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**Nazwa gatunku: N12E/1.1663/CT120**

**Nazwa: COLD WORK TOOL STEEL**

**NORM: PN-84/H-85020**

## **APPLICATION**

Steel susceptible to the steel files, metal working tools (with a low machinability), steel tools for millstone and grindstone dressing, pull broaching rings for pipes, paper knives and engraving tools.

## **CHEMICAL COMPOSITION:**

<b>C</b>	<b>Mn</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cr</b>	<b>Mo</b>	<b>W</b>	<b>V</b>	<b>Co</b>	<b>Cu</b>	<b>Ni</b>
1,15- 1,24	0,15 -0,3	0,15 -0,3	MAX 0,025	MAX 0,025	MAX 0,15	-	-	-	-	MAX 0,2	MAX 0,2

## **MECHANICAL PROPERTIES:**

Hardness after	Tempering °C	Symbol	Value
Soft annealing	-	HB	Max. 207
Quenching with 760-780 °C in water	-	HRC	63

## **Technological treatment processes:**

Technological treatment processes		Possible application	Temperature, °C
Hot forming	Forging	+	1000-800
	Rolling		

Treatment	Heat treatment	Quenching	+	760-780
		Tempering	+	180-300
	Annealing			600-700
	Soft annealing	Above $A_{c1}$	+	750-780
		Below $A_{c1}$	+	680-710
Thermochemical treatment	Nitriding		-	-
	Other		-	-