



## Quality 16NiCrMo12 (UNI 7846)

### PROPERTIES AND EMPLOYEMENTS

It is a case-hardening steel with particularly elevated mechanical characteristics. The remarkable quantity of alloy elements (especially ni) confers the nucleus an elevated hardenability and resistance, combined with an excellent toughness and fatigue strength. It is successfully employment in substitution of 16NiCr11 and of all those case-hardening steels that have a high content of nickel and chromium that are not unified. It is also used for the construction of parts that are subject of repeated impacts and/or strongly stressed. With norm en 10084, 16NiCrMo12 was substituted with 14NiCrMo13-4, which has similar characteristics.

### CORRESPONDENCE TO INTERNATIONAL DESIGNATIONS

Quality	Europe	Germany		France	Spain	G.B.	USA
	EN	DIN	W.n.	AFNOR	UNE	B.S.	AISI/SAE
<b>16NiCrMo12</b>	<b>14NiCrMo13-3</b>	-	-	<b>16NCD13</b>	-	-	<b>9314</b>

### CHEMICAL COMPOSITION % (UNI 7846)

Steel quality	Chemical composition							
	C	Mn	Si	P max	S max	Cr	Ni	Mo
<b>16NiCrMo12</b>	<b>0,13 ÷ 0,19</b>	<b>0,40 ÷ 0,70</b>	<b>0,15 ÷ 0,40</b>	<b>0,035</b>	<b>0,035</b>	<b>0,80 ÷ 1,10</b>	<b>2,70 ÷ 3,2</b>	<b>0,30 ÷ 0,40</b>

Concentration limits of the elements that are not indicated in the table can be deduced in the en 10020 regulation.


### MECHANICAL CHARACTERISTICS (UNI 7846)

Steel quality	Bar's diameter	Tensile testing					Impact strength KCU min
		Unified tensile strength R		Deviation from proportionality R <sub>p 0,2</sub> min		Elongation A min	
	mm	N/mm <sup>2</sup>	kgf/mm <sup>2</sup>	N/mm <sup>2</sup>	kgf/mm <sup>2</sup>	%	J
<b>16NiCrMo12</b>	<b>11 (30) (63)</b>	<b>1230÷1520 (1080÷1370) (980÷127)</b>	<b>125÷155 (110÷140) (100÷130)</b>	<b>980 (785) (735)</b>	<b>100 (80) (75)</b>	<b>9 (10) (10)</b>	<b>32,5 (35) (42,5)</b>

## JOMINY HARDENABILITY (UNI 7846)

Steel designation	Range limits	HRC hardness measured from the quenched end of the test tube (mm)														
		1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
Symbolic																
16NiCrMo12	max	48	48	48	47,5	47,5	47	47	46,5	45,5	44,5	44	43	42	41,5	41
	min	42	41,5	41	40,5	40	39	38,5	38	36,5	35,5	34	33	32	31	30

## USUALLY AVAILABLE EX STOCK

M.T. Coloration	Quality	Heat treatment	Surface
	16NiCrMo12	Ricotto	45-200