The name
you can
trust

PK4S

CORROSION-RESISTANT
TOOL STEEL FOR
PLASTICS

PK4S CORROSION-RESISTANT TOOL STEEL FOR PLASTICS

This steel is alloyed with Cr and has an increased S content which increases its corrosion resistance and improves its machinability. When hardened and tempered, it has a martensitic bainite structure.

CHEMICAL COMPOSITION (weight % - average)

C	Si	S	Cr	Ni	Mn	Mo	P
0.36	0.40	0.070	16.0	0.50	0.45	0.10	0.030

DESIGNATION

RAVNE	W.Nr.	AISI	EN DIN
PK4S	~1.2085	420F	~X33CrS16

PHYSICAL PROPERTIES

Heat conductivity W/(m.K): 20°C / 18
Density g/cm^2: 20°C / 7.65

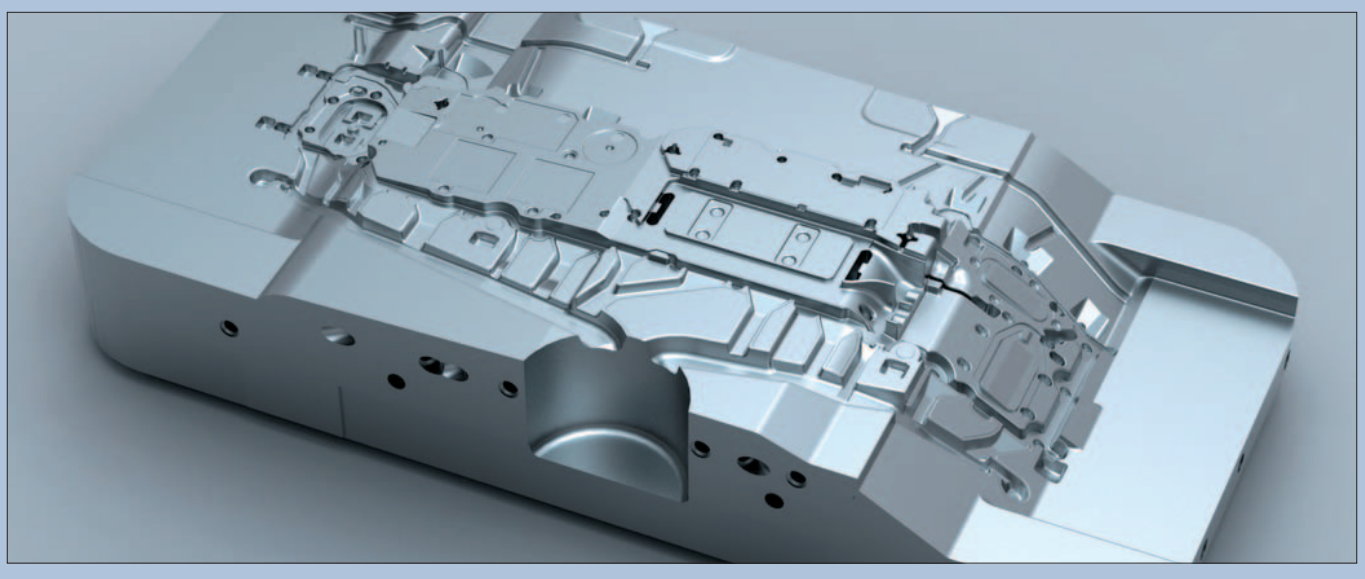
TEMPERATURE COEFFICIENT OF LINEAR ELONGATION (10^{-6}°C^{-1}):

