



**Charging the Industry
with Excellent Quality
and Service**

Ajacs Die Sales Corporation

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Quality Drill Rod



**AISI
SAE**

O-1

Oil Hardening

**AISI
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W-1

Water Hardening

**AISI
SAE**

A-2

Air Hardening

**AISI
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Air Hardening

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Standard Tolerances

SIZE RANGE (INCHES)	PLUS OR MINUS
2.000 to .500	.001
.499 to .125	.0005
.124 and smaller	.0003

Drill Rod closer than standard tolerances is available at extra cost.*

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O-1

Oil Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
2	2.000	32.04	
1-15/16	1.9375	30.06	
1-7/8	1.875	28.14	
1-13/16	1.8125	26.31	
1-3/4	1.750	24.51	
1-11/16	1.6875	22.80	
1-5/8	1.625	21.15	
1-9/16	1.5265	19.56	
1-1/2	1.500	18.00	
1-15/32	1.4687	17.25	
1-7/16	1.4375	16.53	
1-13/32	1.4062	15.826	
1-3/8	1.375	15.14	
1-11/32	1.3437	14.44	
1-5/16	1.3125	13.80	
1-9/32	1.2812	13.12	
1-1/4	1.250	12.50	
1-7/32	1.2187	11.89	
1-3/16	1.1875	11.31	
1-5/32	1.1562	10.69	
1-1/8	1.125	10.12	
1-3/32	1.0937	9.58	
1-1/16	1.0625	9.03	
1-1/32	1.0312	8.49	
1-1/64	1.0156	8.26	
1	1.000	8.01	
63/64	0.9843	7.74	
31/32	0.9687	7.59	
61/64	0.9531	7.24	
15/16	0.9375	6.99	
59/64	0.9218	6.78	
29/32	0.9062	6.56	
57/64	0.8906	6.35	
7/8	0.875	6.13	
55/64	0.8593	5.91	
27/32	0.8437	5.68	
53/64	0.8281	5.48	
13/16	0.8125	5.29	
51/64	0.7968	5.12	
25/32	0.7812	4.87	

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O-1

Oil Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
49/64	0.7656	4.68	
3/4	0.750	4.50	
47/64	0.7343	4.31	
23/32	0.7187	4.12	
45/64	0.7031	3.93	
11/16	0.6875	3.75	
43/64	0.6718	3.56	
21/32	0.6562	3.43	
41/64	0.6406	3.31	
5/8	0.625	3.12	
39/64	0.6093	3.00	
19/32	0.5937	2.81	
37/64	0.5781	2.67	
9/16	0.5625	2.53	
35/64	0.5468	2.39	
17/32	0.5312	2.25	
33/64	0.5156	2.12	
1/2	0.500	2.00	
31/64	0.4843	1.87	
15/32	0.4687	1.74	
29/64	0.4531	1.62	
7/16	0.4375	1.53	
27/64	0.4218	1.41	
Z	0.413	1.37	
13/32	0.4062	1.31	
Y	0.404	1.28	
X	0.397	1.26	
25/64	0.3906	1.22	
W	0.386	1.20	
V	0.377	1.14	
3/8	0.375	1.12	
U	0.368	1.06	
23/64	0.3593	1.03	
T	0.358	1.02	
S	0.348	0.975	
11/32	0.3437	0.939	
R	0.339	0.924	
Q	0.332	0.882	
21/64	0.3281	0.8610	
P	0.323	0.831	

- All Sizes Available in 3 and 12 Foot Lengths
- Price Per 12' = 3' x 4

- Price Per Pound = 3' Piece Price ÷ Weight Per 3' Piece
- A \$25.00 packaging charge will be added to 12 foot drill rod orders less than 250 lbs.

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O-1

Oil Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
O	0.316	0.813	
5/16	0.3125	0.780	
N	0.302	0.726	
19/64	0.2968	0.702	
M	0.295	0.699	
L	0.290	0.675	
9/32	0.2812	0.639	
K	0.281	0.636	
J	0.277	0.615	
I	0.272	0.594	
H	0.266	0.564	
17/64	0.2656	0.561	
G	0.261	0.543	
F	0.257	0.522	
1/4	0.250	0.501	
D	0.246	0.483	
C	0.242	0.462	
B	0.238	0.450	
15/64	0.2343	0.441	
A	0.234	0.441	
1	0.227	0.414	
2	0.219	0.387	
7/32	0.2187	0.387	
3	0.212	0.363	
4	0.207	0.345	
5	0.204	0.327	
13/64	0.2031	0.327	
6	0.201	0.321	
7	0.199	0.318	
8	0.197	0.312	
9	0.194	0.297	
10	0.191	0.288	
11	0.188	0.282	
3/16	0.1875	0.282	
12	0.185	0.276	
13	0.182	0.267	
14	0.180	0.261	
15	0.178	0.255	
16	0.175	0.246	
17	0.172	0.237	
11/64	0.1718	0.234	
18	0.168	0.228	

