

After having tested the chains directly on the "land", today, we are able to make a concrete comparison between the chains with case-hardened pin execution and those with case-hardened and chromium plated pin execution and it's easy to notice the real quality difference between the two chains.

See our **comparative chart** for the chain components after the working campaign with regard to wear and tear.

### COMPARATIVE CHART

	CASE-HARDENED PINS	CHROMIUM-PLATED PINS
<b>Working hours</b>	<b>(94 h.)</b>	<b>(347 h.)</b>
<b>Wear of the chain pins</b>	0,08/0,13 mm	0,085 mm
<b>Wear of the chain bushings</b>	0,10/0,15 mm	0,13 mm
<b>Nominal length on 69 link of new chain</b>	2070,00 mm	2070,00 mm
<b>Length found on 69 link of a worn out chain</b>	2083,80 mm	2085,12 mm
<b>Difference in meters</b>	+ 6,66 mm/meter	+ 7,20 mm/meter
<b>Stretching percentage</b>	0,65% approx.	0,74% approx.

We noticed the considerable performance of the execution with chromium-plated pins, that with a number of hours, approx. 3 times superior to those with case-hardened pins, has a sensibly inferior stretching percentage. In fact, after **347 working hours**, we obtain 0,74% stretching against 0,65% of the execution with case-hardened pins after **94 working hours**.

Today, the above, with concrete and objective data, permits us to assert that: **the execution with chromium-plated pins represents, today, the best in terms of quality and useful life of the chain which can be found in the agricultural field.**

The above mentioned information was obtained by tests on the land thanks to the collaboration with our customers.

Our products with chromium-plated pins are presently utilized by: **CLAAS** - Saulgau; **CARL GERINGHOFF** - Ahlen; **OLIMAC** - Beinette; **DOMINONI** - Camisano.

## HARD CHROMIUM

Unlike chromising, "**hard chromium**" is a chromium coating. Therefore the hard chromium underneath doesn't undergo chemical alterations during the process. For this reason the component (pin) can be, and it is, casehardened. Therefore the hard chromium adds the excellent characteristics of the chromium coating to the already good characteristic of a casehardened pin.

During the useful life of the chain, wear and tear will be quite limited because first of all, there's the particularly hard layer of the chromium and then the casehardened layer. The layer of hard chromium reaches 40 - 50 micron with hardness of 1000 - 1100 HV. Underneath, the casehardened layer reaches a hardness of 700 - 800 HV for the depth of useful casehardening.

The hard chromium adds to the excellent characteristic of resistance to wear and tear, an anti-corrosive protective power which makes it particularly suitable even for the applications in the open; the importance of the coating thickness enables the pin to resist with greater easiness to eventual abrasive and/or corrosive inclusions.

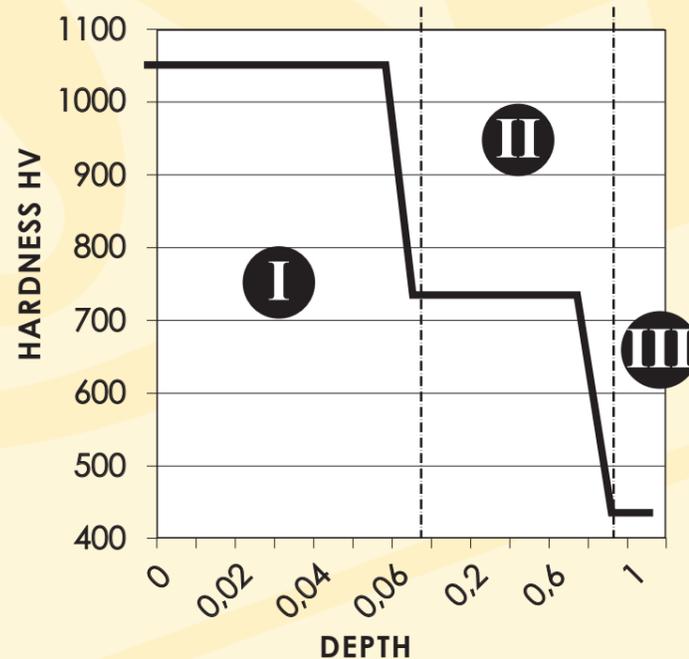
During the useful life of the chain, first the coated chromium will be consumed and successively and partially the casehardened layer. The max. stretching of the chain will take place before this last layer will wear away.

**AREA I:** Hard chromium coating. In this area only the hard chromium works. The particularly elevated hardness and the limited porosity of the material guarantee the anti-wear and tear and the anti-corrosive behaviour.

**AREA II:** In this area there's the casehardening of the pin. Therefore the characteristics are the "standard" ones of the chain pin. The useful life (allowable stretching) of the chain ends inside this area.

**AREA III:** Under the casehardened layer, the material didn't undergo chemical/mechanical alterations, therefore, it's not treated. It doesn't result sensibly impoverished of carbon. It's not expected that the chain works in this area.

INDICATIVE GRAPHIC OF HARDNESS



**The Hard Chromium coating is being used by ROSA CATENE S.p.A. for several years now in the agricultural field with considerable satisfaction and recognition on behalf of the national and international clientèle.**