AIRTURE A-2

PRECISION MARSHALL
The Deluxe Company

Air Hardening Tool Steel

Precision Marshall's AIRTRUE is an air hardening tool steel which provides a good combination of wear resistance, 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.

Typical Analysis

Carbon	1.00	Chromium	5.00
Manganese	.60	Vanadium	.35
Phosphorus	.03 max	Molybdenum	1.10
Sulfur	.03 max	Silicon	.30

Applications

AIRTRUE is suitable for use in cold work tooling applications requiring a combination of wear resistance and toughness such as thread roll dies, punches, blanking dies, shears and forming dies. The grade is also used for plastic molds requiring high wear resistance.

Heat Treating

AIRTRUE is subject to decarburization during heat treatment, so a protective atmosphere furnace or vacuum furnace should be used.
After preheating to 1500°F for one half to one hour, heat to 1750/1800°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 harness, two hours minimum per temper. Representative hardness levels after tempering are tabulated below.

Air cooled from 1750°F • Tempered 4 hours (Section Size — 4" x 4")

Tempering Temperature ((°F)	Rockwell Hardness (RC)
400	60/62
500	59/61
600	58/60
700	57/59
800	56/58
900	56/58
1000	54/56
1100	47/50

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 AIRTRUE 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

AIRTRUE A-2 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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