BILSTEIN GROUP

Supermod® and Ultramod®

Cold Rolled Steel Strip with Electromagnetic Characteristics

Chemical Composition

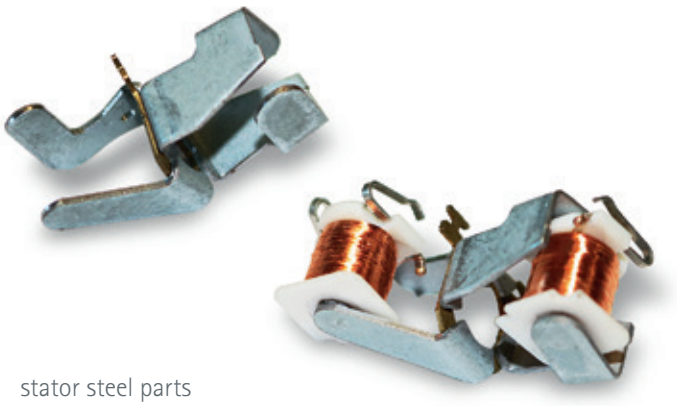
	Chemical ranges %					
Grade	C ≤	Mn ≤	P ≤	S ≤	Si ≤	Al ≤
Supermod®	0,040	0,280	0,020	0,012	0,030	0,070
Ultramod®	0,020	0,300	0,015	0,012	0,040	0,020

Mechanical Properties

Grade	YS [MPa] average	UTS [MPa] ≤	Elongation % min
Supermod®/ Ultramod®	210	330	40
	200	310	36
	180	310	34
	150	300	32
	140	300	30

Electromagnetic Properties

Grade	Vickers Hardness ≤	Coercive Force Hc [A/m] ≤	Remanence BrT ref. standard value	Saturation Magnetization Js T ref. standard value
Supermod®/ Ultramod®	95	240	1,100	2,090
		160	1,100	2,090
		120	1,000	2,090
		100	0,950	2,090
		80	0,925	2,090



stator steel parts
(part of instrument clusters)

The megatrend electric mobility will accompany us due to current discussions concerning energy issues along the next decades. The aim is to realise the vision of electrical movement by courtesy of automobiles with contrastable or even more favourable cost-, energy- and carbon-dioxide-results compared to present combustion engines.

For bypassing this period a lot of effort is put into the process of finding a (preliminary) hybrid-solution, which can be offered fast and favourable to the market.

In this connection the suppliers also request new components and applications with electromagnetic properties and functions for a hybridization, which must be presentable efficiently and flexibly as a preliminary solution for a clear electrical movement.

On this occasion electromagnetic characteristics of a component do not have to be identically to use "standard" cold rolled electrical steel strips.

Supermod® and Ultramod® fill the qualitative, economic dimension- and quantity-flexible gap between cold rolled steel strip and silicon/ aluminum-alloyed electrical strip.

The Supermod® and Ultramod® grades particularly developed by BILSTEIN contain the excellent electromagnetic characteristics that are already in state of delivery, and therefore enable a direct partial delivery even without any additional annealing treatment.

These grades meet the requirements of the DIN EN 10139 and DIN EN 10140 at all essential points.

Tolerances BILSTEIN DC04

The BILSTEIN types present cold-strip-specific, narrowest thickness tolerances within the EN 10140. Narrower tolerances can be arranged.

thickness	tolerances
> 0,10 ≤ 0,50 mm	±0,015 mm
> 0,50 ≤ 1,00 mm	±0,020 mm
> 1,00 ≤ 1,50 mm	±0,025 mm
> 1,50 ≤ 2,00 mm	±0,030 mm
> 2,00 ≤ 2,50 mm	±0,035 mm
> 2,50 ≤ 3,00 mm	±0,035 mm
> 3,00 ≤ 3,50 mm	±0,040 mm
> 3,50 ≤ 4,00 mm	±0,045 mm
> 4,00 ≤ 5,00 mm	±0,050 mm

Application-Characteristics

Weldability

All of the BILSTEIN types are basically weldable with all common methods. However it needs to be considered that a modification of the electromagnetic characteristics can occur in the area of the heat-affected zone. In particular spot- and laser welding stand the test, in which the drop of the electromagnetic characteristics turned out considerably lower.

