

# ARISTOCRAT D-2

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### Deluxe Plate



#### Hard Carbon/ High Chrome Tool Steel

Precision Marshall's ARISTOCRAT is an air hardening tool steel which provides exceptional wear resistance with medium 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 and W 2379.

#### Typical Analysis

Carbon	1.50	Chromium	11.50
Manganese	.30	Vanadium	.70
Phosphorus	.03 max	Molybdenum	1.00
Sulfur	.03 max	Silicon	.30

#### Applications

ARISTOCRAT is suitable for use in cold work tooling applications requiring maximum wear resistance such as thread roll dies, punches, blanking dies, shears and forming dies.

#### Annealing

Heat slowly and uniformly to 1600/1650° and hold two hours. Cool slowly (50°F per hour max.) to 1400°F, hold six hours and air cool. Hardness 255 BHN maximum.

#### Heat Treating

ARISTOCRAT is subject to decarburization during heat treatment, so a protective atmosphere furnace or vacuum furnace should be used.

After preheating to 1400°F for one half to one hour, heat to 1825/1875°F and soak one half hour when material is up to temperature. Air cool to hand warm (approximately 150°F) and temper immediately.

#### 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.

#### Air cooled from 1750°F • Tempered 4 hours

Tempering Temperature (°F)	Rockwell Hardness (RC)
400	60/62
500	59/61
600	57/59
700	56/58
800	56/58
900	57/59
1000	56/58
1100	50/54

*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 ARISTOCRAT D-2 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

ARISTOCRAT D-2 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" thru 8".

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

#### 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)



#### ***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](http://www.pmsteel.com).*

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