



David H. Fell & Company, Inc.

*Precious Metals Refiner and Manufacturer of Quality Mill Products
Since 1973*

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David H. Fell & Company
Outstanding in every element.™



*Now with multiple locations
serving the Southwest, DHF also ships
to customers all around the US.*

For fabricated mill products

(including casting grains, wire, sheet, solders, etc.)
all orders are processed, manufactured and shipped
by our City of Commerce, CA facility.

In addition to our headquarters in Commerce,
our Northern California (Burlingame) and
Arizona (Phoenix) facilities offer melt and assay,
processing of select refining lots, and exchange
for bullion or mill products.

The Coin Gallery in Phoenix,
operated by DHF&Co. - Arizona, Inc.,
also buys and sells bullion and collectible coins and bank notes.
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We welcome you to David H. Fell & Company, Inc.

For over 40 years, David H. Fell & Company has been honored to serve the jewelry, pawn, electronics, dental, and mining industries by providing gold, silver, and platinum products and refining services.

Year-after-year we realize the success of our business relies on the partnership we establish with our customers. If you are looking for a metals supplier that provides not only a number of different forms, sizes, colors, and manufacturing formulations; but a partner to your needs, then consider relying on us.

If you are an individual or company searching for an honest refiner with a golden reputation then let us earn your confidence. We place a great emphasis on providing an honest return with each lot, because we know you'll see the difference.

All of our staff has a deep desire to serve your needs for precious metal products and refining services. I encourage you to fulfill their desire and experience the partnership we offer to you.



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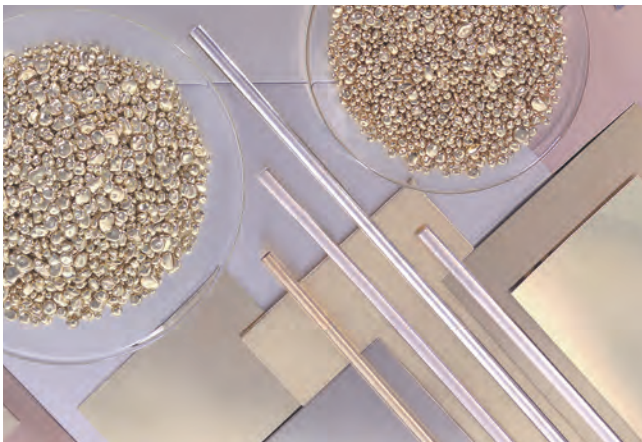
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*“A satisfied customer
is our most
valuable asset.”*



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“Let us earn your confidence.”

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Colors	Metal Description	Melting Solidus °F	Flow Point Liquidus °F	Available in a variety of products. See NOTES below.	Flask Temp. °F
10K Yellow Sunbrite	Light yellow – looks like 14K	1558	1665	c s w a	850-950
10K Yellow Sunbrite Plus	Contains deoxidizer	1461	1598	c a	850-950
10K White	Soft white – handles like yellow/low nickel	1755	1868	c s w a	1000-1100
10K White Plus	Contains deoxidizer – casts bright	1855	1988	c	1000-1100
10K Red	Rose or pink – contains grain refiner	1719	1787	c s w a	950-1050
10K Green	Light green	1553	1683	c s w a	950-1050
14K Yellow Sunbrite	Yellow – most popular for sheet and wire	1553	1623	c s w a	850-950
14K Yellow Sunbrite Plus	Contains deoxidizer – best seller – great for casting	1463	1593	c a	850-950
14K Yellow Standard	European yellow – contains grain refiner	1495	1557	c a	850-950
14K Yellow Classic Plus	Contains deoxidizer	1540	1625	c a	850-950
14K Yellow Regal	Deep yellow – closest to 18K Santa Fe	1569	1639	c s w a	850-950
14K Yellow Regal Plus	Deep yellow – contains deoxidizer	1499	1603	c a	850-950
14K Yellow Spring	Hard spring quality – low zinc	1537	1575	c s w a	850-950
14K Satin White	Very white – rhodium plating optional – good reusability	1700	1785	c a	950-1000
14K Winter White	Bright white – high nickel	1720	1805	c a	950-1050
14K Standard White	Handles like yellow – low nickel	1693	1782	c s w a	950-1050
14K White Plus	Contains deoxidizer – casts bright	1683	1767	c	950-1050
14K White Spring	Hard spring quality	1744	1823	c s w a	950-1050
14K Palladium White	Looks like Platinum – very soft – good for pavé – no nickel	2296	2395	c s w	1050-1150
14K Red	Deepest rose – contains grain refiner	1686	1740	c s w a	950-1050
14K Green	Medium green	1650	1747	c s w a	900-1000
18K Yellow Santa Fe	Rich reddish yellow	1616	1688	c s w a	850-950
18K Yellow Santa Fe Plus	Contains deoxidizer	1611	1690	c a	850-950
18K Yellow Standard	European yellow – enameling – no zinc – most popular	1668	1717	c s w a	850-950
18K Yellow Standard Plus	Contains deoxidizer – casts bright	1762	1817	c	850-950
18K White	Standard white	1695	1720	c s w a	900-1000
18K White Plus	Contains deoxidizer – casts bright	1795	1844	c	900-1000
18K Palladium White	Looks like Platinum – malleable – good for pavé – no nickel	2215	2340	c s w	1050-1150
18K Red	Deep rose – use in depletion gilding – contains grain refiner	1663	1699	c s w a	900-1000
18K Green	True green – malleable	1828	1893	c s w a	900-1000
22K Yellow Standard	Bright greenish yellow – enameling – no zinc	1945	1976	c s w	1000-1100
22K Yellow Romance	Very deep reddish yellow – no zinc	1854	1908	c s w a	1000-1100
22K Red	Peach-red – no zinc	1729	1780	c s w	1000-1100
24K Fine Gold	Pure (.9999)	1945	1945	c s w b	1000-1100
Sterling Silver	Silver and Copper (.925)	1640	1715	c s w	850-950
Sterling Silver Plus	Sterling w/deoxidizer (.925)	1625	1700	c	950-1050
Sterling Silver Supercast	Casts stones in place (.925)	1600	1675	c	900-950
Fine Silver	Pure (.999+)	—	1761	c s w	950-1050
Platinum	Pure (.999+)	—	3224	c s w sp	1600-1700
10% Iridium Platinum	General purpose	3236	3272	c s w	1600-1700
5% Iridium Platinum*	General purpose (softer platinum)	3236	3254	c s w	1200-1600
5% Ruthenium Platinum	Good machining property	3236	3263	c s w	1600-1700
10% Palladium Platinum	Very soft Platinum	3164	3191	c s w	1600-1700
Palladium	Pure (.999)	—	2831	c s sp	1400-1450
500 Palladium	White metal that enhances beauty of diamonds, no rhodium plating required	2281	2331	c s w	1050-1150
950 Palladium	Shiny white – rhodium plating not required	2442	2505	c s w	1225-1325
Iridium	Pure (.999)	—	4449	sp	

*DHF Platinum is 95.2% Platinum and 4.8% alloy to exceed FTC regulations.

All DHF White Golds have been certified as Nickel-Safe by the American Assay & Gemological Office in New York, NY.

NOTES: c=casting grain • s=sheet • w=wire • a=alloy • sp=sponge • b=bullion coins and bars available.

Conversion from Fahrenheit to Centigrade: subtract 32 from Fahrenheit temp then multiply by .5556.

Casting temperatures should be 100°-150° (F) over Liquidus temp and may vary based on equipment.

Custom alloys and colors available. DHF Co. will manufacture to your specifications. Additional costs and minimum requirements may apply.



CASTING	Description	Melt Temperature when mixed with Fine Gold	
		Solidus °F	Liquidus °F
10 Yellow Sunbrite	Light yellow	1558	1665
10 Yellow Sunbrite Plus	Contains deoxidizer	1461	1598
10 White	Soft white – handles like yellow/low nickel	1755	1868
10 Red	Rose or pink with or without grain refiner	1719	1787
10 Green	Light green with or without grain refiner	1553	1683
14 Yellow Sunbrite	Yellow – most popular for sheet and wire	1553	1623
14 Yellow Sunbrite Plus	Contains deoxidizer – best seller	1463	1593
14 Yellow Standard	European yellow with or without grain refiner	1495	1557
14 Yellow Classic Plus	Contains deoxidizer	1540	1625
14 Yellow Regal	Deep yellow – closest to 18K Santa Fe	1569	1639
14 Yellow Regal Plus	Deep yellow – contains deoxidizer	1499	1603
14 Yellow Spring	Deep yellow – hard spring quality – low zinc	1537	1575
14 Satin White	Very white – rhodium plating optional – good reusability	1700	1785
14 Winter White	Bright white – high nickel	1720	1805
14 Standard White	Handles like yellow – low nickel	1693	1782
14 White Spring	Hard spring quality	1744	1823
14 Red	Deepest rose with or without grain refiner	1686	1740
14 Green	Medium green	1650	1747
18 Yellow Santa Fe	Rich reddish yellow	1616	1688
18 Yellow Santa Fe Plus	Contains deoxidizer	1611	1690
18 Yellow Standard	European yellow – enameling – no zinc	1668	1717
18 White	Standard white	1695	1720
18 Red	Deep rose – use in depletion gilding – with or without grain refiner	1663	1699
18 Green	True green – malleable	1828	1893
22 Yellow Romance	Very deep reddish yellow – no zinc	1854	1908
ROLLING/DRAWING	Description	Solidus °F	Liquidus °F
10 Yellow Sunbrite	Light yellow – looks like 14K	1558	1665
10 White	Soft white – handles like yellow/low nickel	1755	1868
10 Red	Rose or pink with or without grain refiner	1719	1787
10 Green	Light green	1553	1683
14 Yellow Sunbrite	Yellow – most popular for sheet and wire	1553	1623
14 Yellow Standard	European yellow – contains grain refiner	1495	1557
14 Yellow Regal	Deep yellow	1569	1639
14 Yellow Spring	Hard spring quality – low zinc	1537	1575
14 Satin White	Very white – rhodium plating optional – good reusability	1700	1785
14 Standard White	Handles like yellow – low nickel	1693	1782
14 White Spring	Hard spring quality	1744	1823
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18 Yellow Santa Fe	Rich reddish yellow	1616	1688
18 Yellow Standard	European yellow – enameling – no zinc	1668	1717
18 White	Standard white	1695	1720
18 Red	Deep rose – use in depletion gilding – with or without grain refiner	1663	1699
18 Green	True green – malleable	1828	1893
22 Yellow Romance	Very deep reddish yellow – no zinc	1854	1908