°C	100°C	200°C	300°C	400°C	500°C
10^{-6}°C^{-1}	11.0	11.1	11.2	11.6	12.0

APPLICATION OF PK4S STEEL

This steel is corrosion resistant and has favourable machinability

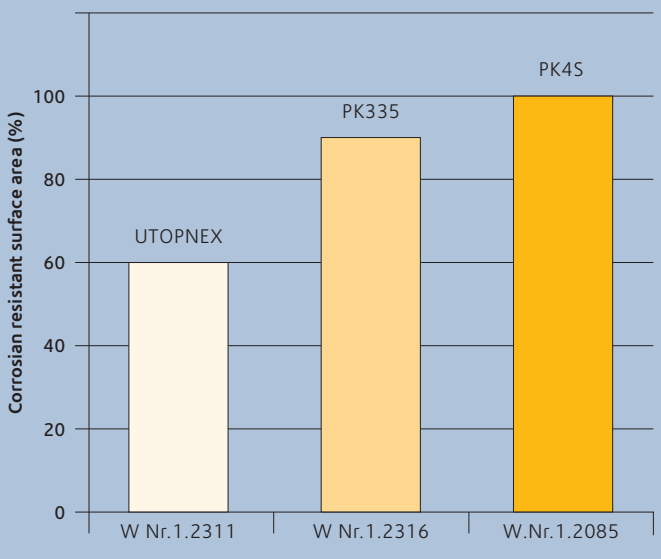
Applications:
- Plastic moulds
- Frames for plastic moulds
- Construction parts
- Tools operating under extreme conditions
- Tools used in processes with aggressive plastics and steam
- Tools used in environment with condensed water.



PROPERTIES AND ADVANTAGES OF PK4S STEEL

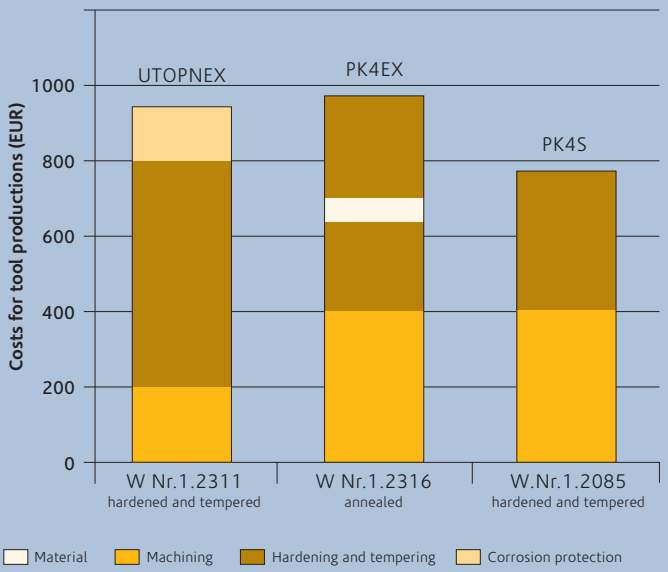
CORROSION RESISTANCE

- No cost necessary for additional protection against corrosion
- High corrosion resistance in condensed water
- High corrosion resistance in cooling channels
- Higher resistance to environments with aggressive steam
- No additional corrosion protection necessary for storage
- Minimal maintenance during tool operation.



MACHINABILITY

- Reduction of cost and time of machining



ENVIRONMENTAL PROTECTION

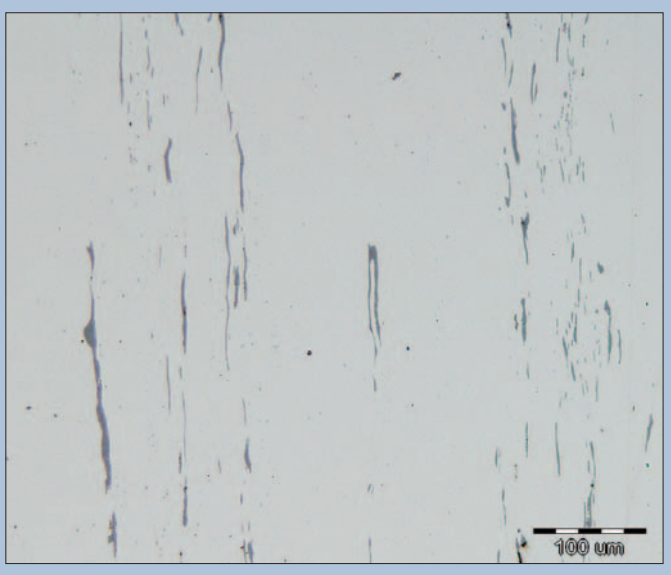
- Surface does not need additonal varnishing, nickel-plating, etc.

