

## Product Information DSC inox





# Datasheet DSC inox

## DSC - Damascus Steel SuperClean ferritic-martensitic compound

Steel	Etch Color	C	Si	Mn	Cr	Mo	V	N	Co	Ni
Nitro-B	dark	0.50	0.60	0.50	14.80	0.60	0.12	0.15-0.20	-	0.0
N690	bright	1.08	0.40	0.40	17.30	1.10	0.10	-	1.50	0.0

Chemical compositions (%)

### Hot Working

The forging temperature for our stainless Damascus steel is 950-1050°C.

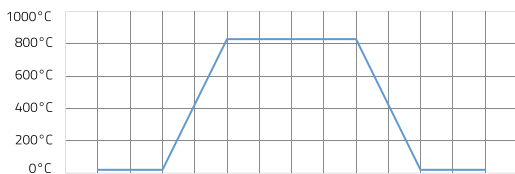
### Cold Working

Cold working of our Damascus steel is usually not possible.

### Machining

All our products are delivered soft annealed. The hardness of the steel in this state is about 22-27 HRC.

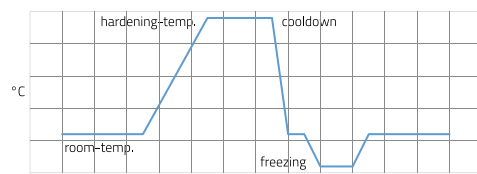
### Soft annealing



To process our DSC inox after hot working, you need to perform a soft annealing process as follows:

- Heat it in the oven up to 830°C
- Holding time of a minimum of 4 hours at 830°C
- Slow furnace cooling
- Remove at temperatures of < 400°C

### Hardening Information

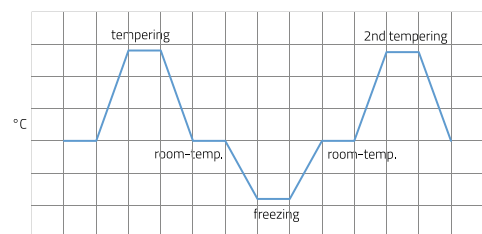


Deep freezing after hardening is not required, but recommended.

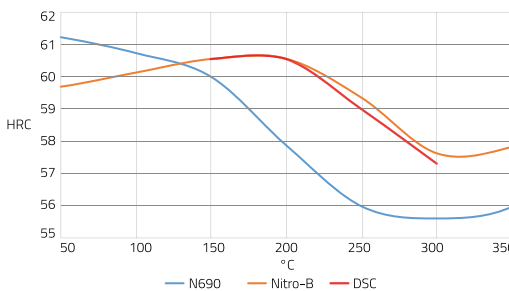
First when the steel has been hardened is the maximum corrosion resistance achieved. We recommend the hardening process according to the following instructions in a vacuum, or to be carried out under protective gas.

- Heat it in the oven up to 1050-1080°C
- Holding time for 15-20 minutes at 1050-1080°C
- Rapidly quench in air, then immediately deep freeze

### Tempering Information



Tempering after the hardening process is needed to convert the steel structure into tempered martensite and to adjust its hardness. We recommend a tempering of at least 2 x 1 hour, optionally repeating the deep freezing process before a second tempering.



Please note that a new material with its own hardness profile is created through the composition of Damascus steel.

### We recommend for knife blades:

2 x 0.75 hours at 180-190°C (60-61 HRC)

### We recommend for decorative items:

2 hours at 300°C (56-57 HRC)

## DSC - Damascus Steel SuperClean ferritic-martensitic compound

**DSC** stands for Damascus Steel SuperClean, entered as a trademark at the German Trademark and Patent Office. In the steel industry, the term „super clean“ designates extremely fine and pure steels. This stainless steel is super clean as it is produced and specially treated by a weld bonding process which prevents the build-up of contaminants in the steel or the welding seams. This pure weld-bonded composite steel is produced powder-free using traditional methods on the basis of solid material and reacts with very low distortion when heat-treated.

The connections of the welded layers of steel do not separate during further hot working or machining. A high degree of hardness of up to 62 HRC and good ductility produces the best cutting properties for blades. DSC stainless consists of up to 450 layers of steel.

### Applications

Regardless of where our DSC inox is used, in the kitchen, the pocket or in the field the product is perfectly suited as a result of its fine grain and stainless properties. Fault free layer welds are the basis for the superb quality of this steel.

Your unique requirements and ideas come first and are our guideline - we are ready to produce according to your special wishes. The combination of steel used can be altered to your specifics, for example. Feel free to contact us and discuss your specially produced DSC inox.