Sheet

All gauges from 6 through 30 are available as stock items. Odd gauges are available on a custom basis at additional charge. Gold and Platinum sheet size is 4" wide and any length up to 12" long. Silver sheet size is 6" wide and any length up to 36" long. Widths can be as narrow as 7mm. DHF Co. will cut to size. Approximate weight per square inch in dwts. for Gold and Platinum. Approximate weight per square inch in troy ounces for Silver.

Gauge	Inches	MM	10K	14K	18K	22K	Fine Gold	Pure PT and PT Alloys	Sterling Silver	Fine Silver
6	.160	4.00	19.51	22.03	26.28	31.33	32.58	36.32	0.883	0.887
7	.144	3.66	17.56	19.83	23.65	28.20	29.32	32.62		
8	.128	3.26	15.70	17.70	21.10	25.20	26.20	28.12	0.701	0.709
9	.114	2.89	13.90	15.66	18.04	22.32	23.21	25.88		
10	.102	2.59	12.40	14.00	16.70	20.00	20.80	22.72	0.556	0.562
11	.090	2.27	10.98	12.36	14.24	17.62	18.32	20.43		
12	.080	2.05	9.85	11.10	13.30	15.87	16.50	18.00	0.441	0.446
13	.072	1.83	8.78	9.90	11.40	14.10	14.60	16.34		
14	.064	1.63	7.81	8.82	10.50	12.59	13.10	14.40	0.350	0.354
15	.057	1.45	6.94	7.84	9.02	11.16	11.61	12.94		
16	.050	1.29	6.21	7.00	8.35	10.00	10.40	11.24	0.277	0.281
17	.045	1.14	5.48	6.18	7.12	8.81	9.16	10.21		
18	.040	1.02	4.91	5.55	6.62	7.89	8.20	9.00	0.220	0.223
19	.036	0.91	4.38	4.94	5.70	7.05	7.33	8.17		
20	.032	0.81	3.90	4.40	5.25	6.26	6.51	7.20	0.174	0.176
21	.028	0.71	3.40	3.84	4.42	5.48	5.70	6.36		
22	.025	0.64	3.09	3.49	4.16	4.96	5.16	5.62	0.137	0.140
23	.023	0.58	2.68	3.02	3.48	4.50	4.68	5.22		
24	.020	0.51	2.45	2.77	3.30	3.93	4.09	4.50	0.109	0.111
25	.018	0.45	2.18	2.48	2.84	3.52	3.66	4.09		
26	.016	0.41	1.94	2.19	2.62	3.12	3.24	3.60	0.087	0.088
27	.014	0.35	1.70	1.92	2.20	2.74	2.85	3.18		
28	.013	0.32	1.54	1.74	2.08	2.48	2.58	2.70	0.069	0.070
29	.011	0.27	1.34	1.52	1.74	2.15	2.24	2.50		
30	.010	0.26	1.22	1.38	1.65	1.96	2.04	2.24	0.055	0.055





Round Wire

All gauges from 4 through 30 are available for Gold and Platinum. Approximate weight per foot in pennyweights for Gold and Platinum. Silver is available in 2 through 28 gauge. Approximate weight per foot in troy ounces for Silver. All metals are available in a continuous coil.

Gauge	Inches	MM	10K	14K	18K	22K	Fine Gold	Pure PT and PT Alloys	Sterling Silver	Fine Silver
2	0.257	6.53							3.398	3.440
4	0.204	5.18	48.00	54.20	64.60	76.70	80.10	88.93	2.138	2.165
5	0.182	4.62	38.00	43.00	51.20	61.02	63.50	70.74		
6	0.162	4.16	30.20	34.10	40.60	48.47	50.40	57.35	1.350	1.360
7	0.144	3.66	23.90	27.00	32.20	38.30	39.90	44.39		
8	0.128	3.26	19.00	21.40	25.60	30.39	31.60	33.96	0.848	0.859
9	0.114	2.90	15.10	17.00	20.30	24.00	25.20	27.87		
10	0.101	2.59	11.90	13.50	16.10	19.24	20.00	21.84	0.534	0.541
11	0.090	2.29	9.46	10.70	12.70	14.99	15.80	17.38		
12	0.080	2.05	7.50	8.47	10.10	12.12	12.60	13.82	0.334	0.339
13	0.072	1.83	5.95	6.72	8.01	9.57	9.94	11.10		
14	0.064	1.63	4.72	5.33	6.36	7.57	7.87	8.98	0.211	0.214
15	0.057	1.45	3.74	4.23	5.04	6.01	6.25	6.97		
16	0.050	1.29	2.97	3.35	4.00	4.77	4.96	5.16	0.132	0.135
17	0.045	1.14	2.35	2.66	3.17	3.72	3.86	4.31		
18	0.040	1.02	1.87	2.11	2.51	2.99	3.11	3.38	0.084	0.085
19	0.036	0.91	1.48	1.67	1.99	2.37	2.48	2.74		
20	0.032	0.81	1.17	1.33	1.58	1.89	1.96	2.00	0.053	0.053
21	0.028	0.71	0.931	1.05	1.25	1.44	1.56	1.67		
22	0.025	0.64	0.738	0.833	0.994	1.18	1.23	1.32	0.033	0.033
23	0.023	0.58	0.585	0.661	0.789	0.96	0.977	1.11		
24	0.020	0.51	0.464	0.524	0.625	0.743	0.775	0.84	0.021	0.020
25	0.018	0.46	0.368	0.416	0.496	0.60	0.63	0.70		
26	0.016	0.41	0.292	0.330	0.393	0.469	0.488	0.54	0.013	0.013
27	0.014	0.36	0.231	0.261	0.312	0.37	0.386	0.43		
28	0.013	0.32	0.184	0.207	0.247	0.294	0.306	0.34	0.008	0.008
29	0.011	0.28	0.145	0.164	0.196	0.224	0.243	0.26		
30	0.010	0.26	0.115	0.130	0.155	0.182	0.193	0.21		

Dome Wire

Approximate weight per foot in pennyweights for Gold and Platinum. Approximate weight per foot in troy ounces for Silver. All metals are available in a continuous coil.

	MM	10K	14K	18K	22K	Pure and PT Alloys	Sterling Silver	
🏠	6 × 3	32.25	38.78	44.23	53.15	60.72		🏠
🏠	6 × 2	20.84	24.54	29.06	34.71	40.54	0.947	🏠
🏠	6 × 1.5	15.88	18.18	20.96	28.79	28.56	0.688	🏠
🏠	5 × 3	28.29	31.4	36.61	47.59	51.88		🏠
🏠	5 × 2.5	21.98	27.58	30.40	28.20	42.44	1.054	🏠
🏠	5 × 2	17.98	20.48	23.20	27.71	33.76	0.851	🏠
🏠	5 × 1.5	14.82	16.32	18.54	19.99	28.60	0.670	🏠
🏠	4.5 × 1.5	12.35	14.13	15.76	18.91	22.61		🏠
🏠	4 × 2	15.50	17.66	20.22	24.15	28.10	0.691	🏠
🏠	4 × 1.5	12.02	13.56	15.76	18.82	21.84	0.519	🏠
🏠	3.5 × 1.5	10.95	11.95	12.41	14.892	18.75		🏠
🏠	3 × 2	11.78	12.45	14.6	17.52	21.95		🏠
🏠	3 × 1.5	9.16	10.56	12.50	14.93	14.84	0.405	🏠
🏠	3 × 1	4.93	5.56	6.64	10.70	9.15	0.245	🏠
🏠	2.5 × 1.25	6.25	6.48	7.95	9.41	11.11		🏠
🏠	2 × 1.5	6.24	7.06	7.96	9.51	11.28	0.271	🏠
🏠	2 × 1	3.86	4.56	4.96	5.92	7.02	0.161	🏠
🏠	1.5 × 1	3.10	3.46	3.76	4.48	5.36	0.136	🏠
	1.5 × .75	2.12	2.51	2.62	3.32	3.75		
	1.25 × .625	1.45	1.62	1.98	2.41	2.75		
	1 × .5	0.82	1.12	1.25	1.48	1.44		

Flat Wire

Rolled. Approximate weight per foot in pennyweights for Gold and Platinum. Approximate weight per foot in troy ounces for Silver. All metals are available in a continuous coil.