MICROSTRUCTURE OF PK4S STEEL

PK4S steel is used mostly in the hardened and tempered condition with a hardness of 280 to 325 HB.

The microstructure of hardened&tempered material consists of tempered martensite with a uniform distribution of secondary carbides.

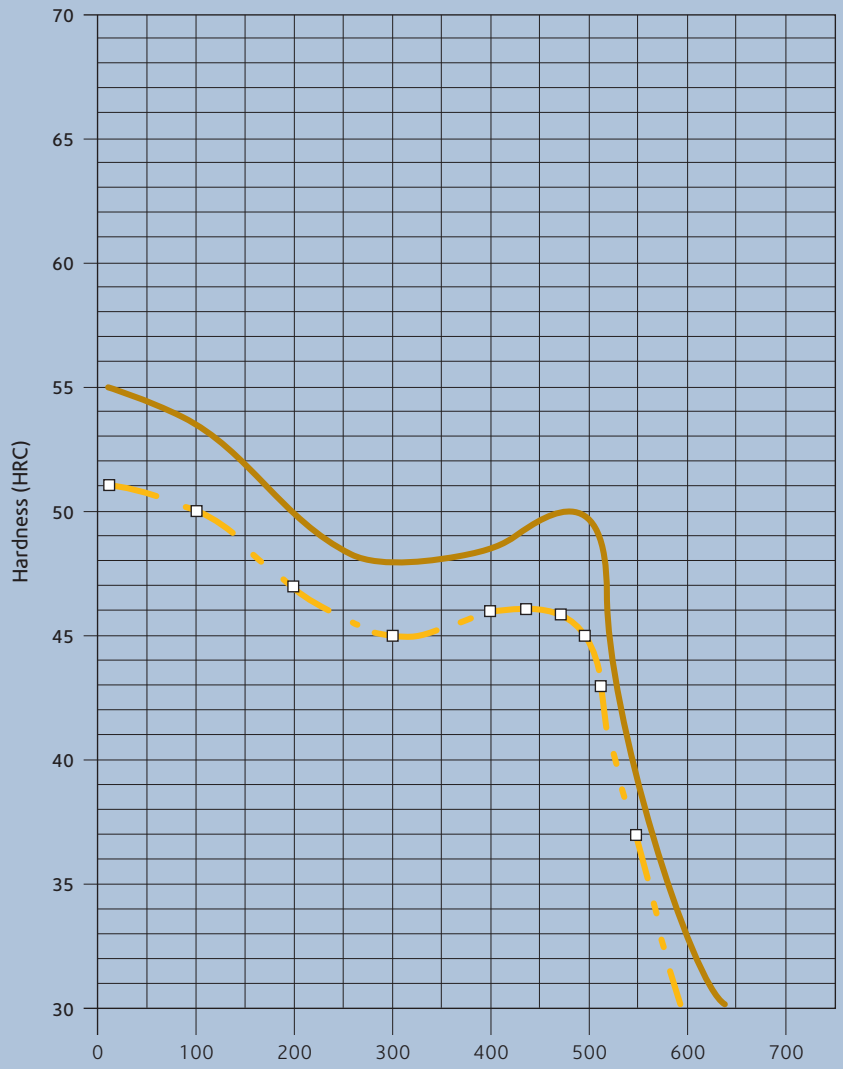
Higher contents of sulphur result in a larger quantity of sulphide non-metallic inclusions in steel microstructure which improves steel machinability.



