



PM-GRADE

# ZAPP CPM<sup>®</sup> Rex 45 S

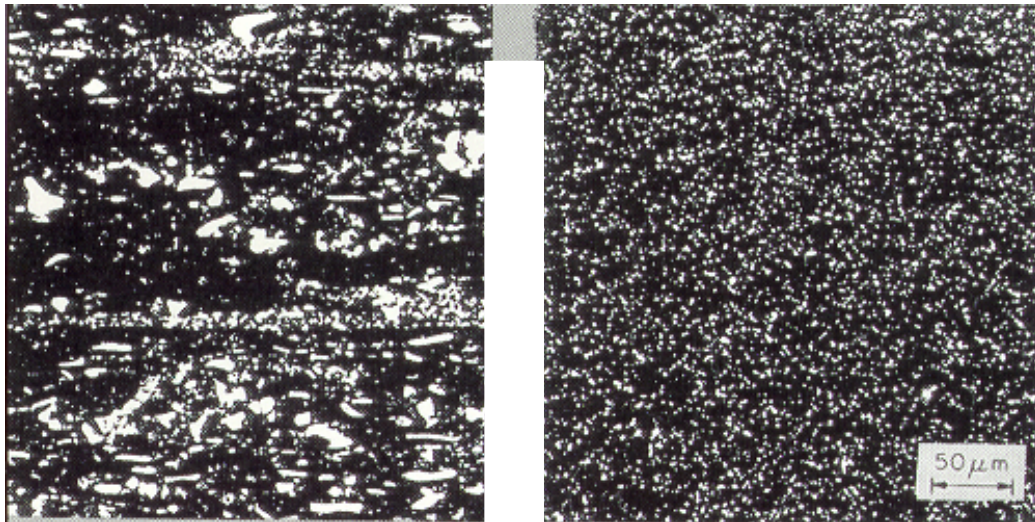
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## CPM® Rex 45 S

CPM® Rex 45 S is a 8% cobalt alloyed P-M high speed steel, produced by the Crucible Particle Metallurgie (CPM) process. The CPM process results in a segregationsfree structure characterized by a uniform distribution of fine carbides.

The uniform microstructure offers a higher toughness, better cutting edge stability and improved machinability.



Conventional steel

CPM® steel

## CHEMICAL COMPOSITION

Carbon	1,30
Chromium	4,10
Molybdenum	5,00
Tungsten	6,30
Vanadium	3,10
Cobalt	8,30

### Delivery condition

Soft annealed  
approx. 250 HB

### Typical Applications

- Form tools
- Milling cutters
- Broaches
- Hobs
- Tools for cold work applications

PHYSICAL PROPERTIES

Modulus of elasticity	240 Gpa
Density	8050 kg/m <sup>3</sup>
Coefficient of thermal expansion at 400°C	11,8 x 10 <sup>-6</sup> mm/mm/°C

Thermal Treatments

- Soft annealing 850 – 900°C
- Stress-relieving 600 – 700°C
- Hardening and tempering, see table

HEAT TREATMENT INSTRUCTIONS

1st preheat.	450 – 500°C
2nd preheat.	850 – 900°C
Hardening	As specified in table
Tempering	3 x 2 hours at 560°C

Quenching after hardening in hot bath app. 550°C, or in vacuum with min. 5 bar presure.

Required hardness HRC +/-1	Austenitizing temp. °C	Soaking time at hardening temp. in sec./mm
60	1000	35
61	1020	35
62	1050	35
63	1080	35
64	1100	30
65	1130	30
66	1150	25
67	1180	15

Tempering graph CPM Rex 45 S