	MM	10K	14K	18K	22K	Pure and PT Alloys	Sterling Silver	
■	7 × 2	31.75	35.86	42.76	50.99	59.11		■
■	6 × 3	40.82	46.10	54.98	65.55	75.99		■
■	6 × 2.5	34.02	38.42	45.82	54.63	63.33		■
■	6 × 2	28.16	31.34	36.38	45.71	52.06	1.258	■
■	6 × 1.5	21.08	23.44	27.06	36.26	38.78	0.919	■
■	6 × 1	13.61	15.37	18.33	21.85	25.33		■
■	5.5 × 3	37.42	42.26	50.40	60.09	69.99		■
■	5 × 3	34.02	38.42	45.82	54.63	63.33		■
■	5 × 2	23.26	26.08	29.48	38.09	43.22	1.014	■
■	5 × 1	11.34	12.81	15.27	18.21	21.11		■
■	4.5 × 1	10.20	11.53	13.75	16.39	19.00		■
■	4 × 2	18.60	21.10	24.36	30.47	33.50	0.825	■
■	4 × 1	9.38	10.66	12.22	15.15	18.18	0.429	■
■	5 × 1.5	17.56	19.42	22.60	30.22	32.74	0.777	■
■	4 × 1.5	13.84	15.66	18.28	24.17	25.64	0.616	■
■	3.5 × 2	15.87	17.93	21.38	25.49	29.55		■
■	3 × 2	13.61	15.37	18.33	21.85	25.33		■
■	3 × 1.5	10.04	11.14	13.12	18.13	19.00	0.457	■
■	3 × 1	7.12	7.92	9.14	11.36	13.38	0.315	■
■	2.5 × 1.5	8.50	9.60	11.45	13.66	15.83		■
■	2 × 1.5	6.66	7.54	8.66	12.09	11.96	0.286	■
■	2 × 1	4.76	5.00	6.10	7.57	8.52	0.206	■
■	1.5 × 1	3.32	3.70	4.18	5.68	6.00	0.144	■

Made for Superior Sizing

Bezel Strip

Approximate weight per foot in pennyweights for Gold. One foot lengths maximum. Approximate weight per foot in ounces for Silver. Silver available in coil and 1 foot lengths.

Width MM	Thickness Gauge	Inches	MM	10K	14K	18K	22K	Pure & PT Alloys	Sterling Silver/ Fine Silver
2	30	.010	.26	1.14	1.29	1.54	1.83	2.16	0.051
2	28	.013	.32	1.48	1.67	2.00	2.38	2.81	0.066
2	26	.016	.40	1.96	2.12	2.40	2.88	3.50	0.080
3	30	.010	.26	1.70	2.02	2.32	2.94	3.24	0.078
3	28	.013	.32	2.18	2.48	2.86	3.72	4.22	0.102
3	26	.016	.40	2.78	3.12	3.68	6.41	5.15	0.119
4	30	.010	.26	2.31	2.61	3.12	3.67	4.33	0.104
4	28	.013	.32	2.91	3.29	3.93	4.64	5.62	0.131
4	26	.016	.40	3.71	4.15	4.76	5.712	6.85	0.165
5	30	.010	.26	2.94	3.32	3.94	4.70	5.41	0.128
5	28	.013	.32	3.64	4.12	4.94	5.88	7.03	0.166
5	26	.016	.40	4.64	5.42	6.25	7.5	8.93	0.206
6	30	.010	.26	3.46	3.91	4.68	5.88	6.49	0.156
6	28	.013	.32	4.36	4.93	5.90	7.44	8.44	0.196
6	26	.016	.40	5.58	6.46	7.49	8.98	10.68	0.252



Square Wire

Rolled or Drawn. Larger than 6 GA will be rolled. Approximate weight per foot in pennyweights for Gold and Platinum. Approximate weight per foot in troy ounces for Silver. Silver is available in coil and 1 foot lengths.

	Gauge	Inches	MM	10K	14K	18K	22K	Pure and PT Alloys	Sterling Silver	
■	2	.257	6.53					180.00		■
■	4	.200	5.00					105.60	2.690	■
■	6	.160	4.00	36.28	40.98	48.87	58.27	67.55	1.645	■
■	7	.144	3.66	30.38	34.31	40.92	48.79	56.55		■
■	8	.128	3.26	20.48	23.06	26.64	38.71	37.54	1.264	■
■	9	.114	2.85	18.42	20.80	24.81	29.58	34.29		■
■	10	.101	2.59	14.38	16.64	19.20	24.00	26.68	0.646	■
■	11	.090	2.25	11.48	12.97	15.46	18.44	21.37		■
■	12	.080	2.05	9.16	10.36	12.04	15.24	17.06	0.421	■
■	13	.070	1.75	6.94	7.84	9.35	11.15	12.93		■
■	14	.064	1.63	4.92	6.00	6.48	9.67	9.16	0.231	■
■	15	.055	1.40	4.44	5.02	5.99	7.14	8.27		■
■	16	.050	1.29	3.62	4.18	4.58	6.00	6.48	0.161	■
■	17	.045	1.10	2.74	3.10	3.70	4.41	5.11		■
■	18	.040	1.02	2.36	2.66	3.18	3.79	4.39	0.101	■
■	19	.036	0.90	1.84	2.07	2.47	2.95	3.42		■
■	20	.032	0.75	1.28	1.44	1.72	2.05	2.37	0.058	■
■	22	.025	0.64	0.93	1.05	1.25	1.49	1.73	0.042	■

Triangle Wire

Available in most Gold karats and colors. Available in Pure Platinum, 10% Ir/Pt, 5% Ir/Pt, and 5% Ru/Pt.

	Gauge	MM
▲	14	1.6
▲	16	1.3
▲	18	1.0

For information on soldering,
see pages 11-12

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Seamless Tubing

Approximate weight per foot in pennyweights for 14K, 18K and Ruthenium Platinum. Approximate weight per foot in ounces for Sterling. Available in one foot lengths only. Other sizes available upon request.

Size MM	Outside Diameter MM	Inside Diameter MM	Weight per Foot			Insert	Wire Gauge	Wall Thickness
			14K	18K	Sterling Silver	Ru/Pt		
6	5.80	5.00	17.26	20.22	.709	28.34	5 GA	26 GA
5	4.80	4.00	14.52	16.84	.543	23.84	7 GA	26 GA
4	3.80	3.05	11.20	13.50	.446	18.40	9 GA	26 GA
3	3.125	2.625	5.96	7.18	.253	9.80	11 GA	30 GA
2.5	2.50	2.00	4.44	5.74	.185	7.30	13 GA	30 GA
2	2.00	1.50	3.50	4.38	.181	5.75	15 GA	30 GA
1.5	1.60	1.15	2.84	3.46	.103	4.66	18 GA	30 GA

Rod Stock

Approximate weight per foot in pennyweights.

Metal	Diameter	Dwt.
10K Yellow	0.320"	117.62
14K Yellow	0.320"	132.84
18K Yellow	0.320"	158.42
Silver	0.313"	100.72

Other karats and colors available.

Discs—Gold, Silver, Platinum

- ❖ **Circles & Discs** available in gauges 16 through 26; diameters – 3" through 6"; most karats and colors.
- ❖ **Machine Punch** available in gauges 10 through 30; diameters – 3", 2³/₄", 2", 1.835", 1¹/₂", 1¹/₄", 1¹/₈", 1", ⁷/₈", ³/₄", ⁵/₈", ³/₈", ⁹/₃₂", ⁹/₁₆", ¹/₂".

*Max thickness for 3" and 2³/₄" discs is 12 gauge.



Gold Plumb Solder—Sheet

Recommended for fabrication or sizing. Minimum 1 dwt. order. Approximately 1 dwt. pieces available as a special order.

Description	Melting Temp.		% of Gold
	°F	°C	
10K Yellow Easy	1200	649	41.67
10K Yellow Hard	1350	732	41.67
14K Yellow Easy	1250	677	58.33
14K Yellow Medium	1300	705	58.33
14K Yellow Hard	1450	788	58.33
14K White Easy*	1300	705	58.33
14K White Hard	1450	788	58.33
14K Pd White Hard	1364	740	58.40
18K Pd White Hard	1787	975	75.00
18K Yellow Easy	1450	788	75.00
18K Yellow Medium	1500	816	75.00
18K Yellow Hard	1550	816	75.00
18K White Easy	1475	802	75.00
18K White Medium	1525	847	75.00
18K White Hard	1575	857	75.00

*Also for tipping

Silver Solder—Sheet, Wire, Paste

Sheets available in 5 pennyweight sheets.

Wire – 20 gauge Round. Minimum 1 dwt. order.

Paste available in 10 pennyweight syringes.

Description	Flow	Melting Temp.	
		°F	°C
Sheet Solder	Easy	1240	671
Sheet Solder	Medium	1275	690
Sheet Solder	Hard	1365	740
Wire Solder	Easy	1240	671
Wire Solder	Medium	1275	690
Wire Solder	Hard	1365	740
Paste Solder	Easy	1115	602
Paste Solder	Medium	1275	690
Paste Solder	Hard	1365	740



Gold Repair Solders—Sheet

Recommended for repairing or sizing. Minimum 1 dwt. order. Approximately 1 dwt. pieces available as a special order.

