



## ATT 2711 MOD

### CHEMICAL ANALYSIS (PERCENTAGE BY MASS)

	C	Si	Mn	P	S	Cr	Ni	Mo	V
Guide analysis	0.52	0.20	0.95	0.015	0.001	1.05	2.00	0.75	0.12
Standard	0.50-0.60	0.15-0.35	0.50-0.80	≤ 0.025	≤ 0.025	0.60-0.80	1.50-1.80	0.25-0.35	0.07-0.12

### CHARACTERISTICS

Plastic mold steel with good toughness, wear resistance and high compressive strength. Nitridable and hard-chrome plateable. Flame-hardenable. Good polishability and suitable for photo-etching. When improving the chemical composition and production process, the content of sulfur and phosphorus is strictly controlled, the hardness becomes uniform. The polishing and etching performance are thus better than the traditional 1.2711.

SEL	~55 NiCrMoV 7 mod
DIN EN ISO 4957	~55 NiCrMoV 7 mod
AFNOR	~ 55 NCD 07-05
mod	
AISI	~L 6 mod

### APPLICATION

Large compression and injection molds subjected to high wear resistance and mechanical stresses. At higher working hardness, also suitable for processing SMC and GMT, in combination with surface coating if possible.

### DELIVERED CONDITION

Annealed to max. 248 HB; Quenched and tempered to 370-415 HB. (approx. 1250-1400 MPa)\* or to customer specification.

### PHYSICAL PROPERTIES

Thermal Conductivity (W/m.K) at	20°C	250°C	500°C
	36.0	37.5	34.8
Thermal Expansion (µm/m) from 20°C to	20-100°C	20-250°C	20-500°C
	12.2	13.1	14.2
Young's modulus (GPa)	20°C	250°C	500°C
	215	198	175

### HIGH TEMPERATURE YIELD STRENGTH

Quenched and tempered state	0.2 % yield strength in MPa at temperature			
	450°C	500°C	550°C	600°C
~ 1570 MPa	910	750	470	230
~ 1370 MPa	830	605	410	215
~ 1180 MPa	630	480	305	165

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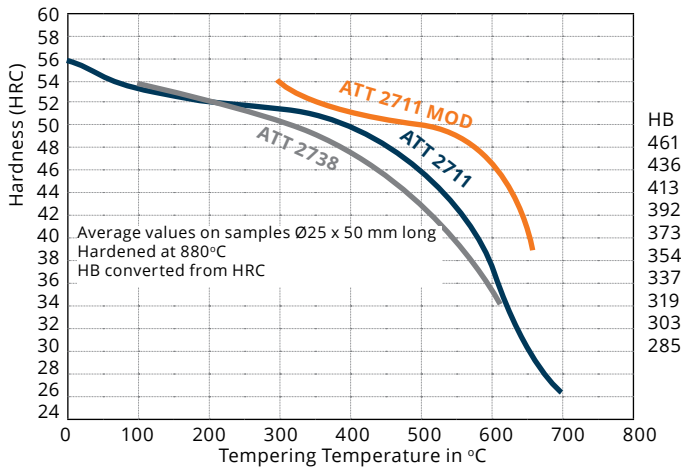


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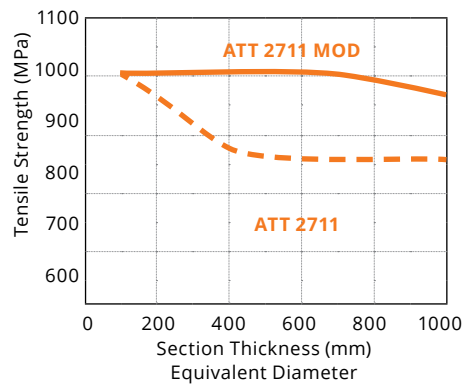
## HEAT TREATMENT

	Temperature	Approx. 650°C in the annealed state
Stress relieving	400 - 450°C	1 hour per 50 mm wall thickness
	Cooling	Furnace
Soft annealing	Temperature	700°C
	Duration	1 hour per 25mm wall thickness
	Cooling	Furnace
Hardening	Temperature	880°C
	Duration	1 min per mm wall thickness
Quenching hardness	Max. 58 HRC	in water/oil, protective atmosphere/oil, oil, hot bath or vacuum
	Temperature	See tempering curve
Tempering	Duration	1 hour per 25 mm wall thickness
	Cooling	Air
Working hardness	280-415 HB	depending on application

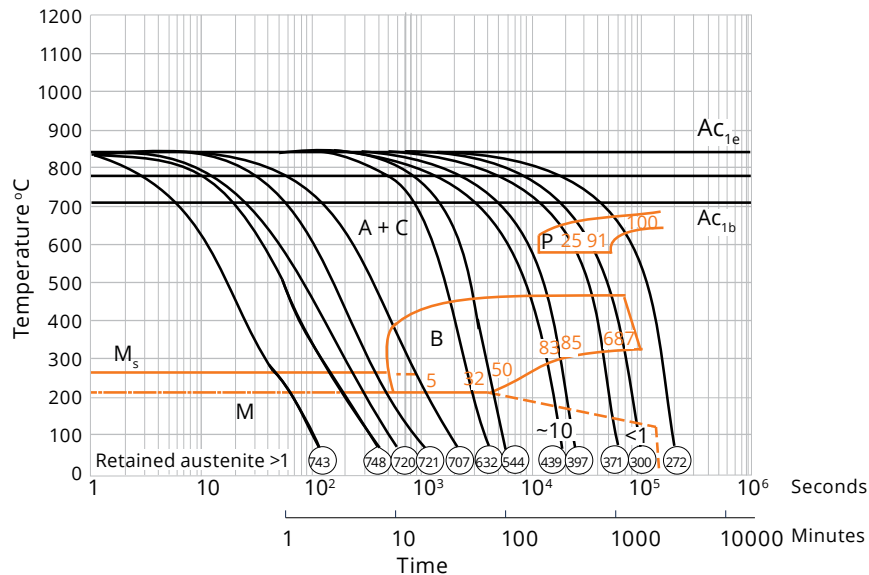
### Tempering curve



### Comparison of core hardness (Schematic curve)



### TTT curve (continuous)



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