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O-1

Oil Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
19	0.164	0.216	
20	0.161	0.207	
21	0.157	0.198	
5/32	0.1562	0.198	
22	0.155	0.195	
23	0.153	0.189	
24	0.151	0.183	
25	0.148	0.177	
26	0.146	0.171	
27	0.143	0.165	
9/64	0.1406	0.156	
28	0.139	0.156	
29	0.134	0.144	
30	0.127	0.129	
1/8	0.125	0.126	
31	0.120	0.117	
32	0.115	0.108	
33	0.112	0.102	
34	0.110	0.096	
7/64	0.1093	0.093	
35	0.108	0.093	
36	0.106	0.090	
37	0.103	0.087	
38	0.101	0.084	
39	0.099	0.078	
40	0.097	0.075	
41	0.095	0.072	
3/32	0.0937	0.069	
42	0.092	0.069	
43	0.088	0.063	
44	0.085	0.057	
45	0.081	0.054	
46	0.079	0.051	
5/64	0.0781	0.051	
47	0.077	0.048	
48	0.075	0.045	
49	0.072	0.042	
50	0.069	0.039	
51	0.066	0.036	
52	0.063	0.033	
1/16	0.0625	0.0304	

- All Sizes Available in 3 and 12 Foot Lengths
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- Price Per Pound = 3' Piece Price ÷ Weight Per 3' Piece
- A \$25.00 packaging charge will be added to 12 foot drill rod orders less than 250 lbs.

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W-1 Water Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
2	2.000	32.04	
1-15/16	1.9375	30.06	
1-7/8	1.875	28.14	
1-13/16	1.8125	26.31	
1-3/4	1.750	24.51	
1-11/16	1.6875	22.80	
1-5/8	1.625	21.15	
1-9/16	1.5625	19.56	
1-1/2	1.500	18.00	
1-15/32	1.4687	17.25	
1-7/16	1.4375	16.53	
1-13/32	1.4062	15.82	
1-3/8	1.375	15.14	
1-11/32	1.3437	14.44	
1-5/16	1.3125	13.80	
1-9/32	1.2812	13.12	
1-1/4	1.250	12.50	
1-7/32	1.2187	11.89	
1-3/16	1.1875	11.31	
1-5/32	1.1562	10.69	
1-1/8	1.125	10.12	
1-3/32	1.0937	9.58	
1-1/16	1.0625	9.03	
1-1/32	1.0312	8.49	
1-1/64	1.0156	8.25	
1	1.000	8.01	
63/64	0.9843	7.74	
31/32	0.9687	7.59	
61/64	0.9531	7.24	
15/16	0.9375	6.99	
59/64	0.9218	6.78	
29/32	0.9062	6.56	
57/64	0.8906	6.35	
7/8	0.875	6.13	
55/64	0.8593	5.91	
27/32	0.8437	5.68	
53/64	0.8281	5.48	
13/16	0.8125	5.29	
51/64	0.7968	5.12	
25/32	0.7812	4.87	
49/64	0.7656	4.68	

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W-1 Water Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
3/4	0.750	4.50	
47/64	0.7343	4.31	
23/32	0.7187	4.12	
45/64	0.7031	3.93	
11/16	0.6875	3.75	
43/64	0.6718	3.56	
21/32	0.6562	3.43	
41/64	0.6406	3.31	
5/8	0.625	3.12	
39/64	0.6093	3.00	
19/32	0.5937	2.81	
37/64	0.5781	2.67	
9/16	0.5625	2.53	
35/64	0.5468	2.39	
17/32	0.5312	2.25	
33/64	0.5156	2.12	
1/2	0.500	2.00	
31/64	0.4843	1.87	
15/32	0.4687	1.74	
29/64	0.4531	1.62	
7/16	0.4375	1.53	
27/64	0.4218	1.41	
Z	0.413	1.37	
13/32	0.4062	1.31	
Y	0.404	1.28	
X	0.397	1.26	
25/64	0.3906	1.22	
W	0.386	1.20	
V	0.377	1.14	
3/8	0.375	1.12	
U	0.368	1.06	
23/64	0.3593	1.03	
T	0.358	1.02	
S	0.348	0.975	
11/32	0.3437	0.939	
R	0.339	0.924	
Q	0.332	0.882	
21/64	0.3281	0.861	
P	0.323	0.831	
O	0.316	0.813	
5/16	0.3125	0.780	