Description	Melting Temp.		% of Gold
	°F	°C	
# 8 Yellow Easy	1190	643	15.00
# 8 White Easy	1200	649	20.00
#10 Yellow Easy	1260	682	25.48
#10 Yellow Hard	1360	738	33.33
#10 White Easy	1250	677	25.00
#10 White Hard	1400	760	29.00
#14 Yellow Easy	1300	705	35.56
#14 Yellow Medium	1375	746	39.80
#14 Yellow Hard	1450	788	44.10
#14 White Easy	1300	705	33.00
#14 White Hard	1450	788	41.50
#18 Yellow Easy	1450	788	58.33
#18 White Easy	1350	732	50.00
#18 White Medium	1400	843	66.25
#18 White Hard	1550	843	82.50

Gold Repair/Plumb Solder—Paste

These solders are recommended for chain repair, fabrication, and sizing. Paste solders contain flux and binders. Available in 1 dwt. and 15 dwt. syringes.

Description	Melting Temp.		% of Gold
	°F	°C	
#14 Yellow Easy	1250	677	33.33
#14 White Easy	1300	705	41.67
14K Yellow Easy	1285	696	58.33
14K White Easy	1300	705	58.33
14K White Hard	1450	788	58.33
18K Yellow Easy	1300	704	75.00
18K Yellow Medium	1350	732	75.00
18K Yellow Hard	1440	782	75.00
18K White Easy	1475	802	75.00
18K White Hard	1575	857	75.00

Platinum Solder

No.'s 1100 through 1400 are recommended for fabrication and may be used for Palladium White Gold.

No.'s 1500 through 1700 are recommended for sizing.

No.	Description	Melting Temp.	
		°F	°C
1000	Extra Easy	1832	1000
1100	Soft	2012	1100
1200	Medium	2192	1200
1300	Hard	2372	1300
1400	Extra Hard	2552	1400
1500	Welding	2732	1500
1600	Hard Welding	2912	1600
1700	Extra Hard Welding	3092	1700

Plumb Platinum Solder

Available in 1 dwt. pieces.

Description	Percentage of PT	Melting Temp.	
		°F	°C
Easy	90.00%	2372	1300
Medium	92.50%	2552	1400
Hard	95.00%	2758	1500

Gold Plumb Solder—Sheet*

Recommended for fabrication or sizing.
Minimum 1 dwt. order.

Description	Melting Temp.		% of Gold
	°F	°C	
10K Yellow Easy	1200	649	41.67
14K Yellow Easy	1250	677	58.50
14K Yellow Hard	1450	788	58.50
14K Green Easy	1500	816	58.33
14K Red Easy	1565	852	58.33
18K Yellow Easy	1450	788	75.00
18K Yellow Hard	1500	816	75.00
18K Red Easy	1500	816	75.00
22K Yellow Medium	1695	924	91.67

Gold Repair Solder—Sheet*

Recommended for sizing and general repair.
Minimum 1 dwt. order.

Description	Melting Temp.		% of Gold
	°F	°C	
# 8 Yellow Easy	1150	621	20.00
#10 Yellow Easy	1200	649	23.00
#10 Yellow Hard	1350	732	29.28
#10 Red Easy	1060	572	29.10
#14 Yellow Easy	1300	705	35.50
#14 Yellow Hard	1400	760	44.10
#14 Red Easy	1060	572	45.80
#18 Yellow Easy	1450	788	57.90

Gold Repair/Solder—Paste*

These solders are recommended for fabrication, sizing and chain repair. Paste solders contain flux and binders. Available in 1 dwt. and 15 dwt. syringes.

Description	Melting Temp.		% of Gold
	°F	°C	
#14 Yellow Easy	1250	677	33.33
14K Yellow Easy	1185	641	58.33
18K Yellow Easy	1170	632	75.00

★ **WARNING:** This product contains cadmium, a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). Avoid creating dust. Avoid contact with eyes or skin. Do not take internally. Do not breathe fumes or dust, which can cause cancer, birth defects (or other reproductive harm), as well as lung and kidney disease. Fumes or dust may also be poisonous and irritate your eyes, nose and throat. Use only with adequate ventilation, such as fume collectors, exhaust ventilators or air supplied respirators. See ANSI-Z49. ‡
If chest pain, cough or fever develops after use, immediately call a physician. Keep away from children.

‡ ANSI Standard Z49.1 (Safety in Welding and Cutting) is published by the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126.

Approximate Temperatures by Color

	°F	°C
First Visible Red	977	525
Dull Red	1292	700
Cherry Red	1653	901
Dull Orange	2012	1100
White	2372	1300
Dazzling White	2732	1500





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Our regular business hours are 8:00 A.M. to 4:00 P.M. PST. Please have your order information ready when you call, including (if applicable): description, quantity, unit, karat, color, and dimensions. We encourage you to call with questions. Call our toll-free number (800) 822-1996 or fax us at (323) 722-6567.

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Minimum order amount is \$75.00.

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Please request an application from our customer service representative. Minimum credit orders are \$200.00. An approved credit application must be on file for all open accounts. A finance charge of 1.5% (18% A.P.R.) will be applied to balances not paid within terms.

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Get our cash price by maintaining a DHF Vault Account and placing your order using your available metal. By prepaying your Gold, Silver, or Platinum you avoid the ever-changing market. When pricing large jobs, this can help you maintain your profit margin. Your refining settlement may be deposited in a vault account for future sale or return.

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If you are not satisfied for any reason, please let us know as soon as possible. We want to correct the error when it occurs. If you found you ordered something you didn't want or can't use and would like to exchange or return it, a restocking fee will apply. Call for your Return Authorization number. Please have the original invoice available when calling.

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We use UPS, FedEx, and U.S. registered mail or we will ship in compliance with your preferences. Please let us know. Shipping and handling charges vary according to the method used. When you are shipping to us be sure to use a traceable method and insure for the anticipated value.



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- Photocopy, fill out, and call, email or fax to David H. Fell & Company, Inc.
- To request a price quote—call us, or fax this form and we will give you a price quote based on the daily market.
- Quoted prices are estimates only. Final prices are based on the actual weights and market prices of the shipment date.
- For credit card orders, ship-to and bill-to addresses must be the same.

David H. Fell & Company, Inc. Order & Request Form

(323) 722-9992 • Fax (323) 722-6567 • Call Toll Free: (800) 822-1996

Acct. # _____

New Account? YES * NO *

REQUEST FOR INFORMATION:

Company _____

Date _____

* Refining Schedule

Contact _____

Resale # _____

* Platinum Information

Address _____

Terms/P.O.# _____

* Please have a salesperson call—

Ship Via _____

Best time: * A.M. * P.M.

Telephone (_____) _____

Ship to (if different) _____

What else can we help you with?

Please let us know . . .

Fax (_____) _____

* Special Requests: _____

E-mail _____

EXAMPLE:

Quantity	Kt/Metal/Color	Form	Thick · Width · Length	Weight	Price	Total
6 pcs	14KY Sunbrite	Sheet	20 GA x 2" x 4"			

Special Instructions: _____

Subtotal

Credit Card # _____ Exp. Date _____

CA Tax

Card Holder's Name _____ Taken by _____

Shipping

Issuing Firm Name _____

TOTAL



Ten Steps to Successful Soldering (Gold and Silver)

- 1. Inspect–Clean–Inspect**—Inspect the jewelry to determine what needs to be done before it is cleaned (magnification is recommended). If gemstone(s) are present, identify them and determine if they can be cleaned using standard methods (ultrasonic and/or steamer). Clean the item(s) and inspect again.
- 2. Prepare**—Prepare the bench keeping all needed equipment and supplies within reach. In preparing the jewelry for soldering, saw/file the area to insure a tight, gap-free fit. Good fit assists the solder to flow properly through the joint. Determine if extra precautions should be taken for any gemstones in the jewelry.
- 3. Firecoat**—Items should be dipped in a solution of boric acid powder and denatured alcohol to help prevent oxidation. Gemstones will also need to be protected from heat. Consult a gemstone durability chart.
- 4. Flux and Preheat**—Flux the solder joint(s) and preheat the piece. Heat the jewelry until the flux turns to liquid.
- 5. Flux the Solder and Place**—Dip the solder piece into flux and place it onto the jewelry while still warm from preheating. This should allow the solder to stick where needed.
- 6. Apply Heat**—Apply heat evenly to the jewelry. The mass of the jewelry item and the thermal conductivity properties of the metal will determine the torch size, the type of flame used, and the amount of heat needed to flow the solder.
- 7. Pickling**—Use a pickling pot with copper tongs and pickling compound (acid) mixed with water. Air-cool the jewelry to avoid splashing before you place the item in the pickle pot. Thoroughly rinse the item, first in a baking soda and water solution, then in clean water.
- 8. Prepare for Polish**—Inspect, be sure all flux and oxidation is removed. Check the solder joint(s) for flow and coverage. Remove any excess solder. Then sand with fine emery.
- 9. Polishing**—Polish across solder joints to avoid “pulling” out the solder with polishing compounds. Thoroughly clean to remove all traces of polishing compounds before buffing to a high polish.
- 10. Inspect–Clean–Inspect**—Inspect the jewelry. Thoroughly clean to remove all traces of buffing compounds. Inspect again.

