



**ELECTRIS**



**QUALITY  
STANDARDS  
OF PRODUCTION  
PROCEESS**





# INTRODUCTION

At our company, we value full transparency and informed cooperation with our Partners.

We have prepared this document to outline the standard visual characteristics that may appear on the surface of our products as a result of the manufacturing processes and the specific nature of the materials and technologies used.

These characteristics are an inherent feature and a typical result of the applied production technology. Their presence is within accepted quality and manufacturing standards.

We understand that these minor visual anomalies may raise questions. We wish to clarify their origin and note that, based on our experience, in the vast majority of cases, they do not significantly affect the core functionality, durability, or safety of your product.

Therefore, as long as they remain within the limits defined in this document, and no other requirements are specified in the technical/quality specifications of our customers' parts, the described aspects of the parts' workmanship do not constitute grounds for warranty claims under the mutual trust agreement.

**Please review the detailed descriptions and illustrations provided on the next pages. We believe that a mutual understanding of production standards builds a solid foundation for cooperation based on trust. Should you have any questions, our team remains at your disposal.**





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## STANDARD QUALITY AFTER PUNCHING PROCESS

**Tearout area / Fracture area**



**Punch mark**



**Gripper / clamp mark**

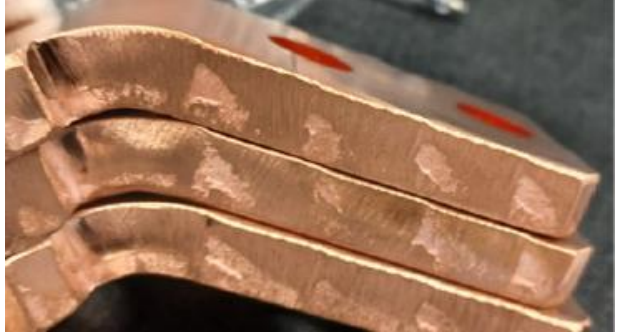




— 1 —

## STANDARD QUALITY AFTER PUNCHING PROCESS

Nibbling edges /  
sequential punch  
overlap marks from  
nibbling



Rollover (radius)  
effect



— 2 —

## STANDARD QUALITY AFTER WATERJET PROCESS

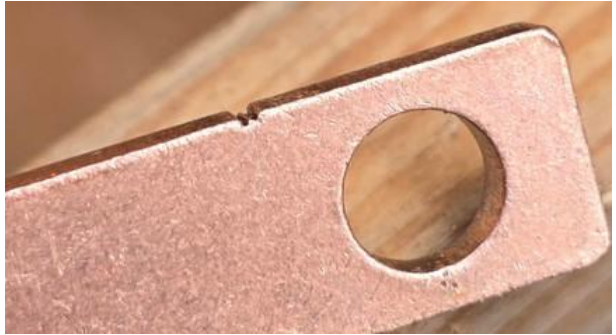
Edge discoloration





## STANDARD QUALITY AFTER LASER CUTTING

Laser cutting marks:  
lead-ins  
and micro-joints





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## STANDARD QUALITY AFTER LASER CUTTING

Surface thermal discoloration



Edge thermal discoloration



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## STANDARD SURFACE QUALITY

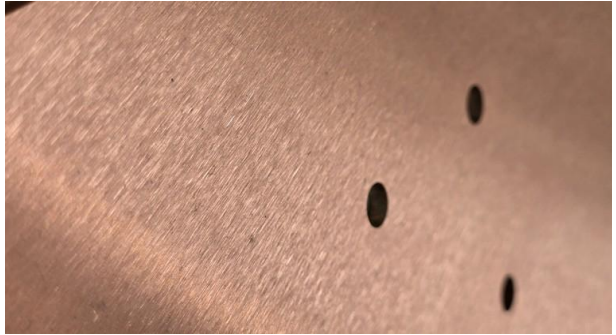
Smelting traces on as-received raw material





## STANDARD SURFACE QUALITY

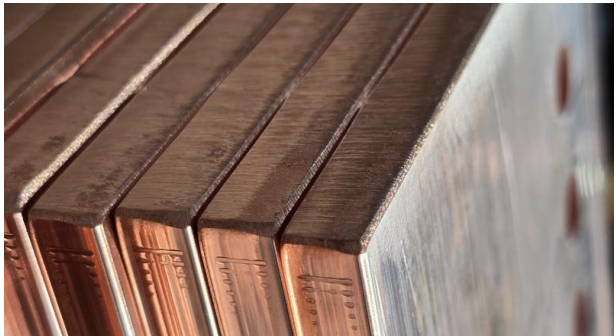
**Directional abrasive marks**  
 **$Ra \geq 1.6$**



**Matte vibro-abrasive finish**  
**( $Ra 0 - 2$ )**



**Deburred edges**  
**(edge rounding marks)**





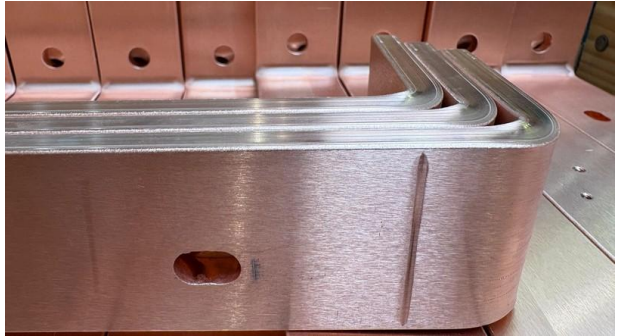
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## STANDARD QUALITY AFTER BENDING PROCESS

