FM Alloy

EXEO-M21

NACHI

Ultra tough steel

EXEO-M21

Nachi developed the EXEO series alloys in company-wide combined and connected engineering system by first analyzing and determining necessary characteristics and then applying Nachi original design and special melting technologies.
EXEO-M21 shows superior strength and toughness even with notchs because of few impurity inclusions.

- Ageing and nitriding are in the same temperature range so they can be done at the same time.
- It has superior workability at hot and cold temperature, good machinability and excellent weldability.
- High strength (2000 MPa) and toughness are achieved by an approximately 500°C aging process.

Mechanical properties

Steels being compared	Hardness (HRC)	Yield strength (MPa)	Tensile strength (MPa)	Elongation (%)	Reduction of area (%)	Tensile strength with notch (MPa)	Strength ratio with notch
EXEO-M21	55	2000	2100	11	50	2900	1.4
SCM435	32	790	950	18	45	1030	1.1
SUS420J2	52	1500	1800	6	35	1900	1.1

[Heat treatment conditions: Solution treatment 820°C × 1h, ageing 490°C × 5h]

Applications

- Automotive parts (CVT belts etc.)
- Racing car parts
- Aircraft and satellite parts
- Precision molds for plastics
- Ejector pins
- Zinc die cast molds, core pins
- Welding rods for repairing mold
- Punch for cold forging
- Machine parts require high strength etc.

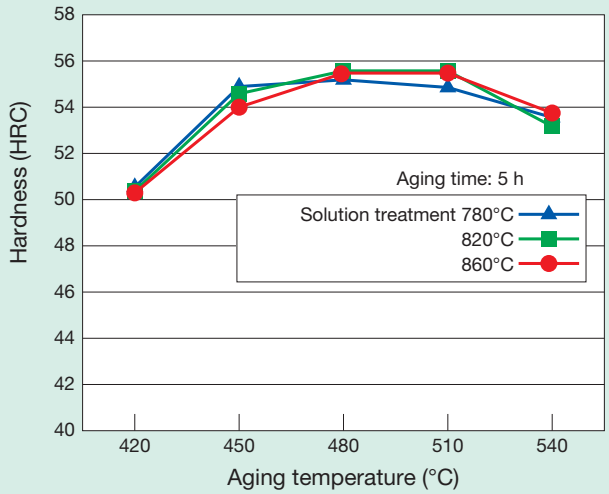
Nozzles of plastic injection molding machine

Parts for a formula car

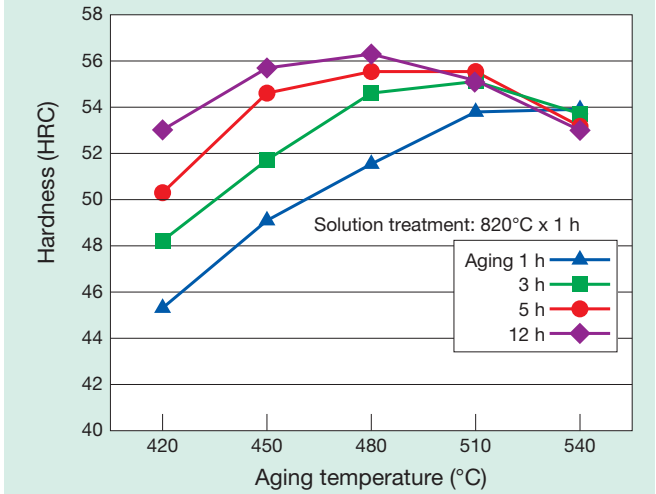
Heat treatment conditions

	Solution treatment process		Aging process		
	Recommended conditions	Hardness	Recommended conditions	Hardness	(Nitriding hardness)
EXEO-M21	820°C × 1h cooling	32HRC	490°C × 3 - 5h cooling	55HRC	860 HV

Solution treatment temperature and aging hardness



Aging process time and hardness



Production range

- Available either finished or semi-finished.
- Contact us for production specifications, delivery times, and minimum orders.

Shape	Range of dimensions (mm)
Forged round bar	ϕ40 - 200
Rolled round bar	ϕ13 - 100
Forged flat bar	Contact us for details (30 - 200)
Rolled flat bar	Contact us for details (t 3 – 48)
Polishing wire	ϕ2 - 13×2000L
Drawn coil	ϕ1.3 - 12

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