- All Sizes Available in 3 and 12 Foot Lengths
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W-1 Water Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
N	0.302	0.726'	
19/64	0.2968	0.702'	
M	0.295	0.699'	
L	0.290	0.675'	
9/32	0.2812	0.639'	
K	0.281	0.636'	
J	0.277	0.615'	
I	0.272	0.594'	
H	0.266	0.564'	
17/64	0.2656	0.561'	
G	0.261	0.543'	
F	0.257	0.522'	
1/4	0.250	0.501'	
D	0.246	0.483'	
C	0.242	0.462'	
B	0.238	0.450'	
15/64	0.2343	0.441'	
A	0.234	0.441'	
1	0.227	0.414'	
2	0.219	0.387'	
7/32	0.2187	0.387'	
3	0.212	0.363'	
4	0.207	0.345'	
5	0.204	0.327'	
13/64	0.2031	0.327'	
6	0.201	0.321'	
7	0.199	0.318'	
8	0.197	0.312'	
9	0.194	0.297'	
10	0.191	0.288'	
11	0.188	0.282'	
3/16	0.1875	0.282'	
12	0.185	0.276'	
13	0.182	0.267'	
14	0.180	0.261'	
15	0.178	0.255'	
16	0.175	0.246'	
17	0.172	0.237'	
11/64	0.1718	0.234'	
18	0.168	0.228'	
19	0.164	0.216'	

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W-1 Water Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
20	0.161	0.207'	
21	0.157	0.198'	
5/32	0.1562	0.198'	
22	0.155	0.195'	
23	0.153	0.189'	
24	0.151	0.183'	
25	0.148	0.177'	
26	0.146	0.171'	
27	0.143	0.165'	
9/64	0.1406	0.156'	
28	0.139	0.156'	
29	0.134	0.144'	
30	0.127	0.129'	
1/8	0.125	0.126'	
31	0.120	0.117'	
32	0.115	0.108'	
33	0.112	0.102'	
34	0.110	0.096'	
7/64	0.1093	0.093'	
35	0.108	0.093'	
36	0.106	0.090'	
37	0.103	0.087'	
38	0.101	0.084'	
39	0.099	0.078'	
40	0.097	0.075'	
41	0.095	0.072'	
3/32	0.0937	0.069'	
42	0.092	0.069'	
43	0.088	0.063'	
44	0.085	0.057'	
45	0.081	0.054'	
46	0.079	0.051'	
5/64	0.0781	0.051'	
47	0.077	0.048'	
48	0.075	0.045'	
49	0.072	0.042'	
50	0.069	0.039'	
51	0.066	0.036'	
52	0.063	0.033'	
1/16	0.0625	0.030'	

- All Sizes Available in 3 and 12 Foot Lengths
- Price Per 12' = 3' x 4

- Price Per Pound = 3' Piece Price ÷ Weight Per 3' Piece
- A \$25.00 packaging charge will be added to 12 foot drill rod orders less than 250 lbs.

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A-2

Air Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
2	2.000	32.04'	
1-3/4	1.750	24.51'	
1-1/2	1.500	18.00'	
1-3/8	1.375	15.14'	
1-1/4	1.250	12.50'	
1-1/8	1.125	10.12'	
1-1/16	1.0625	9.03'	
1	1.000	8.01'	
15/16	0.9375	6.99'	
7/8	0.875	6.13'	
13/16	0.8125	5.29'	
3/4	0.750	4.50'	
23/32	0.7187	4.12'	
11/16	0.6875	3.75'	
21/32	0.6562	3.43'	
5/8	0.625	3.12'	
19/32	0.5937	2.81'	
9/16	0.5625	2.53'	
17/32	0.5312	2.25'	
33/64	0.5156	2.12'	
1/2	0.500	2.00'	
31/64	0.4843	1.87'	
15/32	0.4687	1.74'	
29/64	0.4531	1.62'	
7/16	0.4375	1.53'	
27/64	0.4218	1.41'	
13/32	0.4062	1.31'	
25/64	0.3906	1.22'	
3/8	0.375	1.12'	
23/64	0.3593	1.03'	
11/32	0.3437	0.939'	
21/64	0.3281	0.861'	
5/16	0.3125	0.780'	
19/64	0.2968	0.702'	
9/32	0.2812	0.639'	
17/64	0.2656	0.561'	
1/4	0.250	0.501'	
15/64	0.2343	0.441'	
7/32	0.2187	0.387'	
13/64	0.2031	0.327'	
3/16	0.1875	0.282'	
11/64	0.1718	0.234'	
5/32	0.1562	0.198'	
9/64	0.1406	0.156'	
1/8	0.125	0.126'	
7/64	0.1093	0.093'	
3/32	0.0937	0.069'	
5/64	0.0781	0.051'	
1/16	0.0625	0.030'	

