



## Quality 39NiCrMo3 (EN 10083-3)

### PROPERTIES AND EMPLOYEMENTS

It is the most widespread quenched and tempered steel in Italy.

It has a good hardenability, high toughness, excellent warm and cold deformability. It reaches a high resistance even in relative big sections. It is discreetly machinable with machine tools and it is suitable for surface hardening. Which confers it hardness of 53÷58 HRC. It can be nitrided to increase the fatigue limit, even though surface hardness doesn't exceed 600 HV1. It can be easily hardened in oil or in solutions of synthetic polymers, without particular risks of breakage and/or deformations.

It is mainly employed for gears, shafts, axles and for all those mechanical parts dynamically stressed.

### CORRESPONDENCE TO INTERNATIONAL DESIGNATIONS

Quality	Europe	Germany		France	Spain	G.B.	USA
	EN	DIN	W.n.	AFNOR	UNE	B.S.	AISI/SAE
<b>39NiCrMo3</b>	<b>39NiCrMo3</b>	<b>36NiCrMo4</b>	<b>1,6511</b>	-	-	<b>822M30</b>	-

### CHEMICAL COMPOSITION % (EN 10083-3)

Steel designation		Chemical composition								
Symbolic	Numeric	C	Si max	Mn	P max	S max	Cr	Mo	Ni	V
<b>39NiCrMo3</b>	<b>1,6510</b>	<b>0,35 ÷ 0,43</b>	<b>0,40</b>	<b>0,50 ÷ 0,80</b>	<b>0,025</b>	<b>0,035</b>	<b>0,60 ÷ 1,00</b>	<b>0,15 ÷ 0,25</b>	<b>0,70 ÷ 1,00</b>	-

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

### MECHANICAL CHARACTERISTICS (EN 10083-3)


Steel		Mechanical characteristics for the reduced section														
		d ≤ 16mm					16mm < d ≤ 40mm					40mm < d ≤ 100mm				
Symbolic	Numeric	R <sub>e</sub> min	R <sub>m</sub>	A min	Z min	KV <sup>b</sup> min	R <sub>e</sub> min	R <sub>m</sub>	A min	Z min	KV <sup>b</sup> min	R <sub>e</sub> min	R <sub>m</sub>	A min	Z min	KV <sup>b</sup> min
		MPa	%	%	J	MPa	%	%	J	MPa	%	%	J			
<b>39NiCrMo3</b>	<b>1,6510</b>	<b>785</b>	<b>980 to 1180</b>	<b>11</b>	<b>40</b>	<b>-</b>	<b>735</b>	<b>930 to 1130</b>	<b>11</b>	<b>40</b>	<b>35</b>	<b>685</b>	<b>880 to 1080</b>	<b>12</b>	<b>45</b>	<b>40</b>

Steel		(EN 10083-1:2006, attachment a) with a diameter (d) of									
		100mm < d ≤ 10mm					160mm < d ≤ 250mm				
Symbolic	Numeric	R <sub>e</sub> min	R <sub>m</sub>	A min	Z min	KV <sup>b</sup> min	R <sub>e</sub> min	R <sub>m</sub>	A min	Z min	KV <sup>b</sup> min
		MPa	%	%	J	MPa	%	%	J		
<b>30CrNiMo8</b>	<b>1,6580</b>	<b>635</b>	<b>830 to 980</b>	<b>12</b>	<b>50</b>	<b>40</b>	<b>700</b>	<b>740 to 880</b>	<b>13</b>	<b>50</b>	<b>40</b>

## JOMINY HARDENABILITY (EN 10083-3)

Steel designation		Symbol	Range limits	HRC hardness measured from the quenched end of the test tube (mm)														
Symbolic	Numeric			1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
39NiCrMo3	1,6510	+H	max	60	60	59	58	58	57	57	56	55	52	51	49	48	46	45
			min	55	54	53	52	51	50	48	47	44	41	40	38	37	36	35

## USUALLY AVAILABLE EX STOCK

M.T. Coloration	Quality	Heat treatment	Surface
	39CrNiMo3	Quenched and tempered	oiled reeled forged turned peeled h11 / drawn / ground