

KEYLOS[®] 1730 M

Carbon steel for
plastic moulding



General characteristics

KeyLos® 1730M is a steel designed for the manufacture of small sized dies bolsters or press components.

KeyLos® 1730M represents a good balance of:

- toughness and mechanical characteristics
- machinability
- micro-purity.

This steel is obtained through a special 'super clean' production process, which allows a high level of microcleanness to be achieved. KeyLos® 1730M is supplied in the normalised condition with surface hardness lower than 210 HB.

High levels of machinability and microstructural homogeneity are obtained thanks to a calcium treatment process and careful heat treatment.

KeyLos® 1730M is the best option for the production of blocks with thickness up to 300 mm, at which size there is no major variation of internal hardness.

KeyLos® 1730M offers the following advantages:

- excellent machinability
- good suitability for photo-engraving
- good suitability for polishing
- good wear resistance
- good weldability.

KeyLos® 1730M is 100% ultrasonically inspected, according to the most demanding of standards.

Chemical analysis

KEYLOS® 1730 M		Alloying %	
C	0,50 ÷ 0,60		--
Si	0,15 ÷ 0,40		--
Mn	0,50 ÷ 1,00		--

Table for comparison of international classification

W. Nr. 1.1740

DIN C60U

Lucchini RS's tool steels have been researched and formulated to optimize the performance of the materials.

The brand name identifies the Lucchini RS product and the number evokes the Werkstoff classification or other means of reflecting the characteristics of use.

Main applications

KeyLos® 1730M is suitable for the following applications.

Plastic moulding:

- small sized moulds for the automotive industry
- moulds for food industry products
- moulds for rubber pressing
- pressure moulds (SMC, BMC)
- bolsters for plastic moulds.

Physical and mechanical properties

Main physical properties

KEYLOS [®] 1730 M	at 20°C	at 250°C	at 500°C
Modulus of elasticity [kN/mm ²]	210	196	177
Coefficient of thermal expansion from 20 °C at [10 ⁻⁶ /K]	-	12,6	14,4

Main mechanical properties

KEYLOS [®] 1730 M	at 20°C
Ultimate tensile strength (UTS) [N/mm ²]	700
Yield stress (YS) [N/mm ²]	310

These values are average values obtained from the middle of the section of a 300 thick normalized.

Heat treatment

KeyLos[®] 1730M is supplied in normalised condition. If it is necessary to obtain different hardness levels or if a heat treatment cycle is necessary, the parameters in the following table are recommended. The attached data are for information purposes only and must be varied dependent on the heat treatment facility and the thickness of the bar.

Soft annealing

Suggested temperature	700 °C
Soaking time	60 min every 25 mm thickness
Cooling	Slow in the furnace

Soft annealing is useful to improve machinability.

Stress Relieving

Suggested temperature	400 °C
Soaking time	60 min every 25 mm thickness
Cooling	Slow in the furnace

If the suggested temperature is lower than the tempering temperature, the stress relieving temperature will be 50° C lower than the tempering temperature previously applied

Stress relieving is recommended where it is necessary to eliminate residual stresses induced by mechanical working or by a preceding heat treatment.

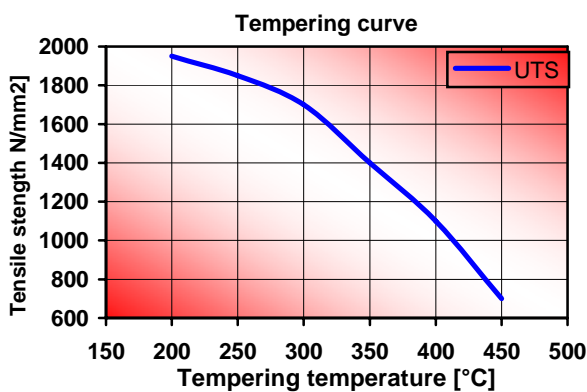
Hardening

Suggested temperature	830 °C
Soaking time	60 min every 25 mm thickness
Cooling	Oil or water quench

We suggest to carry out hardening on material supplied in the annealed condition and tempering immediately afterwards.

Tempering

Suggested temperature	The tempering temperature to be applied to the material depends on the required mechanical properties. See following graph.
Soaking time	60 min every 25 mm thickness
Cooling	Room temperature



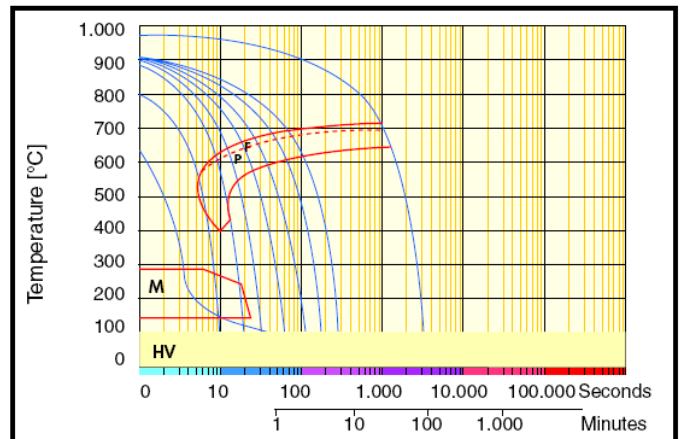
Tempering curve of a sample which has been austenitised at 830 °C.

After tempering we suggest carrying out stress relieving.

Induction hardening

On this steel it is possible to carry out induction hardening. We recommend cooling at room temperature and tempering after heat treatment.

CCT Curve



Critical Points

Ac1	720°C	Ms	320°C
Ac3	780°C	Mf	20°C

Welding

Welding of KeyLos® 1730M can give good results if the following procedure is followed:

Welding technique	TIG	MMA
	Pre-heating at 250÷300 °C	
Recommended heat treatment	Stress relieving (see heat treatment paragraph)	

For further information, please refer to the brochure.



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