- All Sizes Available in 3 and 12 Foot Lengths
- Price Per 12' = 3' x 4

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A-2

Air Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
2mm	0.0787	0.050'	
3mm	0.1181	0.112'	
4mm	0.1575	0.198'	
5mm	0.1969	0.310'	
6mm	0.2362	0.446'	
7mm	0.2756	0.607'	
8mm	0.3150	0.794'	
9mm	0.3543	1.004'	
10mm	0.3937	1.239'	
11mm	0.4331	1.500'	
12mm	0.4724	1.785'	
13mm	0.5118	2.095'	
14mm	0.5512	2.430'	
15mm	0.5906	2.790'	
16mm	0.6299	3.173'	
17mm	0.6693	3.583'	
18mm	0.7087	4.017'	
19mm	0.7480	4.475'	
20mm	0.7874	4.959'	
21mm	0.8268	5.467'	
22mm	0.8661	6.000'	
23mm	0.9055	6.558'	
24mm	0.9449	7.141'	
25mm	0.9843	7.747'	

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D-2

Air Hardening
Drill Rod

Distributor Piece Prices

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
1-1/2	1.500	18.00	
1-1/4	1.250	12.50	
1	1.000	8.01	
7/8	0.875	6.13	
3/4	0.750	4.50	
5/8	0.625	3.12	
1/2	0.500	2.00	
7/16	0.4375	1.53	
3/8	0.375	1.12	
5/16	0.3125	0.780	
1/4	0.250	0.501	
3/16	0.1875	0.282	
1/8	0.125	0.126	

- Price Per Pound = 3' Piece Price ÷ Weight Per 3' Piece
- A \$25.00 packaging charge will be added to 12 foot drill rod orders less than 250 lbs.

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S-7

Air Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
1-1/2	1.500	18.00	
1-1/4	1.250	12.50	
1	1.000	8.01	
7/8	0.875	6.13	
3/4	0.750	4.50	
5/8	0.625	3.12	
1/2	0.500	2.00	
7/16	0.4375	1.53	
3/8	0.375	1.12	
5/16	0.3125	0.780	
1/4	0.250	0.500	
7/32	0.2187	0.387	
3/16	0.1875	0.282	
5/32	0.1562	0.198	
1/8	0.125	0.126	
3/32	0.0937	0.069	
1/16	0.0625	0.030	

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O-1

Oil Hardening
Drill Rod

Size	Decimal Equiv. Inches	Weight Per 3' Piece	
2mm	0.0787	0.050	
3mm	0.1181	0.112	
4mm	0.1575	0.198	
5mm	0.1969	0.310	
6mm	0.2362	0.446	
7mm	0.2756	0.607	
8mm	0.3150	0.794	
9mm	0.3543	1.004	
10mm	0.3937	1.239	
11mm	0.4331	1.500	
12mm	0.4724	1.785	
13mm	0.5118	2.095	
14mm	0.5512	2.430	
15mm	0.5906	2.790	
16mm	0.6299	3.173	
17mm	0.6693	3.583	
18mm	0.7087	4.017	
19mm	0.7480	4.475	
20mm	0.7874	4.959	
21mm	0.8268	5.467	
22mm	0.8661	6.000	
23mm	0.9055	6.558	
24mm	0.9449	7.141	
25mm	0.9843	7.747	
30mm	1.1811	11.300	

Heat Treatment Information

PRODUCT:

AISI O-1 Ground and Polished Drill Rod

Typical Analysis:
C .95, Mn 1.20, Si .35,
Cr .50, W .50

HEAT TREATMENT:

Preheat: 1200°F until thoroughly soaked. Harden at 1475°F. Hold 20 minutes per inch of greatest cross section after tool reaches furnace temperature (minimum holding time - 20 minutes). Quench in warm oil to 150°F. Temper immediately 2 hours per inch of greatest cross-section at temperatures shown to achieve the desired hardness.