### Quality

We have been producing custom Damascus steel since 1991 and you will profit from our experience. DSC inox combines the know-how and experience of over 25 years.

Our patented DSC Superclean process gives us 120 layers, with other layer and component combinations possible per request. Our unique process is exemplified by the extreme cleanliness and fine grain without weld faults.



## Variety – Our Patterns

Discover the wide variety of our Damascus steel. Our patterns are created traditionally with blows from a hammer or by mechanical displacement of the single layers deep into the core. Special or exclusive patterns can be produced for bulk purchase customers upon request.



leopard skin



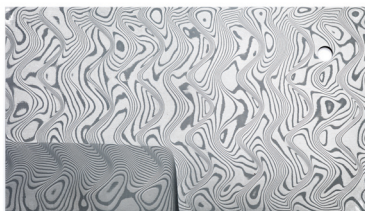
large pyramids



large rhombi



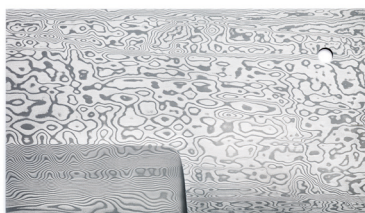
roll damascus



herringbone



small roses



wild damascus



ferus



torsion damascus



special & customized patterns



## DSC – Damascus Steel SuperClean ferritic-martensitic compound

Only highly alloyed and modern steels are used for our stainless Damascus steel – to guarantee that our consumers receive steel with the best properties. The steel industry advertises the material as having very good cutting properties, as being corrosion-resistant and particularly suitable for industrial applications. These unique properties can once again be found in our finished Damascus and make our steel compound interesting for steel experts, jewelry manufacturers, the knife industry and for the production of exclusive unique pieces all over the world. DSC stainless steel contains up to 17.3 % chromium and is thus clearly distinguishable from other compound steels. DSC is approved for direct contact with food.

Steel	Etch Color	C	Si	Mn	Cr	Mo	V	N	Co	Ni
Nitro-B	dark	0.50	0.60	0.50	14.80	0.60	0.12	0.15-0.20	-	0.0
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Chemical compositions (%)

### Characteristics

- SuperClean-layer welds
- Corrosion resistant
- Very fine grain
- Reliable production process
- Multiple options, patterns and dimensions
- High edge holding
- High hardening possible (up to 62 HRC)
- Fit for food production
- Uncritical misforming after heat treatment



## Hot Working

The forging temperature for our stainless Damascus steel is 950-1050°C. Please note that the steel is very tough during processing, even during hot working – a manual processing is therefore only recommended for smaller dimensions.

- Be sure to comply with the forging temperature
- Cool the steel down slowly after deformation
- Before further machining can take place, soft annealing is required

## Cold Working

Cold working of our Damascus steel is usually not possible.

Creating a pattern in a cold state is possible only with our stainless sheet dimensions.

## Machining

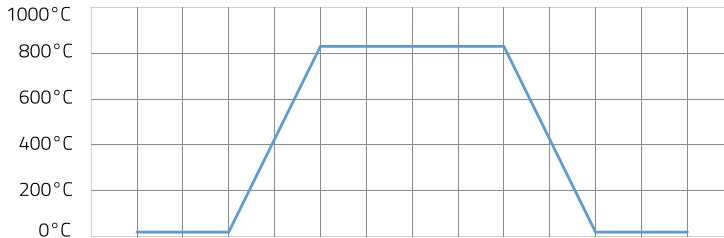
All our products are delivered soft annealed. The hardness of the steel in this state is about 22-27 HRC. Metal-cutting operations are possible in this state – the connections of the welded steel layers will not separate during further machining.





## Soft annealing

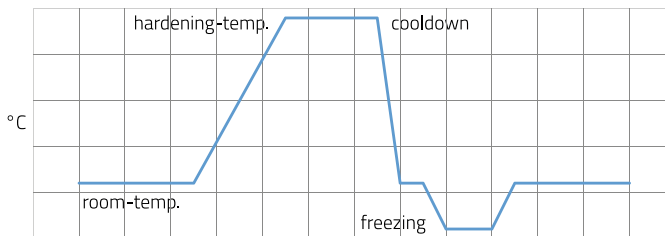
To process our DSC inox after hot working, you need to perform a soft annealing process as follows:



- Heat it in the oven up to 830°C
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- Remove at temperatures of < 400°C

