



ATT 2343 MOD (2343 ISO-B MOD)

CHEMICAL ANALYSIS (PERCENTAGE BY MASS)

	C	Si	Mn	P	S	Cr	Mo	V
Guide analysis	0.35	0.30	0.40	≤ 0.010	≤ 0.003	5.00	1.35	0.50
Standard	0.33-0.41	0.80-1.20	0.25-0.50	≤ 0.030	≤ 0.020	4.80-5.50	1.10 -1.50	0.30 – 0.50

CHARACTERISTICS

This hot work steel, specially developed for the aluminium and magnesium casting industry, is characterized by extremely high toughness properties. The design of this steel is based on an alloy modification for resistance to tempering brittleness, as well as special secondary metallurgical measures which result in the ISO-B grade. This provides the basic requirements for long tool life in die casting and pipe extruder processing. With targeted heat treatment steps after the forging process, such as fine structure treatment, the key properties of the steel, such as:

- fine-structured texture
- non-directional toughness in all test positions
- temperature fatigue resistance

are reliably achieved. Experience in practice shows that this material offers significantly better tool life results than the standard grades 1.2343 and 1.2344.

APPLICATION

Highly stressed diecasting molds and inserts with long tool life expectancies. Pipe and rod extrusion tools, such as die holders, insert and bridge type spider tools, liners and liner holders. Plastic molds subject to abrasion stress with tool hardening up to 50 HRC, combined with surface coating where applicable.

DELIVERED CONDITION

Annealed to max. 229 HB.

Hardened and tempered to customer specification on request.

Also available as ATT 2343 ESR on request

PHYSICAL PROPERTIES

Thermal Conductivity (W/m.K) at	20°C 23.0	350°C 26.0	700°C 29.5	
Thermal Expansion (µm/m) from 20°C to	100°C 9.9	200°C 11.5	300°C 12.1	500°C 12.8
Young's modulus (GPa)	20°C 210	250°C 195	500°C 172	

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	1050	960	690	430
~ 1370 MPa	900	830	650	390
~ 1230 MPa	800	720	500	310

SEL	X36CrMoV5-1 (1.2340)
DIN EN ISO 4957	~X37CrMoV5-1
AFNOR	Z38CDV5
AISI	~H11 MOD
BS	~BH11

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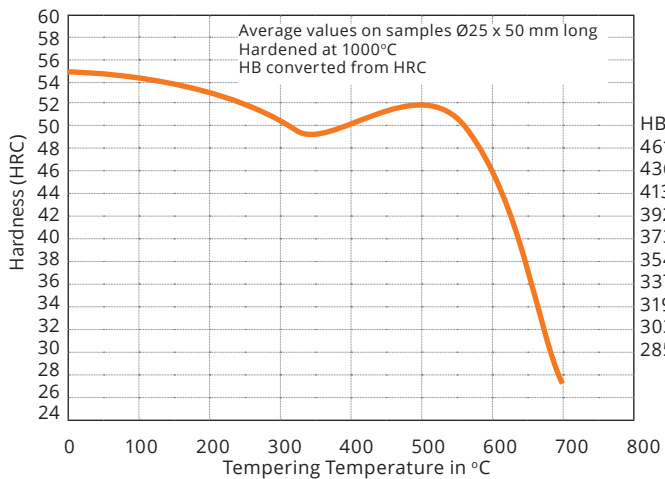


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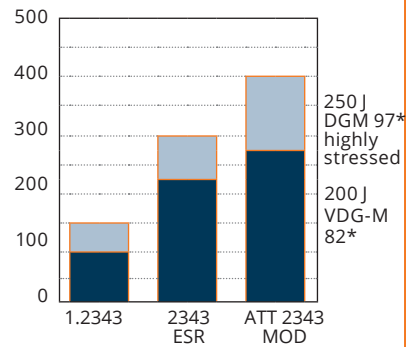
HEAT TREATMENT

Stress relieving	Temperature	Approx. 650°C in the annealed state Approx. 30–50 °C below the tempering temperature in the hardened and tempered state
	Duration	1 hour per 50 mm wall thickness
	Cooling	Furnace
Soft annealing	Temperature	820°C
	Duration	1 hour per 25mm wall thickness
	Cooling	Furnace
Hardening	Temperature	1000°C
	Duration	30 seconds per mm wall thickness
Quenching hardness		in oil, hot bath, protective atmosphere, vacuum or air, depending on geometry and dimensions
Tempering	Temperature	See tempering curve
	Duration	1 hour per 25 mm wall thickness
	Cooling	Air
Working hardness	30-50 HRC	depending on application

Tempering curve

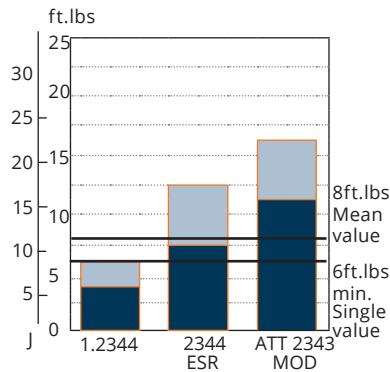
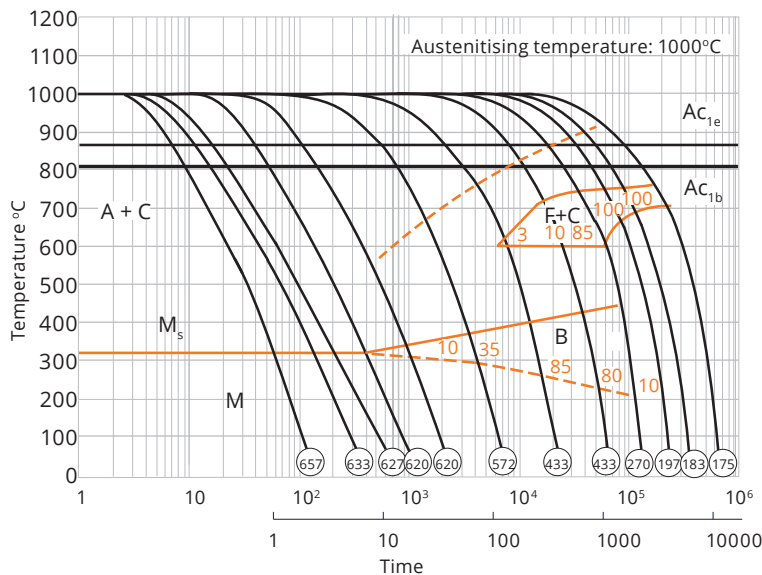


Mechanical properties



Comparison of impact energy
Quenched and tempered to 43–47 HRC
Samples transverse, 20 °C

TTT curve (continuous)



Comparison of notch impact energy to NADCA #207-03* (Charpy V)
Quenched and tempered to 44–46 HRC
samples transverse, 20 °C

* Indicate when ordering

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