

Zapp SuperClean Invar* Foils Datasheet With Dimensional Stability



Zapp is Certified to ISO 9001



Zapp SuperClean Invar* Foils with Dimensional Stability

Iron-nickel precision foils made of Ni36 (1.3912) exhibit tightest thickness tolerances, are free from waves and at the same time internal stresses.

*Invar is a registered trademark of Aperam Alloys Imphy

Applications

Zapp precision foils of iron-nickel alloy Ni36 are used for various applications in the electronic industry either as stencils or masks for the production of electric devices, or in the appliances themselves. They are furthermore used in bi-metals, as sealings between glass and metals, in clocks and laser systems. The patterning of masks is usually carried out by photochemical machining. During this process material is removed to produce through apertures. In order to maintain the desired shape and tolerances after the etching process, internal stresses must be eliminated. Furthermore, the low thermal expansion and its tight control allows the use of Zapp SuperClean Invar 36 over a large temperature range, even in combination with other materials.

Finish

- Cold rolled
- Cold rolled and stress relieved

The stress relieved material is recommended for photochemical machining processes and for operations at elevated temperatures, where dimensional stability is essential for the production of patterns or components.

Edges

- Slit

Zapp SuperClean Invar 36 is an iron-nickel alloy with 36 % nickel content.

Chemical Analysis (Weight %)

	Ni	C	Cr	Mn	S	Si	Fe
min.	35.0	-	-	-	-	-	bal.
max.	37.0	0.05	0.10	0.50	0.005	0.30	bal.

Mechanical Properties

The foils are delivered in the work-hardened condition.

Alloy	Tensile Yield Strength [MPa]	Ultimate Tensile Strength [MPa]	Elongation [%]	Hardness [HV _{0.05}]
min.	550	600	-	180
max.	750	800	10	-

* typical values, intermediate values possible

Surface

All foils are bright annealed.
Surface roughness: $R_a \leq 0.15 \mu\text{m}$

Cleanness

The metallurgy is optimised to achieve the best possible cleanness.
Tight process control and sampling is applied to deliver the optimum right material for the typical demands in the microelectronic industry.

Physical Properties

Thermal expansion coefficient between 20 and 100 °C:
 $0.8 \times 10^{-6}/\text{K} \leq a \leq 1.6 \times 10^{-6}/\text{K}$.

Delivery Form and Finish

- Coil

Zapp Precision Metals GmbH

PRECISION STRIP

Hochstraße 32

59425 Unna

Phone +49 2304 79-508

Fax +49 2304 79-7979

precisionstrip@zapp.com

www.zapp.com

Further information regarding our products and locations are available in our image brochure and under www.zapp.com

The illustrations, drawings, dimensional and weight data and other information included in this data sheet are intended only for the purposes of describing our products and represent non-binding average values. They do not constitute quality data, nor can they be used as the basis for any guarantee of quality or durability. The applications presented serve only as illustrations and can be construed neither as quality data nor as a guarantee in relation to the suitability of the material. This cannot substitute for comprehensive consultation on the selection of our products and on their use in a specific application. The brochure is not subject to change control.

Last revision: October 2021