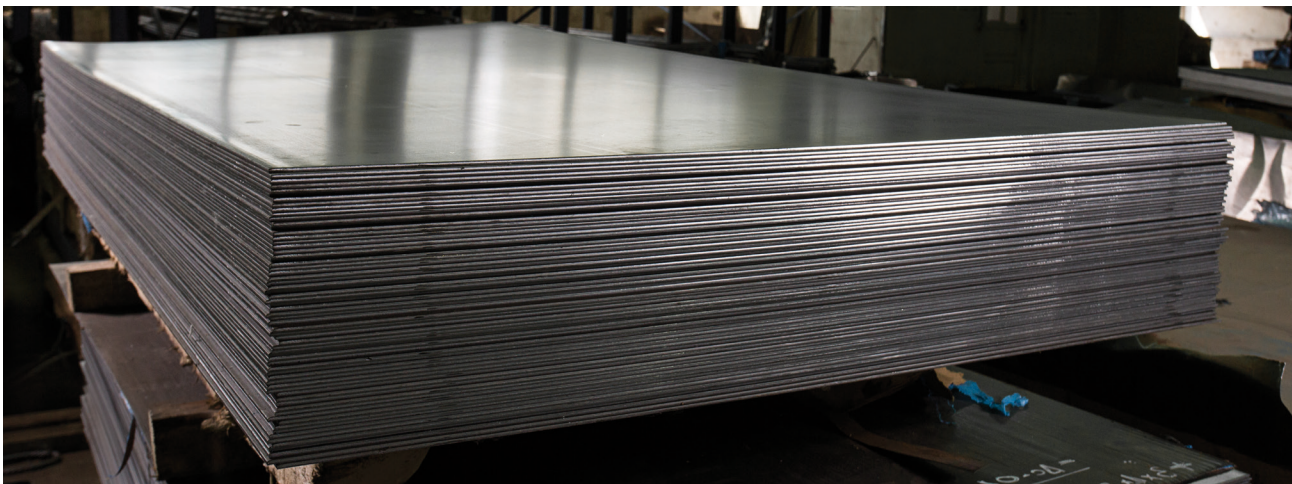
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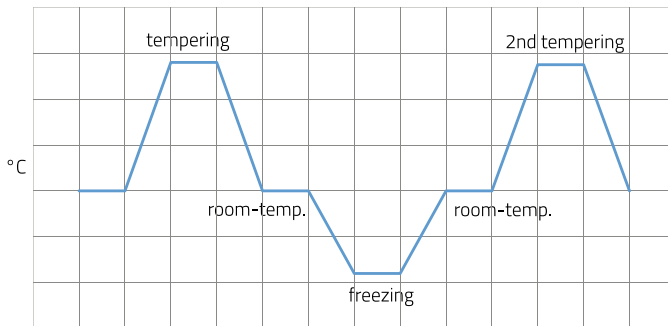
Deep freezing after hardening is not required, but recommended.

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Tempering after the hardening process is needed to convert the steel structure into tempered martensite and to adjust its hardness. We recommend a tempering of at least 2 x 1 hour, optionally repeating the deep freezing process before a second tempering.

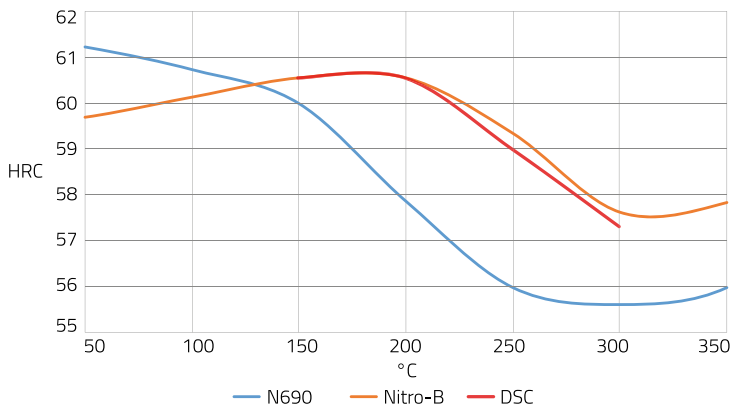


### We recommend for knife blades:

2 x 0.75 hours at 180-190°C (60-61 HRC)

### We recommend for decorative items:

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Please note that a new material with its own hardness profile is created through the composition of Damascus steel.



