

## CLIN<sup>™</sup> ROD

CLIN<sup>™</sup> ROD is a sustainable solution to improve lifetime and efficiency of rods and tubes in hydraulic cylinders. CLIN<sup>™</sup> ROD are specific nitrided bars and tubes developed in partnership between HEF<sup>®</sup> GROUPE, surface engineering leader, and Aria industries, cylinder expert, to answer the needs of high performance and sustainable rods for hydraulic applications.

### Steel grades:

- Common steel grades: C45 / 20MnV6 / 42CrMo4 Specific grades: 38MnV6 / E355 / E470 Any grades
- may be used: possible studies on demand Available on bars and tubes: treatment used on CLIN<sup>™</sup> ROD
- is fully adaptable to tubes, ensuring the same efficiency on all surfaces to allow a rod design with a
- significant weight reduction.

### Technical characteristics:

<b>Yield point</b> (depending on steel grade and dimensions)	From 250Mpa to 750 Mpa
<b>Tensile strength</b> (depending on steel grade and dimensions)	From 500 Mpa to 1200 MPa
<b>Compound layer hardness</b> (depending on steel grade)	From 600 Hv0,025 to 900 Hv0,025
<b>Surface Roughness</b>	Ra < 0,4µm
<b>External diameter</b>	From Ø 20mm to Ø 125mm
<b>Tolerance</b>	Class 7 or class 10
<b>Standard Length</b>	2m

### Corrosion resistance:

Neutral salt spray test according to ISO 9227 - Evaluation according to ISO 10289 :

<b>CLIN<sup>™</sup> ROD 250</b>	>250h class 10 (no rust point)
<b>CLIN<sup>™</sup> ROD 500</b>	>500h class 10 (no rust point)
<b>CLIN<sup>™</sup> ROD 1000</b>	>1000h class 10 (no rust point)

### Applications



Farming



Energy



Handling



Construction

## CLIN<sup>™</sup> ROD

### CLIN<sup>™</sup> ROD : a sustainable rod thanks to CLIN<sup>™</sup> technologies

HEF<sup>®</sup> groupe's CLIN<sup>™</sup> technologies such as ARCORT<sup>™</sup> treatment used on CLIN<sup>™</sup> ROD have adopted a circular economy model through the development of the patented ECO-CLIN<sup>™</sup> processes which convert liquid nitriding wastes into directly usable consumables.

This strategy positions the CLIN<sup>™</sup> technologies as the ideal alternative to processes that are today submitted to EU restrictions, such as hard chrome plating. By offering the access to the CLIN<sup>™</sup> technologies to cylinder manufacturers through CLIN<sup>™</sup> ROD bars and tubes, HEF<sup>®</sup> Groupe offers a sustainable solution opening the way to innovation such as hollow rod for weight reduction.



### CLIN<sup>™</sup> ROD : advantages

Corrosion  
resistance

Wear  
resistance



Safe & REACH  
compliant



Sustainable  
technology

All surfaces  
treated

No flaking

### HEF<sup>®</sup>Groupe: A worldwide footprint

HEF works in close proximity  
to its customers worldwide.

25  
industrial plants  
Americas

36  
industrial plants  
Europe

29  
industrial plants  
Asia

90 industrial plants | 21 countries