

## Roofinox is inventor of the HFX-stainless-technology.

In 1996 HFX stainless was developed as a highly flexible material with Special FX. Its designated area of application is roof and façade and reflects nothing less than the evolution of stainless steel.

Compared to regular stainless steel our HFX stainless is up to 35% softer and is considered the world's most malleable stainless steel.

Roofinox expands proven advantages of stainless steel through its Special FX and creates new possibilities regarding shape and design. More than 10 different surface designs and 15 roof and façade panels combine to reflect the world's most versatile stainless steel.

The technologies developed by Roofinox allow surface designs not possible in the past. Whether ultra-matte or highly reflective, embossed or smooth, natural metallic or colored, pigmented or tin-plated, HFX stainless offers unlimited freedom in designing roofs and facades.

Roofinox is devoted like no other to consistently enhance the development of building envelopes in all its aspects and represents highly flexible, customer focused solutions which meet sustainable requirements.

Our commitment lasts for generations – like no other!

## Roofinox frequently asked questions:

### Roofinox tin-matte (Terne coated)

- **What is the difference between your material and traditional terne material?**

	<b>Roofinox</b>	<b>traditional terne material</b>
Substrate alloy	<b>439 (normal environment)</b>	
	<b>304 (normal environment)</b>	304
	<b>316L (corrosive env.)</b>	
Coating alloy	<b>100% Tin</b>	50% Tin / 50% Zinc
Coating process	<b>Electroplating</b>	Hot-dipping
Solderability	<b>Yes (easy)</b>	Yes (more difficult b/o Zinc)
Mechanical properties	<b>Enhanced malleability</b>	Hard material
Material thickness (gauge)	<b>.0197" (25)</b>	.0156" (28) / .0186" (26)

- **Why do you tin plate 439?**  
For roofing applications in normal environments the alloy 439 performs equally well as alloy 304 relative to corrosion resistance. The alloy does not contain nickel which is beneficial to its price and price stability. For highly corrosive environments (e.g. marine application) the alloy 304 is not corrosion resistant enough – for this application we apply the alloy 316L, this will perform as needed and provide higher corrosion resistance.
- **Will this material age (patina)?**  
Roofinox tin-matte comes already with a dull finish and will continue to develop an oxide layer – this natural change of the coating layer is called patina. This underlying oxidation

process happens over time due to the reaction of oxygen (from air and water) and the material's tin plating.

- **How long does the patina process take?**  
Depending on climate, precipitation and environmental influences patina will develop at different paces. In normal North-American, continental environments we have witnessed average durations of 12 to 36 months for a homogenous patina, which will continue to develop at a slower pace.
- ***Will the patina continue to get darker?***  
The chemical and aesthetic composition of the patina depends on the composition of the environment and the atmosphere the roof is located in. Another major impact is the moment and process of the first weathering cycle – e.g. if a roof is weathered partially this will maintain a color difference until patina development is completed. Chemical substances can alter and discolor the surface and patina.
- **Will the patina wear off?**  
Experience and analysis to date have not shown considerable wear of the oxide layer. It is important not to abrade or clean the oxide layer with abrasives, as this will result in the stainless steel substrate shining through.
- **Will the tannins in Cedar shake affect the tin coating either from an aesthetic or functional stand point?**  
The color of the tin oxide layer can be affected by tannins of different wood types. Depending on the shape of the roof and the application of Roofinox tin-plated this can lead to darker traces on the material. To date no functional impairment has been reported due to tannins.

## **Roofinox Classic - Roofinox Plus - Roofinox Chroma - Roofinox tin-matte (Terne coated)**

- **Can I solder this material?**  
Yes - Roofinox is manufactured to be soldered! Please refer to our detailed soldering section and instructions for more details. For Roofinox Spectra make sure to remove the pigmentation first, this can be done mechanically or chemically.
- **Is it in the US or does it all come from Europe?**  
Roofinox is permanently on stock in our warehouse in Allentown, PA. For unusual products or project related productions material will be shipped from the mills in Germany or Austria.
- **Can this touch other metals without a risk of reaction?**  
Bimetall or galvanic corrosion needs to be considered. Roofinox stainless steel is generally very easy to use and easily combined with other metals. Please refer to our product specialists if in doubt. One of the most important rules is not to use (galvanised) steel fasteners for our products as this will lead to extraneous rust.
- **What underlayment do you recommend?**  
The corrosion resistance of Roofinox products would technically not require an underlayment – but in regard to building codes, regulations and standards an underlayment is required. No specific brand or product is required as long as it meets above mentioned regulations. No structured mat or nylon matrix is needed!
- **Do I have to use a special solder?**  
Most commonly tin/lead alloys are used. The tin content may range from 40% to 60%. The solder may not contain more than 0.5% antimony. These solders, in conjunction with

Roofinox FLM flux, provide optimum gap filling, good wetting and high strengths. With the required soldering temperature of approximately 250°C, the melting range of this solder is well suited to guarantee good flow characteristics. If lead free solder is required, you can use it, but please check with our application engineers first.

- **Do I have to use a special flux?**

We provide Roofinox FLM, a flux specially designed for the Roofinox product range. If you wish to work with your own flux, make sure to use a stainless steel flux based on phosphoric acid. Flux based on hydrochloric acid or containing other chlorides will cause rust and must not be used!

- **What kind of fasteners do you recommend?**

For all applications we recommend the use of stainless steel fasteners only, i.e. rivets or screws. For all normal environments 304 fasteners are suitable, for all corrosive environments please use fasteners made from alloys 316L or 316. For easier soldering we also supply tin-plated stainless steel rivets.

## Comparison of Roofinox Tin-matte and conventional terne coated material (e.g. TCSII\*, Freedom Gray\*, or lead-coated copper)

	Roofinox tin-matte	Roofinox Classic	Follansbee TCSII	Revere FreedomGray	Lead-coated copper
<b>Substrate</b>	HFX stainless	HFX stainless	Standard stainless	Copper	Copper
<b>Corrosion resistance</b>	++ / +++	++ / +++	++	++	++
<b>Strength</b>	+++	+++	+++	++	++
<b>Malleability</b>	+++	+++	+	+++	+++
<b>Solderability</b>	+++	+++	+	+	++
<b>Price (low – high)</b>	+ / ++	+ / ++	++	+++	+++
<b>Homogenous Patina</b>	+++		+	+	++
<b>Initial dullness</b>	+++	++	+++	++	+
<b>Toxicity</b>	+++	+++	++**	++**	+**
<b>Rainware</b>	+++	+++		+++	+
<b>Lead-times</b>	+++	+++		+	+
<b>Roll-forming</b>	+++	+++	+	+++	+
<b>Seaming</b>	+++	+++	++	+++	++
<b>Availability</b>	+++	+++		+	+

+ = poor

++ = good

+++ = excellent

The above listed comparison is not exhaustive and reflects the Roofinox assessment of different materials. Still it contains the most common and relevant items for comparison. Each product has its specialties and can be used in different applications and environments.

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\*\* Zinc, lead and copper are highly toxic to organisms; seepage is not recommended (sometimes even restricted and illegal).