## Etching Information

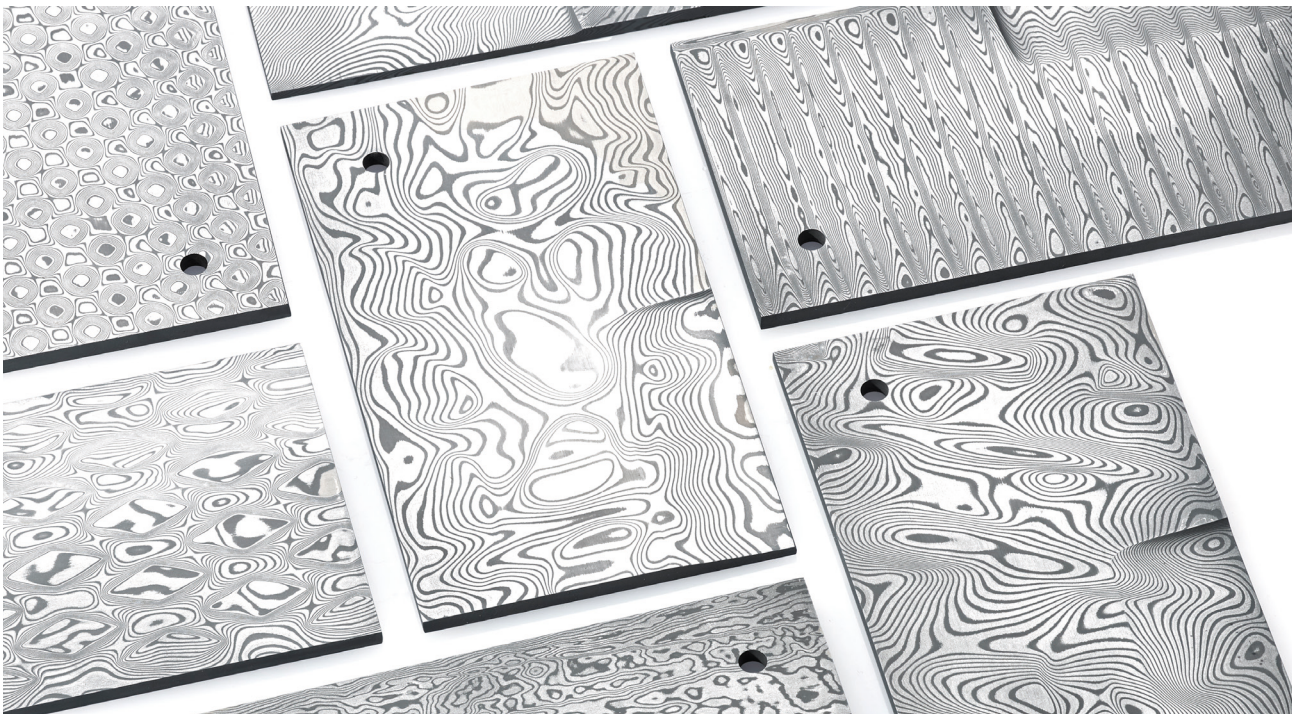
In order to achieve a perfect etching result, the following steps should be followed.

- Fine polish and mirror polish after hardening
- Remove contaminations and possible fats with e.g. dishwashing liquid / acetone
- Etching process
- Neutralize
- Second fine polish or fine grinding (grade > 2500) until desired contrast is achieved.

To achieve a good and deep etching of approx. 20 µm roughness, fresh sulphuric acid must be heated to 50-60 °C in a water bath. Per 5 minutes etching time the depth etching is then approx. 5 µm in roughness. We recommend an etching time of 20 minutes for a roughness of approx. 20 µm.

	acid	chemical name
1	sulfuric acid (15-20 %)	H <sub>2</sub> SO <sub>4</sub>

Please note the safety instructions and warnings for handling acid. Neutralize the Damascus steel thoroughly after etching.



Samples, fine polished after deep etching.

## Shapes / Sizes

Our products are available in various shapes and sizes. The following dimensions are the maximum possible dimensions. The standard length of embossed Damascus steel is from 1.0 to 1.2 meters.



Standard material cross-sections, other shapes are possible by arrangement.

### Round

Manufactured by hand in the patterns torsion Damascus and layered Damascus, scaled surface, raw.

- Torsion Damascus: diameter < 35 mm, length < 1000 mm
- Layered Damascus: diameter < 60 mm, length < 1000 mm

### Square/Rectangle

Available in the patterns torsion Damascus and layered, scaled surface, raw

- Torsion Damascus: side length < 30 mm, length < 1000 mm
- Layered Damascus: side length < 160 mm, length < 5000 mm

### Flat

- Embossed patterns: width < 60 (130) mm, thickness 1-20 mm, length < 1200 mm
- Torsion Damascus: width < 60 mm, thickness 2-15 mm, length < 1200 mm
- Layered Damascus: width < 260 mm, thickness 5-150 mm, length < 5000 mm

### Sheet

Embossing in a cold state to achieve a different pattern is possible.