Surface Quality

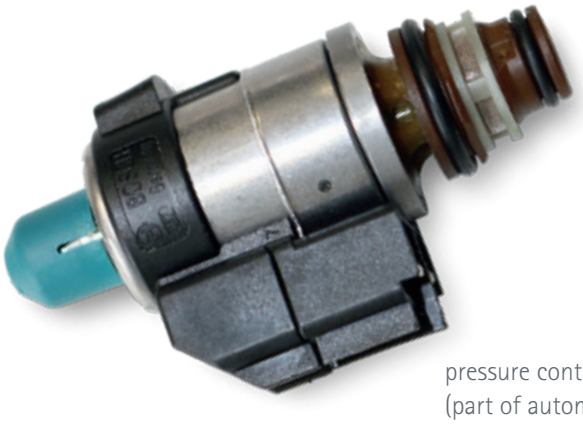
As a standard the BILSTEIN types are delivered with the surface quality MA and the surface finish RM (Ra 0,9 – 1,6 µm). Hereof differing surface qualities and finishes can be arranged individually.

Coating

The BILSTEIN types are suitable for the application of wet- and powder coatings as well as electrolytically applied metallic coatings.

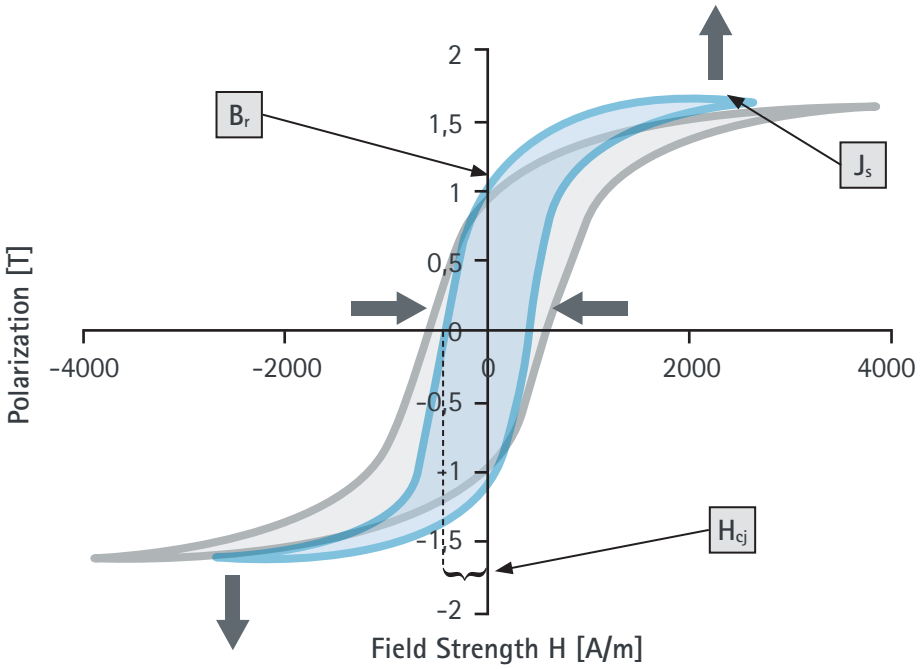
Advantages of BILSTEIN qualities with magnetically soft characteristics

- Cancelled additional annealing treatment
- Very good formability (high n-quality)
- Variable dimensions and tolerances regardless of the known norms
- Small-volume through our production process (batch annealing plant)
- Substitution of turned parts, efficiency due to higher material output by means of cold forming
- No "ready made" material:
  due to the flexible production process at BILSTEIN, variable features are possible, which are adjusted to the client's processing chain



pressure control valve
(part of automatic gear)

Improvement of the Cold-Rolled-Steel-Strip-Quality



• DC-quality according to the standard • optimized DC-quality

BILSTEIN GROUP

BILSTEIN
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BILSTEIN CEE
BILSTEIN COLD ROLLED STEEL
SHEARLINE STEEL STRIP

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