

## ES 265 W ESR

**Name:**

**X 38 CrMoV 5-3**

**Material No.:**

1.2367 ESR

**Typical analysis in %:**

C	Si	Mn	Cr	Mo	V
0.38	0.4	0.5	5.0	3.0	0.6

**As-supplied condition:**

Structurally treated to max. 229 HB (770 N/mm<sup>2</sup>)

**Characteristics:**

CrMoV alloyed hot work steel with excellent high temperature strength and good high temperature toughness.

**General fields of application:**

Extrusion tools, die inserts, injection moulds, mandrels

**Special note:**

We recommend triple tempering to increase toughness. Preheating before bringing into operation to at least 300 °C is a mandatory requirement.

**Heat treatment data:**

	Temperature	Duration	Cooling
Soft annealing	820 - 840 °C	4 - 6 h	furnace
Stress-relief annealing	600 - 650 °C	min. 4 h	furnace
Hardening	1030 - 1060 °C	Group II	oil, air WB 500-550° C
Tempering	500 - 700 °C see tempering curve	min. 2 h depending on cross section	still air

**Physical characteristics:**

**Coefficient of thermal expansion:** between 20 °C and:

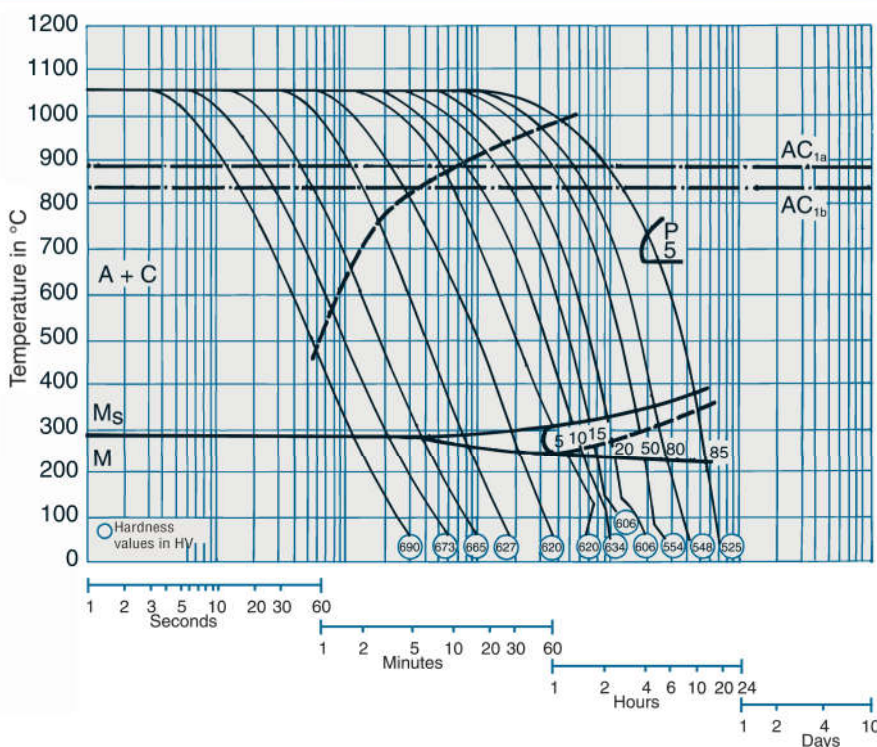
10 <sup>-6</sup> x m	100	200	300	400	500	600	700 °C
m x K	11.9	12.5	12.6	12.8	13.1	13.3	13.5

**Thermal conductivity:**

W	20	350	700 °C
m x K	36.4	32.2	27.5

**Normal working hardness:** 35 - 52 HRC

**Continuous time-temperature-transformation diagram**



**Tempering curve**