- Layered Damascus sheet "hot strip": width < 700 mm, thickness 1.5-8.0 mm, length < 2000 mm
- Layered Damascus coil "hot strip": width < 240 mm, thickness 1.5-5.0 mm



## How to Order

### Consumers

As an end consumer or when purchasing a small quantity, you can easily order in our online shop. All items are in stock and immediately available.

[www.balbachdamast.com/en/material-store](http://www.balbachdamast.com/en/material-store)

### Seller / Knife maker

For small dimensions and orders, please use our online shop. For larger orders or custom orders please contact us by email.

[info@balbachdamast.com](mailto:info@balbachdamast.com)

### Bulk buyers

We will gladly prepare an attractive offer and will support you in the implementation of projects – please contact us.

[info@balbachdamast.com](mailto:info@balbachdamast.com)

### Distribution partners

You want to offer your customers our Damascus steel and actively market it? Terms and conditions are available upon request – please contact us.

[info@balbachdamast.com](mailto:info@balbachdamast.com)

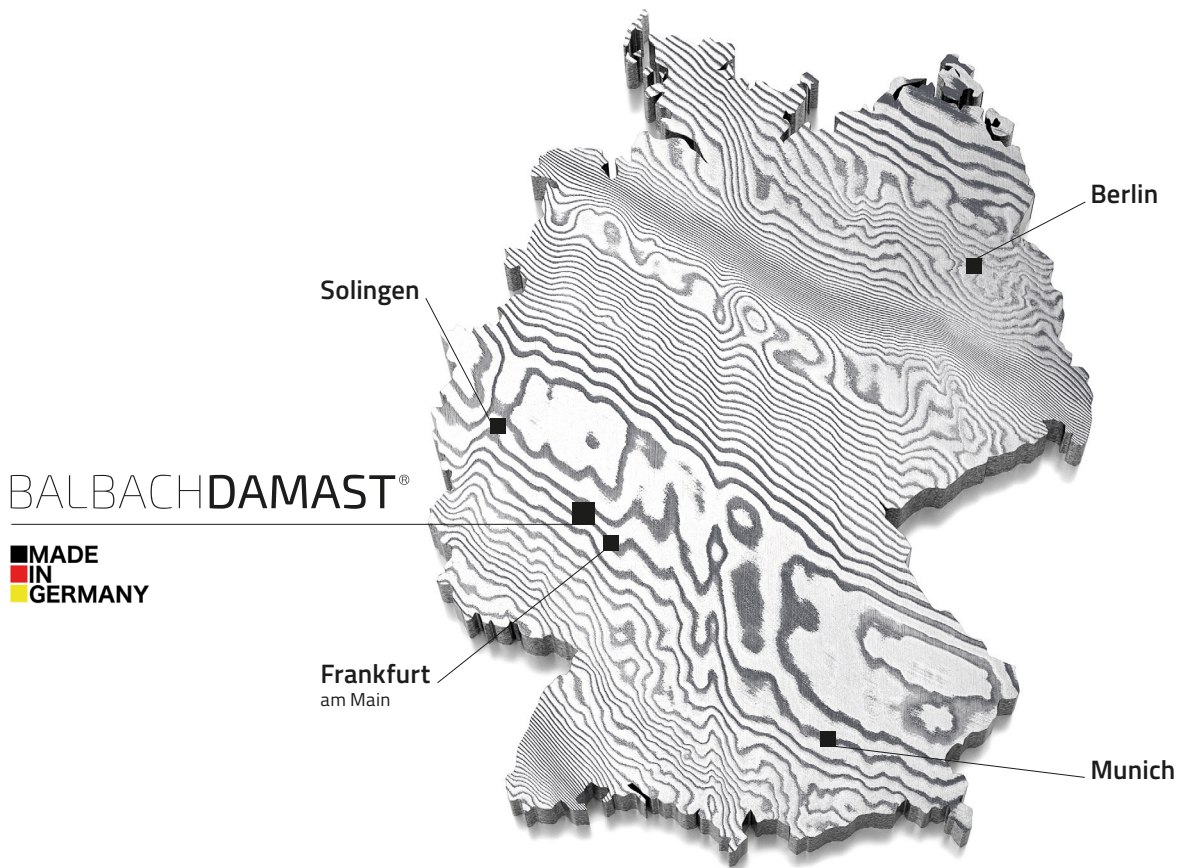
### Please always specify:

- Full name and mailing address, Tax ID Number
- Type of Damascus steel
- Dimensions, quantity & pattern



## Location

On more than 3,200 square meter production area, we've been manufacturing our unique Damascus steel since 1991 centrally and exclusively in the heart of Germany.



The information in this document is based on experience, there is no legal claim. All data is not guaranteed, no liability is accepted for damage.