

## CLIN<sup>™</sup> ROD

CLIN<sup>™</sup> ROD is a sustainable solution to improve life time and efficiency of rods and tubes in hydraulic cylinders. CLIN<sup>™</sup> ROD are specific nitrided bars & tubes developed in partnership between HEF<sup>®</sup> GROUPE, surface engineering leader, and SAGHEV, cylinder expert, to answer the needs of high performance & sustainable rods for hydraulics 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 & 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<0,4
<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

**CLINTM ROD : a sustainable rod thanks to CLINTM technologies**

HEF<sup>®</sup> groupe's CLIN<sup>™</sup> technologies such as ARCOR<sup>™</sup> treatment used on CLIN<sup>™</sup> ROD have entered in the era of circular economy through the development of the patented ECO-CLIN<sup>™</sup> processes which convert liquid nitriding wastes into directly reusable 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 : avantages**

<b>Corrosion resistance</b>	 <b>Safe &amp; REACH compliant</b>	 <b>Sustainable technology</b>	<b>All surfaces treated</b>
<b>Wear resistance</b>			<b>No Flaking</b>

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

