

Shock Resistant Tool Steel

Precision Marshall's SUPER 7 MQ® is a premium shock resistant tool steel which provides a unique combination of machinability, exceptional toughness, ease of heat treatment and minimum distortion. Special melting and refining practices are utilized to produce a uniform product with high cleanliness and minimum segregation. The material is tested to rigorous tool steel standards to ensure uniformity of structure and freedom from defects. Meets ASTM A-681.

Chemistry

Element	Range	Aim	Element	Range	Aim
Carbon	.48/.55	.50	Chromium	3.10/3.50	3.30
Manganese	.60/.80	.70	Molybdenum	1.30/1.55	1.35
Phosphorus	.015 max	.005	Silicon	.20/1.00	.50
Sulfur	.002 max		Vanadium	.20/.30	.25
	.0005		Tungsten	.30 max	
Copper	.25 max		Nickel	.40 max	

Applications

SUPER 7 MQ® is suitable for use in applications requiring high impact strength such as shears, punches, blanking dies and chisels. **SUPER 7 MQ®'s superior cleanliness and soundness makes it suitable for high-hardness plastic molds and zinc die casting dies.**

Annealing

Heat slowly and uniformly to 1500/1550°F and hold two hours. Cool slowly (50°F per hour max.) to 1100°F and air cool to room temperature. Hardness 229 BHN maximum.

Heat Treating

Precision Marshall's SUPER 7 MQ® is subject to decarburization during heat treatment, so a protective atmosphere furnace or a vacuum furnace should be used.

After preheating 1200/1250°F, soak material for one half hour per inch of thickness. When material reaches this temperature, heat to 1725°F, then soak material for one half hour per inch of thickness when material is up to this temperature. Air cool or oil quench to hand warm (approximately 150°F) and temper immediately. Note: Sections over two inches thick should be interrupt oil quenched or full oil quenched to attain full hardness.

Tempering

Double temper one hour per inch of section thickness to desired hardness at a heating rate of two hours per inch. Cool in air to room temperature between the two tempers. Representative hardness levels after tempering are tabulated below.

Oil quenched from 1725°F • Tempered 4 Hours
(Section Size — 4" x 4")

Tempering Temperature (°F)	Rockwell Hardness (RC)	Tempering Temperature (°F)	Rockwell Hardness (RC)
400	56/58	900	51/53
500	54/56	1000	49/52
600	53/55	1100	46/48
700	52/54	1200	39/41
800	52/54		



EDM

Electro-discharge machining is used in the production of various tooling. This process produces recast, rehardened and retempered layers on the EDM surface. It is recommended that SUPER 7 be stress relieved at 50°F below the final tool tempering temperature, after the EDM process, to temper the rehardened layer produced by EDM.

Condition

SUPER 7 MQ® is provided completely decarb free and stress relieved.

Finish

Ground oversize to typical rms 50/75, maximum 125.

Sizes

Available in standard thickness increments 1/4" through 8".

Additional Products

Deluxe Plates

MARSHALLOY MQ®/FM
MARSHALLOY™ STD 4142
PRESCO O-1
AIRTRUE A-2
DIECRAT A-6
ARISTOCRAT D-2
FIRECHROME H-13
TRM-2 M-2
RUETOM SPECIAL 420 ESR

Ground Flat Stock

PRESCO O-1
AIRTRUE A-2
SUPER 7 S-7
NUTEC 42® 4142
ARISTOCRAT D-2
MARSHALLCRAT® LC

Drill Rod

WATERCRAT W-1
OILCRAT O-1
AIRTRUE A-2
SUPER 7 S-7
ARISTOCRAT D-2
TRM-2 M-2
WATERCRAT W-1 Cold-drawn

Inventory Locations

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National Distribution Center

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Bolingbrook, IL 60440
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E • sales@pmsteel.com

The Deluxe Company's Guarantee of Quality

Precision Marshall's conformance to specifications is the highest in the industry. Precision Marshall assumes complete liability for any costs directly relating to a deviation from our published specifications. Any such costs, properly documented, will be reimbursed.

For more information, visit our Web site at www.pmsteel.com.