Platinum Soldering Steps to Brazing/Welding (Soldering)

Prepare: Prepare your work area and equipment for brazing. Platinum should be free of any possible contaminants. Remove any residual metals from the workbench. Your equipment should include: clean ceramic pad, tungsten solder pick, and ultraviolet protective glasses.

Clean: The Platinum piece should be cleaned in an ultrasonic cleaning solution to remove oil and grime.

Align: Align your work as level as possible. This helps the solder to melt and flow evenly over the area, reducing the possibility of gaps between the pieces being joined.

Flux: Flux is not needed, but you may use it to keep the solder held in its place.

Heat: Platinum heats at high temperatures. Place the flame directly over the joint to be welded. This will heat the joint quickly and the heat will be transmitted throughout the area to be welded.

Inspect: Check the welded joint for flow and coverage. If the area is not completely welded, use another piece of solder instead of reheating the previously soldered joint.

Soldering Gold and Platinum Together (with gemstones)

- Use Cadmium-Free Karat Gold brazing-filler materials when joining Platinum to Karat Gold products.
- Remove any gemstones within at least a half-inch of the joint to be brazed or the weld area. Never re-tip prongs with a stone in place.
- Be sure to polish the Platinum component completely prior to joining it to Karat Gold. This will allow only the Karat Gold to be polished after brazing.

Flame Characteristics

Carbonizing—Used for annealing.
High gas. Low oxygen. Tint of yellow.



Reducing—Used for soldering.
More gas than oxygen. Soft cone.
Hottest, cleanest part of flame (working area).*



Oxidizing—Low gas. High oxygen.
Hissing sound.



Common Soldering Questions and Problems: Gold, Silver, and Platinum Solder

Why doesn't the solder flow? There are two common reasons why solder will not flow. The first reason is the surface of the areas to be joined are dirty. The second reason is there was not an adequate amount of flux used.

Why does solder pit? When solder pits, it is usually because the joint has been overheated. If your torch has a finely tipped flame and your solder has a low melting temperature then the solder will pit. Make sure you use a lower flame for easy, medium, and repair solders.

The joint I soldered looked joined, but it's not? When a joint can look soldered but it isn't, you had cold solder joints. Cold solder joints are caused by not heating the solder area to the correct temperature. Make sure the piece is heated first then place the solder over the joint. It should flow into the joint by itself if the area has been pre-heated.

What is the cause of this black layer on my piece when I solder? When soldering on metal that is alloyed with copper (Gold and Silver) and you are using an oxygenated flame, a black layer may appear. This is called Firescale. It is created and enlarged by high temperatures for a protracted time, particularly in the presence of free oxygen. To prevent Firescale, use borax or a mixture of boric acid and alcohol. Both of these will coat the area and protect the metal from oxidation.

Solder Forms and Their Uses

Sheet Solder: This form of solder can be used for any application needed. It is supplied in various lengths and widths. Simply cut off the desired amount from the sheet, heat the area to be soldered, heat the solder into a ball, place on the area to be joined, and heat to flow the solder into the joint.

Chip Solder: This form of solder can be used for any application needed. It is the same as a piece cut off from the sheet solder. Place on the area to be joined, heat the area to be soldered, and heat to flow the solder into the joint.

Wire Solder: This form of solder can be used for any application needed. Place the end of the wire in the joint to be soldered and heat. The solder will melt and flow into the joint.

Paste Solder: This form of solder can be used for any application but it works especially well for manufacturing chains. It is supplied in a syringe of various Karats and flow temperatures.

*When using Sheet, Chip, or Wire solder, be sure to coat the solder area with flux.

Soldering Hints

- DHF Co. offers cadmium-free solder.
- Jagged or porous ends will leave a weak and pitted solder joint if not filed smooth.
- When placing items into or removing from the pickle pot be sure to use the correct type of tweezers for the metal you are using. Use copper tweezers for Gold and tungsten tweezers for Platinum.
- When removing items from the pickle pot be sure to rinse in a mixture of baking soda and water to neutralize the acid, then rinse with fresh water.
- Step soldering involves soldering a single piece more than once in steps. Examine what needs to be done then begin with the hard solder, then medium, then soft.
- Avoid breathing soldering fumes. Proper ventilation (minimum 6 changes of air per hour)* is necessary, and use of a ventilation hood is recommended.

*Ventilation rules and regulations vary by location.

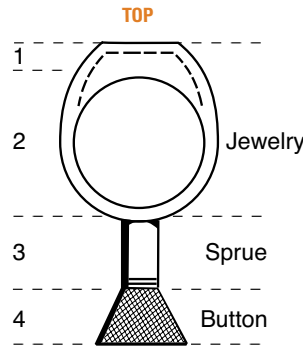
Check with your local OSHA office to meet the requirements.

NOTICE: All information and procedures are for reference only, and may vary according to desired results and skill levels.



Progressive Solidification as Taught at GIA (Gemological Institute of America)

- Two words define casting success: *progressive solidification*. The molten metal cast in a pre-heated flask should solidify and cool in a progressive manner, in this order:
- **Area 1:** the top area of the item should cool first, then
- **Area 2:** the next heaviest area of the item, next to the sprue
- **Area 3:** The sprue
- **Area 4:** The button, which is attached to the sprue and which provides molten metal for the sprue to draw from. After cooling, the top of the button should be flat. If it is concave, the metal was too hot. If it is convex, the metal was too cold.



Wax to Metal

Take the weight of the wax (with the sprue) times the multiplication factor and add 5-10 dwts. for the button.

Metal	Factor
Brass, Bronze, Copper	9.00
Sterling Silver	10.40
Fine Silver	10.60
10K Gold	11.60
14K Gold	13.40
18K Gold	15.50
22K Gold	17.30
Fine Gold	19.30
Platinum	21.40
Palladium	12.20

Gold & Silver Investment

In Gold and Silver jewelry casting, gypsum-bonded investment is normally used. The investment powder consists of fine-grained mineral powder as the main component and a binder. The binder gives strength and can be added as a solid directly to the dry mineral powder or as a liquid together with the water in preparing the slurry, as is the case with phosphate bonded investment. The mixture consists of Gypsum (Calcium Sulphate Hemihydrate) and Silica (Quartz and B-cristobalite). It is convenient to handle and relatively cheap. However, the instability of calcium sulphate is the cause for many casting defects. When mixing the investment wear a protective mask for protection against inhaling the dust from the powder.

Gold & Silver Wax Burnout Cycles

Hour	6 Hours	8 Hours	12 Hours
1	350	350	350
2	700	700	350
3	1000	1000	700
4	1350	1350	800
5	1350	1350	900
6	850	1350	1000
7		1200	1350
8		850	1350
9			1350
10			1350
11			1200
12			850

Platinum Investment

In Platinum casting, phosphate investments are used. Phosphate bonded investments are best used for metals with a high melting temperature. In this investment, phosphate compounds are used as the binder (in combination with magnesia) in place of gypsum. It is not as easy to handle when compared to Gypsum bonded investment and is more expensive. Its thermal and chemical stability in jewelry casting is excellent, but the subsequent removal of this investment from the casting can be difficult.

Platinum* Wax Burnout Cycles

Hour	10 Hours	Hour	10 Hours
1	250° F	7	800° F
2	250° F	8	1000° F
3	300° F	9	1200° F
4	400° F	10	1600° F
5	600° F	Adjust temperature to the casting temperature of the metal.	
6	600° F		

*Phosphate Bonded Investment
Flasks may vary according to desired results.
These temperatures and procedures are for reference only.

Platinum Wax Burnout (by Jewelry Type)

- Men's Heavy Rings: 1300°–1480°F
- Medium Weight Rings/Mountings: 1600°– 1700°F
- Heavy Weight Findings: 1800°F
- Light Weight Rings and Findings: 1800°–1850°F

Quenching Times

Metal	Annealing Temperature °F	Quench
Fine Silver	950	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
Sterling Silver	1200	Air cool to black heat and then quench in water.
10K Yellow	1200	Air cool to black heat and then quench in water.
10K White	1300	Air cool to black heat and then quench in water.
10K Red	1300	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
10K Green	1200	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
14K Yellow	1300	Air cool to black heat and then quench in water.
14K White	1400	Air cool to black heat and then quench in water.
14K Red	1400	Water quench from red heat.
14K Green	1300	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
14K Yellow Spring	1200	Water quench from red heat.
14K Palladium White	1400	Air cool to black heat and then quench in water.
18K Yellow	1300	Air cool to black heat and then quench in water.
18K White	1400	Air cool to black heat and then quench in water.
18K Red	1400	Water quench from red heat.
18K Green	1300	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
18K Palladium White	1400	Air cool to black heat and then quench in water.
22K Yellow	1300	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
22K Red	1400	Water quench from red heat.
10% Ir/Pt	1800	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
5% Ir/Pt	1800	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.
5% Ru/Pt	1800	Cool by quenching from red heat, natural air cool, or air cool to black heat then quench in water.

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Common Casting Problems and Causes

Porosity is a catch-all word for casting trouble and comes in many forms. The most common porosity is very small bubbles on or just under the surface. Sometimes they will wait until the final polish to make their appearance. A few common causes of this type of porosity are:

Model Design: This cause of porosity can be related to the intricacy of the piece. Make sure you avoid the following: sharp and acute angles, alternating thick and thin cross sections, points as well as thin edges and fine wires, and sections of the model that will cross over each other.