Bulging effect



Press brake tooling mark



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## STANDARD QUALITY AFTER CNC MACHINING PROCESS

Tooling marks / cutting marks

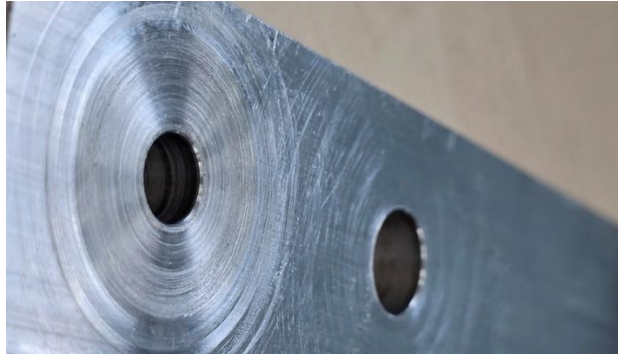




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## STANDARD QUALITY AFTER CNC MACHINING PROCESS

Surface scratches /  
swirl marks



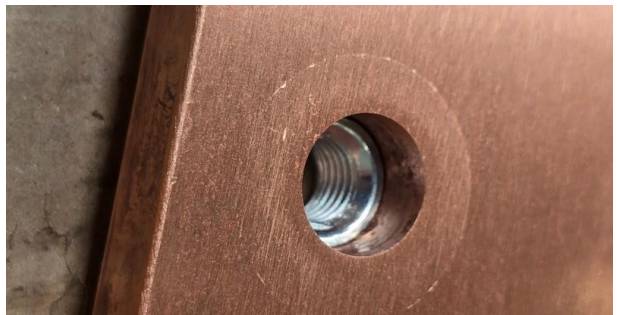
Slightly sharp  
internal edges



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## STANDARD QUALITY FOR COMPONENTS WITH FASTENERS

Tooling  
impression

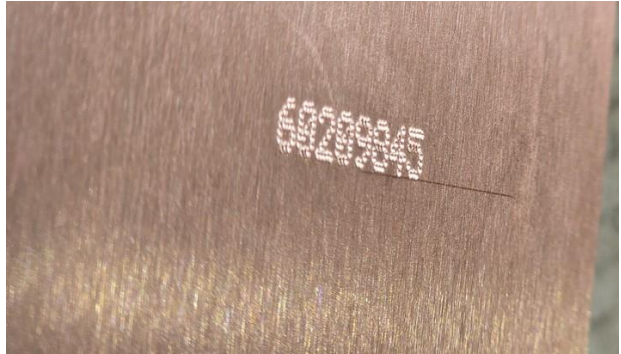




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## ENGRAVING QUALITY STANDARDS

Needle engraving marks



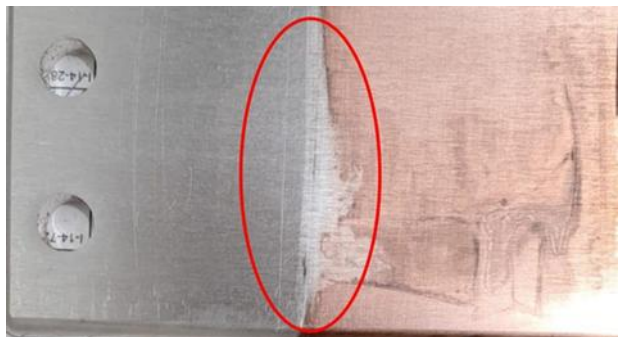
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## SELECTIVE PLATING QUALITY STANDARDS

Electroplating traces on masked area



Partial coverage of the base material beyond the cut-off line





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## RACK PLATING MARKS

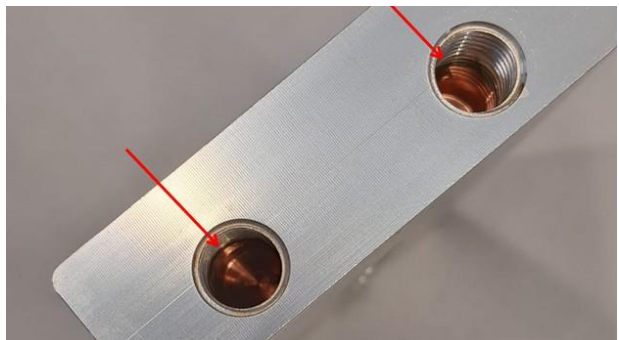
Rack mark /  
contact point



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## BLIND HOLES | BLIND THREADS

Partial electroplating  
coverage





## BARREL-PLATED COMPONENTS

Surface structure after barrel plating



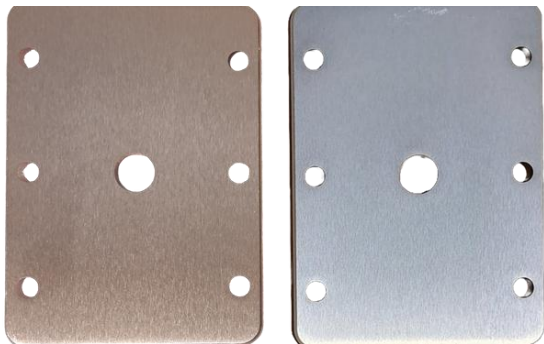


## TRANSFER OF THE BASE MATERIAL SURFACE STRUCTURE ONTO THE ELECTROPLATED COATING

Unpolished material



Polished material





## TRANSFER OF THE BASE MATERIAL SURFACE STRUCTURE ONTO THE ELECTROPLATED COATING

Material after vibro-  
abrasive processing



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## STANDARD QUALITY AFTER POWDER-COATING PROCESS

Heat-Affected Zone  
(HAZ) discoloration





We hope that this document provides you with a clearer insight into the specifics of our production processes.

We believe that an awareness of these standard manufacturing characteristics is the key to your full satisfaction with our products.

**Sincerely,  
The Electris Team**

