SUPER 7 MQ®

PRECISION MARSHALL
The Deluxe Company

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
Carbon	.48/.55	.50
Manganese	.50/.80	.70
Phosphorus	0.010 max	.005
Sulfur	.002 max	.0005
Copper	.25 max	

Element	Range	Aim
Chromium	3.10/3.50	3.30
Vanadium	.20/.30	1.35
Molybdenum	1.30/1.55	.50
Silicon	.20/1.00	.25
Tungsten	.30 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, two hours minimum per temper. Representative hardness levels after tempering are tabulated below.

Oil quenched from 1750°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		

Note: Variations in section size, heating rate, soak time, quench rate and tempering will cause deviations from the above values. Precision Marshall should be consulted for specific applications.

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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 MQ® 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.

The following additional products are available through our authorized distributors.

DELUXE PLATES
MARSHALLOY MQ®/FM
MARSHALLOY™ STD 4142
MARSHALLOY™ 4140 (Annealed)
PRESCO O-1
AIRTRUE A-2
SUPER 7 MQ® S-7
ARISTOCRAT D-2
FIRECHROME H-13
SUPER 7 S-7

GROUND FLAT STOCK
PRESCO O-1
AIRTRUE A-2
ARISTOCRAT D-2
SUPER 7 S-7
NUTEC 42® 4142
FIRECHROME H-13
PREMAR 410
RUETOM SPECIAL 420
PREMAR 440 C
MARSHALLCRAT LC

DRILL ROD
WATERCRAT W-1
OILCRAT O-1
AIRTRUE A-2
SUPER 7 S-7
ARISTOCRAT D-2
FIRECHROME H-13PH
TRM-2 M-2
WATERCRAT W-1 (Cold-drawn)

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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 us at www.pmsteel.com.

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