TEMPERING:

Tempering Temp. °F	Hardness Rockwell C
None	65.0
300	63.0
350	61.0
400	60.5
450	59.0
500	58.0
600	56.0
800	48-49

AISI W-1 Ground and Polished Drill Rod

Typical Analysis:
C 1.00, Mn .40, Si .20

Heat slowly to 1450°F. Hold 20 minutes per inch of greatest cross-section after tool reaches furnace temperature (minimum holding time - 20 minutes). Quench in water or 10% brine solution to 150°/200°F. Temper immediately 2 hours per inch of greatest cross-section at temperatures shown to achieve the desired hardness.

Tempering Temp. °F	Hardness Rockwell C
None	67.0
300	64.0
400	61.0
500	59.0
600	55.0
800	46.0

AISI A-2 Ground and Polished Drill Rod

Typical Analysis:
C 1.00, Mn .70, Cr 5.00,
Mo 1.10, V .25

Preheat: 1200°F until thoroughly soaked. Harden at 1775°F. Hold 20 minutes per inch of greatest cross-section after tool reaches furnace temperature (minimum holding time - 30 minutes). Air quench to 150°F. Temper immediately 2 hours per inch of greatest cross-section at temperatures shown to achieve the desired hardness.

Tempering Temp. °F	Hardness Rockwell C
None	64.5
300	63.0
350	62.0
400	61.0
450	60.0
500	59.0
600	58.0
800	57.0

AISI S-7 Ground and Polished Drill Rod

Typical Analysis:
C .50, Mn .50, Si .30,
Cr 3.25, Mo 1.45

Preheat: 1250°F until thoroughly soaked. Harden at 1725°F. Hold 45 minutes per inch of greatest cross-section after tool reaches furnace temperature (minimum holding time - 45 minutes). Air quench to 150°F. Temper immediately 2 hours per inch of greatest cross-section at temperatures shown to achieve the desired hardness.

Tempering Temp. °F	Hardness Rockwell C
400	58.0
500	56.0
600	55.0
700	54.0
800	53.0
900	52.0
1000	51.0
1100	47.0
1200	38.0
1300	31.0

AISI D-2 Ground and Polished Drill Rod

Typical Analysis:
C 1.50, Mn .40, Si .30,
Cr 12.00, Mo .80, V .90

Preheat: 1250°F until thoroughly soaked. Harden at 1850°F. Hold 45 minutes per inch of greatest cross-section after tool reaches furnace temperature (minimum holding time - 45 minutes). Air quench to 150°F. Temper immediately 2 hours per inch of greatest cross-section at temperatures shown to achieve the desired hardness.

Tempering Temp. °F	Hardness Rockwell C
300	62.0
400	60.5
500	58.5
600	57.5
700	57.0
800	56.5
900	56.5
1000	57.0
1100	51.5
1200	43.5

W-1 Tool Steel Drill Rod

W-1 Tool Steel is a general purpose water-hardening tool steel with a 1.00% Carbon content. It offers an excellent combination of physical properties with an outer case that is abrasion resistant in the 60 Rockwell "C" range with a soft, ductile inner core. W-1 is the easiest of all steels to machine with a machinability rating of 100 as a basis for comparison with other tool steels.

0-1 Tool Steel Drill Rod

0-1 Tool steel is a general purpose oil-hardening tool and die steel. Normal care in treatment gives good results in hardening and produces small dimensional changes. It has good abrasion resistance and sufficient toughness for normal tool and die applications. When compared to a 1 percent carbon steel, 0-1 has a machinability rating of 90.

S-7 Tool Steel Drill Rod

S-7 Tool Steel is a general purpose cold work tool steel especially formulated for tooling applications that require extreme toughness and impact strength. S-7 Tool Steel has exceptional impact properties with an unnotched Charpy of 180 ft-lbs with a 400°F temper. When compared to a 1 percent carbon steel, S-7 has a machinability rating of 95.

A-2 Tool Steel Drill Rod

A-2 Tool Steel is a general purpose, 5% chrome air hardening tool steel. A-2 is popular because it has better wear resistance compared to S-7, A-6 and A-8 Tool Steel. A-2 is tougher and more ductile than D-2 Tool

Steel. A-2 is also a very safe grade of tool steel to harden, and can be heat treated in most tool room furnaces without problem. When compared to a 1 percent carbon steel, A-2 has a machinability rating of 65.

D-2 Tool Steel Drill Rod

D-2 is for tooling applications where excellent abrasion resistance is the primary concern, D-2 Tool Steel is the most logical choice. D-2 Tool Steel also has very deep hardening characteristics, and high compressive strength. D-2 is also very popular because of its air hardening characteristics and excellent ability to resist distortion and size changes during hardening. When compared to a 1 percent carbon steel, D-2 has a machinability rating of 50.