ROVALMA

THE STEEL INNOVATOR

PKT-117
Pre-Hardened Hot Work Tool Steel

PKT-117

PKT-117 is a pre-heat treated hot work tool steel, supplied at 1500 MPa (nominal). It has a good toughness-to-hardness ratio, and very high compression strength. Furthermore, PKT-117 features good high temperature wear resistance, annealing resistance, as well as a thermal conductivity. Its additives confer a good machinability in hardened and tempered state.

Applications

- Dies and molds for injection of thermoplastics, thermosets, zinc based alloys and in some conditions of aluminium based alloys (big dimension dies without excessively large pulls).
- Sliders, preferably nitrided, plate insert-carriers, dollies, die bases, hold-down plates, columns, and bushes for dies; jackets for hot banding of hard metal cores, forging stamps or steels at high hardness.
- Dies for hot and cold deburring, cutting dies for silver, alpaca and soft alloys.
- Punching tools and stamping dies; forging stamps, mandrels, pushers, and extrusion die holders; shear and folding blades, gears, shafts, pins, broaches and screws.
- Prototyping dies for hot stamping.

Physical and Mechanical Properties

Properties	293 K	373 K	573 K	Unit
Density	7.82			g/cm^3
Mechanical Resistance	1505	1490	1300	MPa
Yield Strength 0.2 %	1305	1290	1110	MPa
Elastic Modulus	214			GPa

The values given in the table are typical values (neither maximum nor minimum values), at a hardness level of 44-46 HRc.

Thermal Properties

Properties	293 K	373 K	573 K	Unit
Linear Thermal Expansion Coefficient		11.0	12.7	$x10^{-6}/K$
Thermal Conductivity	37.0			W/m·K
Specific Heat Capacity	0.42			J/g·K

The values given in the table are typical values (neither maximum nor minimum values), at a hardness level of 44-46 HRc. Thermal conductivity values are calculated on the basis of thermal diffusivity values measured by laser flash method.

Stress Relieving Guidelines

When the tools have suffered severe machining, with big working stresses and loss of balance because of important fibre cuts, it is convenient to relieve stress after rough machining.

- Heat until the core reaches the temperature of 520-550 °C
- Hold for 2-4 hours
- Slow cooling down inside the furnace.

Designer & Provider of First-Class Tool Materials

ROVALMA, S.A. provides innovation in tool materials. Thanks to comprehensive research, innovative design and development, most recent production techniques as well as in depth quality control, we have achieved significant advances in the knowledge about material forming processes and generated important know-how regarding the production and optimal usage of our materials for a specific application. As a result, we can provide you with **first-class tool steels** for cold and hot work material forming processes and outstanding technical assistance.

We are proud to make our High Performance Tool Steels available to you for your specific applications. Do not hesitate to contact us for the latest information.

Application Engineering Service

In order to fully exploit the advantages and the potentials of ROVALMA's High Performance Tool Steels, we offer our customers the support of our Application Engineering Service. Our highly qualified and dedicated engineers can assist you in selecting the optimized grade for your application and provide you with the corresponding technical recommendations. It is our mission to increase the competitive-advantage of our customers and support them in achieving the highest possible cost-effectiveness.

You can access our service directly by sending an email to: ae-fast@rovalma.com.

ROVALMA, S.A. carries out ongoing research for many applications regarding the usage of the materials here presented. This research often brings along significant advances in the knowledge of a given process and thus important information regarding the best possible usage of the materials for a specific application. We strongly recommend to get in contact with ROVALMA, S.A. for the latest information regarding a specific application.

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