Improper Spruing: This cause of porosity can be related mostly to the size of the piece and its placement. Make sure of the following: the number of pieces are spaced apart from one another, the light and heavy pieces are separated, the type of pieces are in the proper position, the angle of the piece(s) are correct, the sprue size is adequate, and the gate size and connection are adequate.

Investment: This cause of porosity can be related to the mixing procedure for the investment being used. Make sure the following is correct: the water temperature, the investment temperature, the investment storage, the ratio of investment to water, the mixing of the investment, the turbulence when filling the flask, the vacuum on the investment, the vibration on the investment, the time for the investment to set, the cure time after the investment.

Molten Metal Turbulence: This cause of porosity can be related to the melted metal as it flows through the investment cavity. Make sure the model design and the gate placement are properly done.

Incomplete Burnout: This cause of porosity can be related to the removal of wax from the flask and the hardening of the investment. Make sure to follow the burn-out instructions that are provided by the investment manufacturer.

Copper Oxide: To protect sterling during melting and casting, use an inert gas or reducing flame to cover the melt. For vacuum assist casters that hand pour, keep a reducing flame on the metal during the pouring and on the flask from the time the vacuum is started until casting is complete.



Casting Checklist *compliments of Kerr Casting Products*

Casting Defect

“Fins” for Flash on Casting

Potential Causes

Incorrect water/powder ratio causing weak investment mold
 Investing improperly stored
 Investing extended past work time, or flasks disturbed while investment was setting
 Flask dropped or otherwise mishandled
 Flask placed in furnace with insufficient setting time (Bench set for a minimum of one hour)
 Flask heated too rapidly
 Flask allowed to dry and not re-moistened before burnout
 Flask burned out and allowed to cool

NOTE: Cast higher flask temperature pieces first, then lower temperature flasks. Once temperature is reduced, do not raise to higher temperature.

*“Non-fills” for
 Incomplete Castings*

Pattern improperly sprued (sprues too thin, too long, or too few)
 Incomplete wax burnout
 Mold too cool when cast
 Metal too cool when cast
 Insufficient metal by weight

Shiny Castings Before Pickling (without use of deoxidizing investment)

Incomplete elimination of wax. Carbon residue deoxidizes cast metal.

Darkened Rough Castings Which Resist Deoxidizing in Pickling Solution

Burnout temperature too high, exceeding 1450°F / 788°C

*Porous Casting (Dispersion
 of fine cavities in metal)*

Pattern improperly sprued
 Incomplete burnout
 Metal overheated
 Mold too hot
 Too much “old” metal in cast (never use more than 50%)
 Metal insufficiently fluxed
 Too much flux added to metal

*Foreign Particle Inclusions
 in Castings*

Sharp corners and bends in sprue system
 Flask placed in furnace with insufficient setting time
 Flask heated too rapidly
 Sprue hold not checked for particles after sprue base is removed
 Molten metal contained foreign particles
 Flask contained rust or is unclean from prior cast
 Crucible old and disintegrated or insufficiently fluxed

NOTE: Graphite has a tendency to absorb moisture and break down if not properly dried before melt.

*Spauling (portion of investment
 moves within the mold)*

Sharp corners and bends in sprue system
 Flask placed in furnace at insufficient setting
 Flask heated too rapidly
 Investment handled past work time

Bubbles or Nodules on Castings

Wax patterns not painted with wetting agent
 Investment slurry and/or invested flasks not sufficiently mixed, vibrated, or vacuumed

*Rough-surfaced Castings
 Other Than Bubbles or Nodules*

Roughness on pattern (polish original model before vulcanizing)
 Pattern improperly sprued
 Incorrect water/powder ratio
 Flask placed in furnace with insufficient setting time
 Flask heated too rapidly
 Pattern material trapped in mold and boiled against mold surface
 Too much “old” metal in cast (never use more than 50%)

Watermarks on Casting (Grainy Surface)

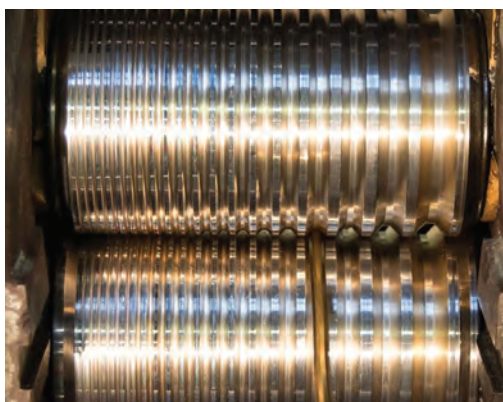
Investing too rapidly

NOTE: A colder temperature will extend the work time (temperature should be 70°F / 21°C to 75°F / 24°C).

A warmer temperature will shorten the work time. For best results, work time should be kept within the specified time of 9 to 10 minutes.

Gauge to Thousandths Conversions

Gauge	Thousandths of an Inch	Gauge	Thousandths of an Inch	Gauge	Thousandths of an Inch
1	0.2893	15	0.0570	28	0.0126
2	0.0276	16	0.0508	29	0.0112
3	0.2294	17	0.0452	30	0.0100
4	0.2043	18	0.0403	31	0.0089
5	0.1819	19	0.0358	32	0.0079
6	0.1620	20	0.0319	33	0.0070
7	0.1142	21	0.0284	34	0.0063
8	0.1284	22	0.0253	35	0.0056
9	0.1144	23	0.0225	36	0.0050
10	0.1018	24	0.0201	37	0.0044
11	0.0907	25	0.0179	38	0.0039
12	0.0808	26	0.0159	39	0.0035
13	0.0719	27	0.0141	40	0.0031
14	0.0640	28	0.0126		



Hardness/Softness of Metal After Pull

Number of Pulls	Temper
1	1/4 Hard
2	1/2 Hard
3	3/4 Hard
4	Hard
5	Full Hard
6	Extra Hard
7	Spring Temper
8	Extra Spring Temper

Sheet Metal Weight per Square Inch

Thickness in Inches	10K Gold Dwt.	14K Gold Dwt.	18K Gold Dwt.	24K Gold Dwt.	Platinum Ozs.	Sterling Silver Ozs.	Fine Silver Ozs.
0.128	15.70	17.70	21.10	26.20	1.450	0.7130	0.7140
0.102	12.40	14.00	16.70	20.80	1.150	0.5650	0.5580
0.081	9.85	11.10	13.30	16.50	0.913	0.4480	0.4430
0.064	7.81	8.82	10.50	13.10	0.724	0.3560	0.3510
0.051	6.21	7.70	8.35	10.40	0.574	0.2820	0.2780
0.040	4.91	5.55	6.62	8.20	0.455	0.2240	0.2210
0.036	4.38	4.94	5.89	7.32	0.406	0.1990	0.1960
0.032	3.90	4.40	5.25	6.52	0.361	0.1770	0.1750
0.025	3.09	3.49	4.16	5.17	0.286	0.1410	0.1390
0.020	2.45	2.77	3.30	4.10	0.227	0.1120	0.1100
0.016	1.94	2.19	2.62	3.25	0.180	0.0884	0.0873
0.013	1.86	1.62	1.95	2.58	0.143	0.0701	0.0689
0.010	1.17	1.38	1.60	2.04	0.113	0.0556	0.0549



Round Wire Weight per Foot

Gauge	Thickness in Inches	10K Gold Dwt	14K Gold Dwt	18K Gold Dwt	Platinum Ozs.	Sterling Silver Ozs.	Fine Silver Ozs.
1	0.2893	96.20	109.00	130.00	8.91	4.30	4.36
2	0.25763	76.30	86.10	104.00	7.07	3.41	3.45
3	0.22942	60.50	68.30	81.50	5.61	2.71	2.74
4	0.20431	48.00	54.20	64.60	4.45	2.14	2.17
5	0.18194	38.00	43.00	51.20	3.53	1.70	1.72
6	0.16202	30.20	34.10	40.60	2.80	1.35	1.36
7	0.14428	23.90	27.00	32.20	2.22	1.07	1.09
8	0.12849	19.00	21.40	25.60	1.76	0.848	0.859
9	0.11443	15.10	17.00	20.30	1.39	0.673	0.682
10	0.10189	11.90	13.50	16.10	1.11	0.534	0.541
11	0.09074	9.46	10.70	12.70	0.877	0.423	0.429
12	0.0808	7.50	8.47	10.10	0.695	0.335	0.339
13	0.07196	5.95	6.72	8.01	0.552	0.266	0.270
14	0.06408	4.72	5.33	6.36	0.437	0.211	0.214
15	0.05706	3.74	4.23	5.04	0.347	0.167	0.169
16	0.05082	2.97	3.35	4.00	0.275	0.132	0.135
17	0.04525	2.35	2.66	3.17	0.218	0.105	0.107
18	0.0403	1.87	2.11	2.51	0.173	0.0835	0.0846
19	0.03589	1.48	1.67	1.99	0.137	0.0662	0.0671
20	0.03196	1.17	1.33	1.58	0.109	0.0525	0.0532
21	0.02846	0.9310	1.05	1.25	0.0863	0.0416	0.0422
22	0.02534	0.7380	0.833	0.994	0.0684	0.0330	0.0335
23	0.02257	0.5850	0.661	0.789	0.0543	0.0262	0.0265
24	0.0201	0.4640	0.524	0.625	0.0430	0.0208	0.0210
25	0.0179	0.3680	0.416	0.496	0.0341	0.0165	0.0167
26	0.01594	0.2920	0.330	0.393	0.0271	0.0131	0.0133
27	0.01419	0.2310	0.261	0.312	0.0214	0.0103	0.0105
28	0.01264	0.1840	0.207	0.247	0.0170	0.00821	0.00831
29	0.01125	0.1450	0.164	0.196	0.0135	0.00650	0.00659
30	0.01002	0.1150	0.130	0.155	0.0107	0.00516	0.00522
31	0.00892	0.0914	0.103	0.123	0.00817	0.00410	0.00414
32	0.00795	0.0726	0.0820	0.0978	0.00673	0.00325	0.00328
33	0.00708	0.0576	0.0651	0.0776	0.00534	0.00258	0.00261
34	0.0063	0.0456	0.0515	0.0614	0.00423	0.00204	0.00207
35	0.00561	0.0362	0.0408	0.0487	0.00335	0.00162	0.00164
36	0.005	0.0287	0.0324	0.0387	0.00266	0.00128	0.00130
37	0.00445	0.0228	0.0257	0.0306	0.00211	0.00102	0.00104
38	0.00396	0.0180	0.0204	0.0213	0.00167	0.000806	0.000816
39	0.00353	0.0143	0.0162	0.0193	0.00133	0.000641	0.000649
40	0.00311	0.0113	0.0128	0.0153	0.00105	0.000507	0.000513