TEMPERING DIAGRAM

Heat treatment:

- T hardening 1000°C and 1050°C, oil,
- T hard.&temp. 100°C - 650°C



• Hardening&tempering temperature; 1,5h, air (°C)

HARDENING & TEMPERING TEMPERATURE (°C)

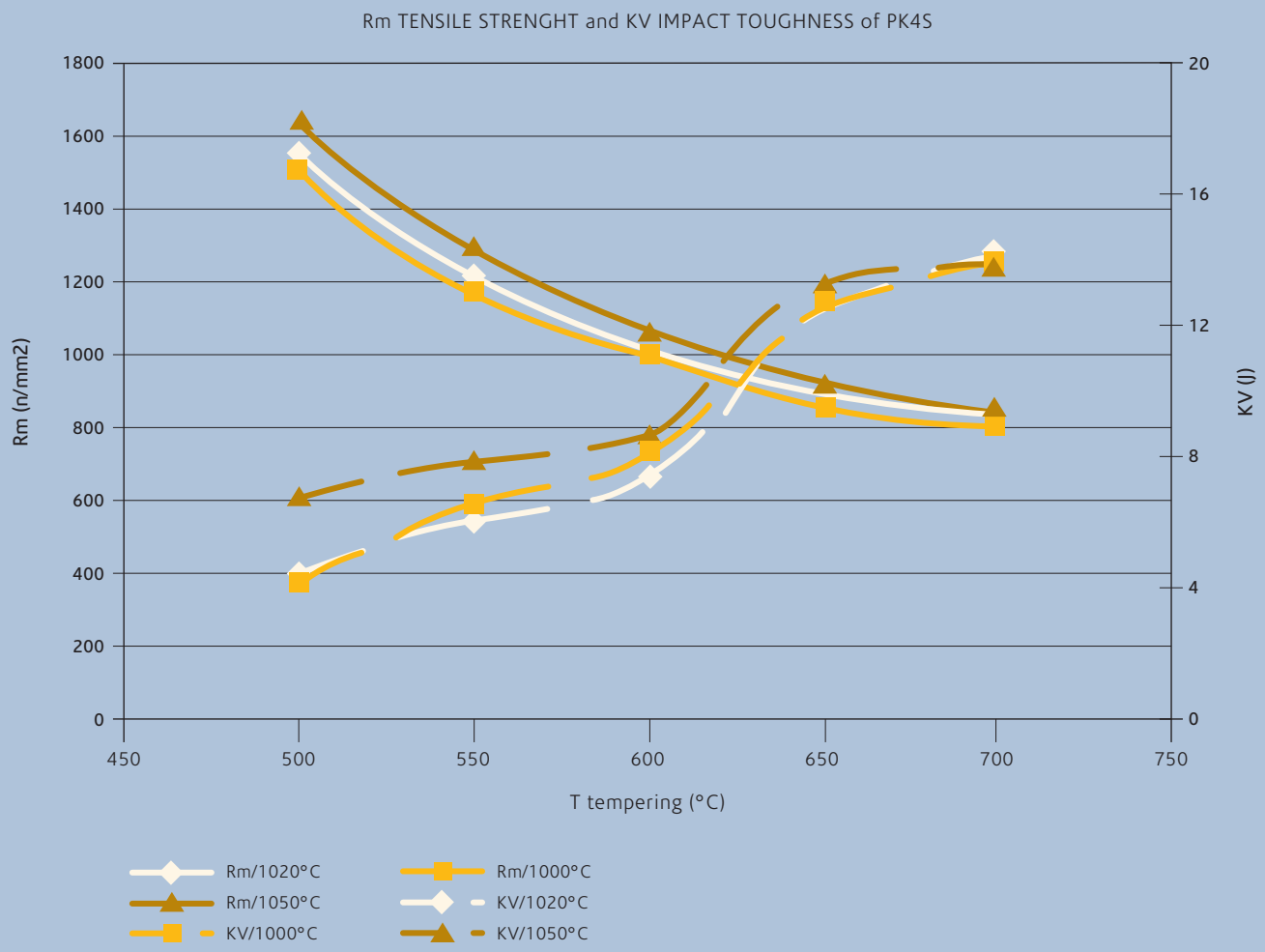
Thardening 0°C	HARDENING & TEMPERING TEMPERATURE 0°C	100	200	300	400	430	460	490	520	550	600	630
1000°C	HRC HARDNESS	50	47	47	46	46	45,5	45	43	37	28	27
1050°C		54	51	48	48,8	49	49,5	50	49	40	32	30

