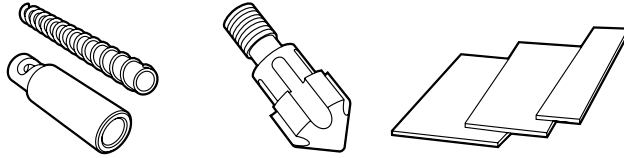


TOOLING ALLOYS

DATA SHEET CSM 21



ZAPP IS CERTIFIED TO ISO 9001



CSM 21

is a martensitic precipitation hardening chromium-nickel mold steel, providing outstanding corrosion resistance and toughness, good polishability, and moderate wear resistance.

TYPICAL APPLICATIONS

- _ Aircraft and rocket engineering
- _ Mechanical engineering
- _ Control technique
- _ Power generation
- _ Plastic extrusion
- _ Injection die
- _ Dies

PHYSICAL PROPERTIES

Specific weight [kg/dm ³]	7.80
Thermal conductivity at 20 °C [W/mk]	16.0
Modulus of elasticity E	200 x 10 ³ N/mm ²

HEAT TREATMENT

SOLUTION ANNEALING

Hardening is accomplished by simply holding at temperature between 1000° C – 1050° C for 1 hours minimum, and cooling down to room temperature with oil/ air.

Hardness max. 365 HB

STRUCTURE AS SOLUTION ANNEALED

Martensite + austenite + ferrite

AGE HARDENING :

480° C – 620° C, 1 – 4 hours,
Air

AGE HARDENING TEMPERATURES

Temperature [°C]	Time [h]	Hardness HRC]
620	4	33
550	4	39
525	4	40
495	4	43
485	4	44

STRUCTURE AS PRECIPITATION HARDENED

Martensite + austenite + ferrite + intermetallic phases

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