong steel that already holds a thread — added cost for no gain.
- Skipping the tang removal, which then blocks the mating screw.

Where Helical Thread Inserts Are Not the Right Choice

Not a fix for a hole that is already oversized beyond the STI tap range, and not needed in steel that already holds a thread well.

Technical Drawing

Customize the parameters below — every spec field is editable, and the drawing redraws to match the values you choose. Changing the size will snap the other fields to that size's standard values; you can then override any individual value.

Sends the selected values to the quote form below.

Request a Quote

The form below follows the current technical drawing configuration. Change the drawing values above and the request details update automatically.

Dimensions & Specifications (DIN 8140)

Thread size	Pitch (mm)	Length (mm)	Drill / tap size (mm)	Free coil diameter (mm)	Reference standard	Notes
M3	0.5	4.5	3.1 (STI tap)	3.45	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M3	0.5	6.0	3.1 (STI tap)	3.45	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off
M4	0.7	6.0	4.2 (STI tap)	4.57	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M4	0.7	8.0	4.2 (STI tap)	4.57	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off
M5	0.8	7.5	5.3 (STI tap)	5.67	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M5	0.8	10.0	5.3 (STI tap)	5.67	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off
M6	1.0	9.0	6.3 (STI tap)	6.80	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M6	1.0	12.0	6.3 (STI tap)	6.80	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off
M8	1.25	12.0	8.4 (STI tap)	9.01	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M8	1.25	16.0	8.4 (STI tap)	9.01	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off
M10	1.5	15.0	10.5 (STI tap)	11.26	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M10	1.5	20.0	10.5 (STI tap)	11.26	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off
M12	1.75	18.0	12.6 (STI tap)	13.51	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M12	1.75	24.0	12.6 (STI tap)	13.51	DIN 8140 / ISO 10130	Wire thread insert, 2xD length; tang break-off

Thread size	Pitch (mm)	Length (mm)	Drill / tap size (mm)	Free coil diameter (mm)	Reference standard	Notes
M16	2.0	24.0	16.5 (STI tap)	17.71	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off
M20	2.5	30.0	20.5 (STI tap)	22.07	DIN 8140 / ISO 10130	Wire thread insert, 1.5xD length; tang break-off

Inside the plant

Manufactured in our own plant

This part is cold-formed, threaded, heat-treated and finished in-house. The stages below are where its class and finish are actually decided.



01

Cold heading

Wire rod is drawn to size and cold-formed into blanks. Forming rather than cutting keeps the grain flow continuous around the head, which is where a bolt is most likely to fail.

Head dimensions and under-head radius checked at set-up and per shift.



2.

02

Thread rolling

Threads are rolled between hardened dies rather than cut. Rolled threads are stronger in fatigue than cut threads and hold pitch and flank angle far more consistently across a batch.

Go / no-go ring gauges to ISO 965 tolerance class 6g.

3.



03

Heat treatment

Quench-and-temper brings carbon and alloy steel to the property class ordered — 8.8, 10.9 or 12.9 — with the furnace charge tracked so a finished lot can be traced back to it.

Core hardness and tensile tested per lot to ISO 898-1.

4.



04

Surface treatment

Zinc, zinc-nickel, hot-dip galvanizing, black oxide, phosphate and Dacromet, selected against the service environment rather than against the price list.

Coating thickness and neutral salt spray hours to ISO 9227.

Frequently Asked Questions

What are Helical Thread Inserts used for?

Reinforcing or repairing threads in aluminum, magnesium and plastics. They are supplied to DIN 8140.

Which industries use Helical Thread Inserts?

They are commonly specified in general machine building, maintenance & repair (mro) and fabrication & metalwork, among other sectors.

How do I choose the right size of Helical Thread Inserts?

Match the nominal size to the mating thread or hole. This product is available from M3 to M20; the full dimension table on this page lists each size.

When should I use Helical Thread Inserts instead of tapping directly?

Use them in soft alloys, plastics or thin sections where a cut thread would strip, or to repair a stripped hole. In strong steel that already holds a thread well, they are usually unnecessary.

Can I get a quote for Helical Thread Inserts in the size and material I need?

Yes. Use the technical drawing and quote form on this page to set the size and options, then send the exact configuration to our team for pricing and lead time.

Related Pages

Product page: [Helical Thread Inserts — specifications & sizes](#)

Helical Thread Inserts Specification Guides

- [M3 Helical Thread Inserts size guide](#)
- [A4 stainless Helical Thread Inserts](#)