Rolling Procedure for Sheet and Common Problems

STEPS

1. Anneal ingot or sheet, pickle, rinse in water and dry.
2. Apply snug pressure on rollers, commence to roll. After each sweep through the mill rotate the material from end to end before passing through the mill again.

When the metal becomes hard, repeat steps 1 and 2 until the desired thickness is reached.
Common practice for Silver is to roll sheet from 3mm to 1mm before annealing.

Common Rolling Problems and Causes

<i>Buckling</i>	Caused by changing direction during rolling without first annealing. Remove metal, anneal, proceed.
<i>Cracks along edge</i>	The ingot rolled is not of uniform shape, metal rolled too much without annealing. To correct: saw out sections which contain cracks or holes. Anneal, forge out material around the cavities so they align with the edge. Anneal, proceed to roll.
<i>Cracking and flaking surfaces</i>	The metal ingot mold was too cold when metal poured; too much old metal in the pour; metal annealed too often; metal contaminated with foreign matter. To correct; reheat, cast ingot and roll again. If problem persists refine the metal before attempting to proceed.
<i>Sheet pulls to one side</i>	Rollers are not even. Correct by applying equal pressure to both sides of mill.
<i>Wire is wavy when rolled</i>	Not enough tension on the free end of the wire. Correct by placing one end of the wire in the mill and while rolling hold the other end tight with one hand.

Hardening Gold, Silver, and Platinum

Gold	<i>Heat:</i> In general, Yellow Gold can be hardened by heating first and then allowed to cool at room temperature. Green and red alloys cannot be heat hardened with very good success. <i>Work:</i> Karat golds will work-harden when rolled, drawn or forged. The more you reduce the thickness the harder the metal gets.
Silver	<i>Heat:</i> Silver must be in an annealed state. Heat to 1200°F (760°C). Set aside for 15 minutes then quench in cool water. Sterling Silver can be hardened by heating to 600°F (316°C). Hold for 30-50 minutes then let it air cool to room temperature. <i>Work:</i> Fine and Sterling Silver will work-harden when rolled, drawn, or forged.
Platinum	<i>Work:</i> Platinum alloys will work-harden when rolled, drawn, or forged.

Annealing Gold, Silver, and Platinum

Gold:	Karat golds are a little more complicated because compositions vary considerably. But in general, yellow, green and red alloys can be softened by heating to 1200°F (649°C) for 10 minutes. Time will be determined by the alloy and the size and shape of the piece. Then quickly quench in cool water.
Silver:	To soften sterling silver, heat to 1200°F (760°C). Set aside for 15 minutes then quench in cool water.
Platinum:	To soften Platinum, heat for 1-minute per millimeter thickness of material to 1292°F/700°C. Let the piece air-cool or quench after dull red-heat is approached. Anneal after about 30% reduction of metal thickness. Annealing for too long can cause grain growth, which may make finishing difficult.

(courtesy of
Platinum Guild)



How much metal do I need to make this sterling item in 14K gold?

To calculate the weight of an item in one metal when you know its weight in another, use the chart below.

Example:

You have a sterling belt buckle that weighs 2.6 troy oz. and you want to make it out of 14K yellow gold. Locate the 'Sterling Silver' category and the '14K Yellow Gold' line. The factor is .796. $2.6 \text{ troy. oz.} \div .796 = 3.266 \text{ troy. oz.}$
Your finished 14K belt buckle will weigh 3.266 troy. oz.

To Convert: (\div = Divide)

Coin Silver To:			14K Yellow Gold To:		
Fine Silver	\div by	.978	18K Yellow Gold	\div by	.839
Sterling Silver	\div by	.995	14K Green Gold	\div by	.920
Sterling Silver To:			10K Yellow Gold	\div by	1.130
Fine Silver	\div by	.987	10K White Gold	\div by	1.036
Coin Silver	\div by	1.005	Platinum	\div by	.609
10K Yellow Gold	\div by	.899	Palladium	\div by	1.089
14K Yellow Gold	\div by	.796	Lead	\div by	1.151
18K Yellow Gold	\div by	.668	Brass	\div by	1.543
Platinum	\div by	.485	Sterling Silver	\div by	1.257
18% Nickel Silver	\div by	1.189	18K Yellow Gold To:		
Brass	\div by	1.182	18K White Gold	\div by	1.064
Pewter	\div by	1.425	14K Yellow Gold	\div by	1.192
10K Yellow Gold To:			Platinum	\div by	.726
14K Yellow Gold	\div by	.885	Lead	\div by	1.371
18K Yellow Gold	\div by	.743	Brass	\div by	1.839
10K Green Gold	\div by	1.049	Sterling Silver	\div by	1.498
10K White Gold	\div by	1.045	Platinum To:		
Platinum	\div by	.539	Palladium	\div by	1.788
Palladium	\div by	.964	5% Irid - Platinum	\div by	.998
Lead	\div by	1.018	10% Irid - Platinum	\div by	.996
Brass	\div by	1.366	Sterling Silver	\div by	2.063
Sterling Silver	\div by	1.113	10% Iridium Platinum		
			5% Ruth - Platinum	\div by	1.026
			14K White Gold	\div by	1.709
			18K White Gold	\div by	1.472

Finishing Platinum

- If Platinum is being joined to Karat Gold, it is important to finish the Platinum segment completely prior to assembly.
- After brazing or welding, file the brazed/welded surface with a #4-cut file. Do not use excessive force and do not reduce past the original surface. Repeat this procedure with a #6-cut file.
- Rubber-wheel the surface to be polished, starting with a coarse, then a medium, and finally with a fine rubber wheel.
- Now that the surface has been reduced close to the original surface, use a #220-grit emery paper. Buff in a diagonal direction, lightly reducing the filed surface. Repeat this procedure using a #280-grit emery paper, then repeat with a #320-grit paper.
- Prepare surface for polishing with a unitized wheel. Start with a #440-grit unitized wheel and lightly reduce the surface by again buffing in diagonal directions. Repeat this operation using a #500-grit unitized wheel, then repeat with a #600-grit unitized wheel.
- Buff with the white cutting compound in a diagonal direction, then reverse the direction of buffing to cross over the original directions. Repeat this operation using orange polishing compound.
- Using a muslin buff charged with orange polishing compound, lightly buff for luster. This should give a highly reflective surface and a lustrous finish.
- Buffing emery papers and polishing wheels should be used on Platinum only!

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Stamping Gold, Silver, and Platinum Jewelry and Objects*

Any piece must contain a minimum of 50% Pure Platinum, and 95% total PGMs. Above 95% Pt, they can be stamped “Platinum” or “PLAT”. From 75% to 95% Pt, the PGM portion must also be stamped, e.g., “IRIDPLAT” for a 10% Iridium alloy.

From 50% to 75% Pt, all PGMs and finesses must be stamped, e.g., 585 PLAT 365 PALL.

To make sure your jewelry pieces or objects comply with Federal Trade Commission (FTC) standards and the National Stamping Act, use the factors in the table below. **DHF Co. metals meet or exceed FTC standards for Fine Metal Content.****

Fine Metal Content and Tolerance

Metal	Fine Metal Content**	Tolerance	Minimum Fine Metal Content	Solder Tolerance	Minimum Allowable Fine Metal Content
10K	0.4167	0.003	0.4137	0.007	0.4097
14K	0.5833	0.003	0.5803	0.007	0.5763
18K	0.7500	0.003	0.7470	0.007	0.7430
24K	0.9999	0.003	0.9965	0.007	0.9925
900 PT/100IR	0.9000	0.000	0.9000	0.000	0.9000
950 PT/50IR	0.9500	0.000	0.9500	0.000	0.9500
Fine Silver	0.9995	0.004	0.9955	0.010	0.9895
Sterling Silver	0.9250	0.004	0.9210	0.010	0.9150

Examples:

Gold Jewelry: Any 10K, 14K, and 18K Gold jewelry is required by law to be stamped. If any piece or object is less than the tolerable amount assigned to the stamp, the piece is considered to be fraudulent.

