

# PRESCO 0-1

## Oil Hardening Tool Steel

Precision Marshall's PRESCO is a general purpose, non-deforming oil hardening tool steel for applications where maximum accuracy is required during the hardening of the end product. PRESCO has deep hardening properties and fine grain structure with unusual toughness. Meets ASTM A-681 and W 2510.

## Typical Analysis

Carbon	.95	Chromium	.50
Manganese	1.20	Tungsten	.50
Phosphorus	.03 max	Silicon	.40
Sulfur	.03 max		

## Applications

Applications for PRESCO include gauges, stamps, jigs, cutters, templates, cams, guides, levers, saws, knives, straight edges, fixtures, machine parts, punches, blanking dies, molding dies, swaging dies, screw dies and trim dies.

## Annealing

Heat uniformly to 1400/1450°F and hold at the annealing temperature for two hours per inch of cross section. Cool in the furnace at a rate not exceeding 50°F per hour down to a temperature of 1000°F, after which a faster rate can be allowed.

## Heat Treating

Preheat thoroughly to 1200/1250°F, then heat to 1450/1500°F depending on the section size. Hold until uniformly heated through. Use high side of hardening range for thicker sections.

Quench in warm thin quenching oil to about 125°F. To prevent soft spots, the tools should be rapidly agitated in oil when a circulating oil bath is not available. The material should be tempered as soon as it has cooled to 125°F.

## Tempering

Temper immediately to desired hardness. For most applications a tempering temperature of 400/450°F is employed. However, for cutting tools requiring high hardness, low temperatures of 300/375°F are suitable. Temper a minimum of two hours for sections under two inches and a minimum of one hour per inch of thickness over two inches.

The following table shows the hardness value obtained at various tempering temperatures on a two-inch cube of PRESCO hardened from 1475°F and tempered two hours.

Tempering Temperature (°F)	Rockwell Hardness (RC)
As quenched	63/65
300	62/64
400	60/62
500	57/59
600	55/57



*The Deluxe Company*

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 PRESCO 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

PRESCO O-1 is provided completely decarb free and stress relieved.

## Additional Products

### Deluxe Plates

MARSHALLOY MQ®/FM  
MARSHALLOY™ STD 4142  
AIRTRUE A-2  
DIECRAT A-6  
SUPER 7 MQ® S-7  
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

### *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.

## Chemical Compositions (%) (Typical)

Grade	A.I.S.I.	Carbon	Manganese	Silicon	Phosphorus (max)	Sulfur (max)	Chromium	Vandium	Tungsten	Molybdenum
<b>PRESCO</b>	O-1	.90/1.00	1.00/1.15	.20/.35	.020	.020	.40/.60	.08/.15	.45/.60	-
<b>AIR-TRUE</b>	A-2	.90/1.05	.40/.60	.20/.35	.025	.005	4.90/5.30	.15/.20	-	.90/1.10
<b>SUPER-7</b>	S-7	.48/.53	.50/.70	.20/.40	.025	.003	3.10/3.40	.20/.30	-	1.30/1.60
<b>NUTEC 42</b>	4142	.38/.46	.70/1.00	.15/.30	.035	.040	.80/1.15	.030 Max	-	.15/.25
<b>ARISTOCRAT</b>	D-2	1.50/1.60	.20/.40	.20/.60	.030	.020	11.25/12.00	.80/1.00	-	.70/.80
<b>MARSHALLCRAT</b>	C-1018	.15/.25	.60/.90	-	.040	.050	-	-	-	-
<b>PREMAR 440C</b>	440C	1.05	.40	.40	-	-	17.00	-	-	.40
<b>PREMAR 410</b>	410	.13	.05	.40	-	-	12.00	-	-	-
<b>RUETOM SPECIAL 420 SS</b>	420	.46	.40	.40	-	-	13.00	.30	-	-
<b>FIRECHROME</b>	H-13	.40	.40	1.00	.030	.030	5.00	1.00	-	1.20
<b>WATERCRAT</b>	W-1	.95/1.05	.30/.40	.10/.25	.025	.025	.15 Max	.10 Max	.15 Max	.10 Max

\*C-1018 modified for sizes below 5/32". W-1 is cold drawn, not ground.

## Specifications and Physical Properties

Grade	A.I.S.I.	UNS				-----Hardness-----		Machinability
		Designation	S.A.E.	A.S.T.M.	Federal	Brinell	Rockwell	
<b>PRESCO</b>	O-1	T31501	J-437	A-681-07	QQT-570 Rev. C.	177-212	Rb88-95	95
<b>AIR-TRUE</b>	A-2	T30102	J-437	A-681-07	QQT-570 Rev. C.	200-235	Rb93-99	65
<b>SUPER-7</b>	S-7	T41907	J-437	A-681-07	QQT-570 Rev. C.	188-223	Rb90-97	95
<b>NUTEC 42</b>	4142	G41420	-	A-322	-	261-321	Rc26-34	85
<b>ARISTOCRAT</b>	D-2	T30402	J-437	A-681-07	QQT-570 Rev. C.	220-255	Rb97-102	50
<b>MARSHALLCRAT</b>	C-1018	-	-	-	635	168 Max	Rb85 Max	78
<b>PREMAR 440C</b>	440C	-	-	-	-	229-269	Rc21-28	45
<b>PREMAR 410</b>	410	-	-	-	-	217	Rb96	54
<b>RUETOM SPECIAL 420 SS</b>	420	-	-	-	-	255	Rc25	45
<b>FIRECHROME</b>	H-13	-	-	A-681-07	-	230	Rb98	75
<b>WATERCRAT</b>	W-1	T72301	J-437	A-686-79	QQT-580 Rev. C.	200	Rb93	100

\*C-1018 modified.

\*Compared to 1.0% Carbon Tool Steel.

## Tolerances

Thickness.....+/- .001"  
 Thickness (Oversize).....+ .010/.015"  
 Thickness (Metric).....+ .05mm/- .00  
 Thickness 72" Nutec 4142.....+/- .002  
 Width.....+ .000/.005  
 Width (Oversize).....+ .010/.015"  
 Width (Metric).....+ .2mm/- .0  
 Squares (Regular).....+/- .001"  
 Squares (Oversize).....+ .010/.015"

\*Widths of more than 50mm are Blanchard ground.

Length 18".....+ .125/.250"  
 Length 24".....+ .1875/.375"  
 Length 24" Stainless.....+ .500/- .000  
 Length 36".....+ .250/.500"  
 Length 72" Nutec-42.....+ 1.000/- .000  
 Length (Metric).....+ 5mm/+ 8mm  
 Squareness Edge......003" per inch  
 Squareness End......004" per inch  
 (Regular and Oversize)

Please Order From:

Clark & Osborne, LLP  
 Industrial Distributor  
 6617 Ferguson Avenue  
 Indianapolis, IN 46240

(317) 255-5668 Phone  
 (317) 253-4486 Fax

sales@clarkandosborne.com  
 www.clarkandosborne.com

Size	Cold Drawn W-1	
	Standard Tolerance* (section)	Standard Tolerance (length)
1.000" through 0.750" (largest dim.)	±.0015"	+1/8", -.0"
0.749" through 0.250" (largest dim.)	±.001"	+1/8", -.0"
0.249" and smaller	±.0005"	+1/8", -.0"

\*Closer tolerances than standard can be produced by request.