

Ameralloy[®]-20

CHROME-MOLY STEEL AISI P-20



Color code:
TAN WITH
ORANGE STRIPE



Ameralloy-20 is a chrome-moly tool steel made specifically to fill the requirements for machined cavities and forces used in zinc die casting and plastic molding. Ameralloy-20 is delivered fully quenched and tempered to approximately Brinell 300. Other hardness levels may be obtained through additional heat treatment.

Typical Analysis

- Carbon .35
- Manganese .80
- Chromium 1.70
- Silicon .50
- Molybdenum .45

Features And Advantages

- Usually eliminates heat treating by customer
- Mold quantity – electric furnace melted, vacuum degassed and ultrasonically inspected
- Good machinability
- Available in a wide range of sizes
- Deep hardening
- Uniform mechanical properties

Applications

- Cavities and cores of zinc die casting dies
- Plastic molding dies
- Compression and transfer molds

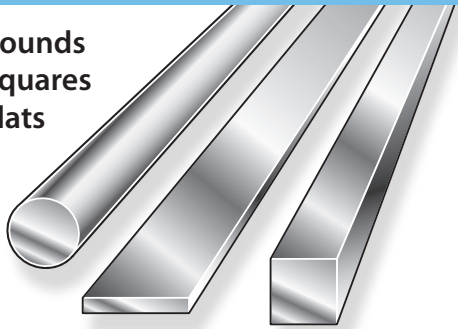
Heat Treatment

For most zinc die casting and plastic molding operations, no further heat treatment is required. However, if the material is committed to reforging, if higher hardness is required, or if stress relieving is necessary after heavy machining, the following cycles are suggested:

- **Stress relieving** 1000°F, air cool
- **Forging** Heat to 2000°F, stop at 1700°F and cool slowly
- **Normalizing** Do not normalize
- **Annealing** 1450°–1500°F, furnace cool. Brinell 207 max.
- **Hardening** 1550°F, oil-quench to 150°F.
- **Tempering** Temper at 300°–400°F for Rockwell C-54/55
- **Nitriding** 1000°–1025°F for 25 hours produces 0.025" case depth
- **Carburizing** 1700°F for 8 hours produces approximately 0.05" case depth

Available Shapes And Sizes

Rounds
Squares
Flats



ROUNDS: Standard lengths 8'-10' R/L. **FLATS & SQUARES:** Standard lengths 8'-12' R/L. Specify O.D. and I.D. Modified and special sizes available upon request. Prompt forging service available.

Rounds

3/4
1
1-1/4
1-1/2
1-3/4
2
2-1/8
2-1/4
2-1/2
2-3/4
3
3-1/4

3-1/2
4
4-1/4
4-1/2
5
5-1/2
6
6-1/2
7
7-1/2
8
8-1/2

9
10
11
12
14
14-1/2
16
18
20
24

Squares

1
1-1/2
1-3/4
2
2-1/4
2-1/2
2-3/4
3
3-1/2
4
5
6

Centerless ground rounds, heat treated & rough turned.

Flats Machine Oversize / Allowance to finish

1	x 16	x 12	x 10	x 14	x 34	x 20	x 40
x 2-1/4	x 18	x 14	x 12	x 16	x 36	x 25	x 48
x 6	x 20	x 16	x 14	x 18	x 38	x 26	x 60
x 8	x 36	x 25	x 16	x 20	x 40	x 30	17
x 12	2-1/4	x 27-1/2	x 18	x 22	x 45	x 32	x 48
x 18	x 12	4	x 20	x 25	10	x 34	18
x 36	x 14	x 6	x 22	x 26	x 12	x 36	x 23
1-1/4	2-1/2	x 7	x 25	x 28	x 14	x 38	x 24
x 10	x 6	x 8	x 28	x 30	x 20	x 40	x 40
x 12	x 8	x 10	x 36	x 36	x 22	x 48	x 48
x 16	x 10	x 12	5-1/2	x 40	x 23	x 60	x 60
1-1/2	x 12	x 14	x 16	8	x 25	14	20
x 3	x 14	x 16	x 40	x 10	x 26	x 23	x 22
x 6	x 16	x 18	6	x 12	x 28	x 25	x 24
x 7	x 20	x 20	x 9	x 16	x 30	x 30	x 34
x 8	x 36	x 24	x 12	x 18	x 32	x 32	x 40
x 10	3	x 25	x 14	x 20	x 36	x 34	x 48
x 12	x 5	x 27-1/2	x 16	x 22	x 38	x 36	x 60
x 14	x 6	4-1/4	x 18	x 25	x 40	x 38	22
x 16	x 6-1/2	x 5-1/4	x 20	x 28	x 48	x 40	x 24
x 18	x 8	4-1/2	x 22	x 30	x 60	x 48	x 48
x 20	x 10	x 8	x 25	x 32	11	x 60	23
x 36	x 12	x 10	x 26	x 34	x 25	15	x 48
2	x 14	x 12	x 28	x 36	x 30	x 23	24
x 4	x 16	x 14	x 30	x 40	x 32	x 25	x 48
x 6	x 18	x 16	x 32	9	x 34	x 30	
x 7	x 20	x 18	x 34	x 20	x 36	x 40	
x 8	x 25	x 28	x 36	x 22	x 40	x 48	
x 10	x 27-1/2	5	x 40	x 25	x 48	x 60	
x 12	3-1/2	x 6	7	x 26	x 60	16	
x 14	x 10	x 8	x 12	x 30	12	x 20	