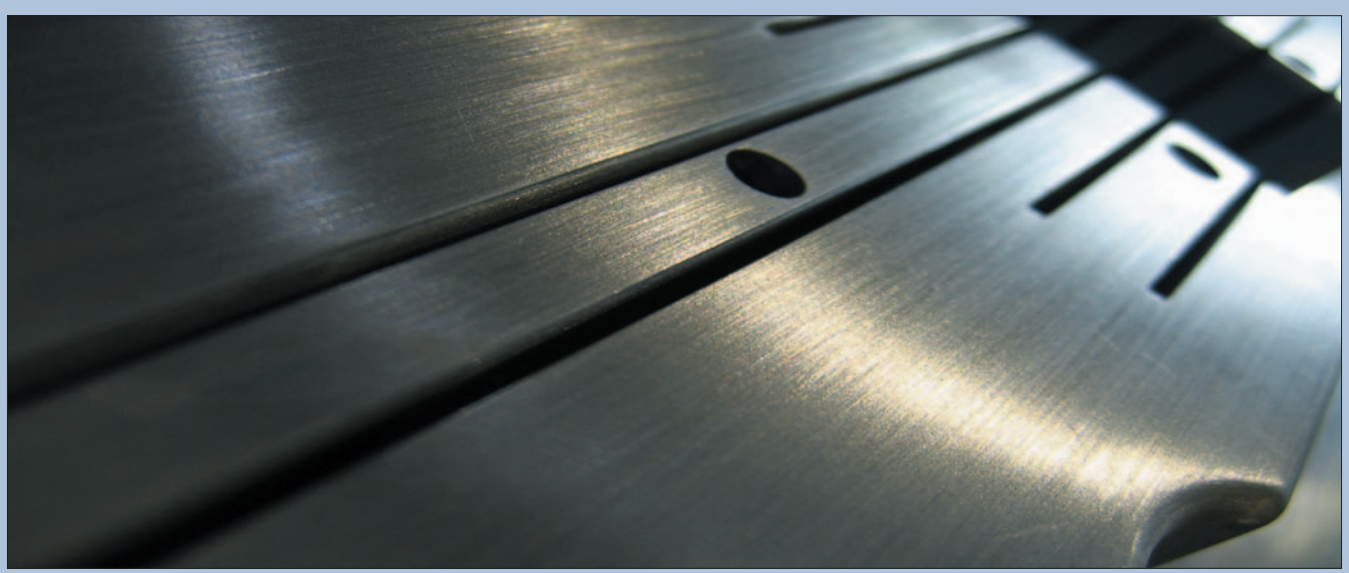
HEAT TREATMENT OF PK4S STEEL

SOFT ANNEALING	810°C - 880°C
HARDNESS AFTER SOFT ANNEALING	Max. 230 HB
HARDENING	1000°C - 1050°C
Hardening medium	Oil
TEMPERING	Approx. 560°C

DIAGRAM - INFLUENCE OF KV IMPACT TOUGHNESS ON Rm TENSILE STRENGTH

- SIST EN 10045
- Test temoerature: 20°C





Metal Ravne is the name you can trust.

METAL RAVNE, d.o.o.,
Koroška cesta 14, 2390 Ravne na Koroškem, Slovenia, phone: +386 2 870 7000, fax: +386 2 870 7006, e-mail: info@metalravne.com, www.metalravne.com