Silver Jewelry: Any item stamped 925 should contain 925/1000 parts of Fine Silver. If any piece or object is less than .921 (the tolerable amount) then the piece is considered to be fraudulent.

Platinum Jewelry: Any piece made of 950 parts or more per thousand of Pure Platinum can be marked “Platinum” without the use of any qualifying statement. Platinum with 850 to 950 parts per thousand can be marked in accordance with international standards of “900 Pt.” or “850 Plat.” For pieces with a minimum of 500 parts per thousand Pure Platinum and at least 950 parts per thousand Platinum group metals in total, mark with the parts per thousand of Pure Platinum, followed by the parts per thousand of each Platinum group metal. Example: “600 Plat 350 Irid.”

NOTE: For additional information, contact Jewelers Vigilance (212) 532-1919, or the Federal Trade Commission at (202) 326-2981.



Melting Points & Density of Various Metals & Alloys

Metal	Melting Point		Specific Gravity	Density in Tr. Ozs. per Cu. In.
	°F	°C		
Aluminum	1220	660	2.70	1.423
Antimony	1167	630	6.62	3.488
Beryllium	2340	1282	1.82	.959
Bismuth	520	271	9.80	5.163
Boron	3774	2079	2.34	1.233
Brass	1805	985	8.68	4.573
Cadmium	610	321	8.65	4.557
Carbon	–	–	2.22	1.170
Chromium	3430	1888	7.19	3.788
Cobalt	2723	1495	8.90	8.90
Copper	1981	1083	8.96	4.719
Gold	1945	1063	19.32	10.180
22K Yellow	1930	1055	18.58	9.790
18K Green	1810	988	15.90	8.375
18K Yellow	1700	927	15.58	8.211
18K White	1730	943	14.64	7.712
18K Red	1655	902	15.18	7.998
14K Green	1765	963	14.20	7.482
14K Yellow	1615	879	13.07	6.885
14K White	1825	996	12.61	6.642
14K Red	1715	935	13.26	6.986
10K Green	1580	860	11.03	5.810
10K Yellow	1665	907	11.57	6.096
10K White	1975	1079	11.07	5.832
10K Red	1760	960	11.59	6.106
Iridium	4449	2454	22.50	11.849
Iron (pure)	2802	1539	7.87	4.145
Lead	621	328	11.34	5.973
Magnesium	1202	650	1.74	.917
Manganese	2273	1245	7.43	3.914
Molybdenum	4760	2625	10.20	5.347
Nickel	2651	1455	8.90	4.691
Osmium	4892	2700	22.50	11.854
Palladium	2831	1555	12.00	6.322
Phosphorus	111	44	1.82	.959
Platinum	3224	1733	21.45	11.301
10% Irid. Plat.	3250	1788	21.54	11.349
5% Irid. Plat.	3235	1779	21.50	11.325
Rhodium	3571	1967	12.44	6.553
Ruthenium	4500	2500	12.20	6.428
Silicon	2605	1430	2.33	1.247
Silver	1761	961	10.49	5.525
Sterling	1640	893	10.36	5.457
Coin	1615	879	10.31	5.430
Stainless Steel	2820	1550	8.0	4.214
Tin	450	232	7.30	3.846
Zinc	787	419	7.13	3.758

Reducing Factors

Karat on Hand From	Reducing Factors		
	To 18K	To 14K	To 10K
24K	.333	.714	1.400
22K	.222	.571	1.200
18K		.286	.800
14K			.400

To lower karat, locate the karat on hand in the left "From" column, then read across to the desired lower karat in the "To" column. Multiply the weight of your Karat Gold on hand by the "reducing factor." This gives you the weight of the alloy you must add to reduce to the karat wanted.

See example:

Example: When changing 10 dwts. of 24K to 14K, locate the factor.

A) 24K to 14K = .714

Multiply the factor by the weight of Gold to be converted.

B) 10 dwts. \times .714 = 7.14 dwts.

Results: 10 dwts. of 24K, when added to 7.14 dwts. of alloy will give you 17.14 dwts. of 14K.

Raising Factors

Karat on Hand From	Raising Factors		
	To 14K	To 18K	To 22K
10K	.400	1.333	6.000
14K		.666	4.000
18K			2.000

To raise karat, locate the karat on hand in the left "From" column, then read across to the desired higher karat in the "To" column. Multiply the weight of your Karat Gold on hand by the "Raising Factor." This gives you the weight of the fine gold you must add to raise to the karat wanted. See example:

Example: When changing 10 dwts. of 14K to 18K, locate the factor.

A) 14K to 18K = .666

Multiply the factor by the weight of gold to be converted.

B) 10 dwts. \times .666 = 6.66 dwts.

Results: 10 dwts. of 14K, when added to 6.66 dwts. of Fine Gold will give you 16.66 dwts. of 18K.

Length & Weight Conversions

To Convert	Multiply By	To Obtain
Square Centimeters	0.155	Square Inches
Square Feet	144	Square Inches
Square Inches	6.452	Square Millimeters
Square Millimeters	0.00155	Square Inches
Centimeters	0.3937	Inches
Feet	30.48	Centimeters
Feet	0.3048	Meters
Inches	2.54	Centimeters
Inches	25.4	Millimeters
Meters	3.281	Feet
Meters	39.37	Inches
Meters	1.094	Yards
Millimeters	0.03937	Inches
Yard	0.9144	Meters
Cubic Centimeters	0.06102	Cubic Inches
Cubic Inches	16.39	Cubic Centimeters
Cubic Feet	28.32	Cubic Centimeters
Liters	1.057	Quarts (Liquid)
Grams	0.64301	Pennyweights (dwt.)
Grams	0.03527	Ounces, Avoir
Grams	0.03215	Ounces, Troy
Kilograms	35.274	Ounces, Avoir
Kilograms	32.1507	Ounces, Troy
Kilograms	643.014	Pennyweights (dwt.)
Kilograms	2.205	Pounds, Avoir
Ounces, Avoir	28.35	Grams
Ounces, Avoir	0.9115	Ounces, Troy
Ounces, Avoir	18.2291	Pennyweights (dwt.)
Ounces, Troy	20	Pennyweights (dwt.)
Ounces, Troy	0.0311	Kilograms
Ounces, Troy	1.0971	Ounces, Avoir
Ounces, Troy	31.1035	Grams
Pennyweights (dwt.)	1.5552	Grams
Pennyweights (dwt.)	0.001555	Kilograms
Pennyweights (dwt.)	0.05486	Ounces, Avoir
Pennyweights (dwt.)	0.05	Ounces, Troy
Pounds, Avoir	0.4536	Kilograms
Pounds, Avoir	16	Ounces, Avoir
Pounds, Avoir	14.5833	Ounces, Troy
Pounds, Troy	12	Ounces, Troy

Ounce-Pennyweight-Gram

1 Troy Ounce	=	20 Pennyweights (dwt.)
	=	1.097 Avoir Ounce
	=	31.103 Grams
1 Pennyweight	=	.05 Troy Ounce
	=	1.555 Grams
1 Gram	=	.03215 Troy Ounce
	=	.643 Pennyweight
1 Kilo	=	32.15 Troy Ounces
1 Avoir Pound	=	16 Avoir Ounces
	=	14.583 Troy Ounces

Temperature Conversions

Conversion Formulas

$$^{\circ}\text{F} = (9/5 \cdot ^{\circ}\text{C}) + 32 \quad \bullet \quad ^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$
600	316	1280	692
620	327	1300	703
640	338	1320	714
660	349	1400	760
680	360	1420	771
700	371	1440	782
720	382	1460	793
740	393	1480	809
760	404	1500	815
780	416	1520	826
800	427	1540	837
820	438	1560	848
840	449	1580	859
860	460	1600	870
880	471	1620	881
900	482	1640	892
920	493	1660	903
1000	538	1680	914
1020	549	1700	925
1040	560	1720	936
1060	571	1800	982
1080	582	1820	993
1100	593	1840	1004
1120	604	1860	1015
1140	615	1880	1026
1160	626	1900	1037
1180	637	1920	1048
1200	648	1940	1059
1220	659	1960	1070
1240	670	1980	1081
1260	681	2000	1092



David H. Fell & Company, Inc. offers state-of-the-art refining techniques that serve our customers efficiently and expediently. We offer you the best return on your refining. Feel confident that what you turn in to DHF Co. will be recovered. Each lot, regardless of size, receives the same careful attention. Because we are both a refiner and a manufacturer, refining charges are minimized. DHF Co. can return the value of your refined material as you choose: by sale, Product Exchange, or as a credit to your DHF Vault Account.

DHF Refining Kit

Each package should be identified with your name, address, phone number, and processing and return instructions. Call our customer service department for your free DHF Refining Kit which includes packing slip, and mailing label. You should also weigh each package yourself. If your weight and our weight do not match, we will contact you.

DHF Co. is a state-permitted, licensed, small quantity hazardous waste transporter and may pick up your refining in the greater Los Angeles area.

You are welcome to witness the sampling of your material. Appointments can be made with your customer service representative.

Product Exchange

Get even more with the DHF Product Exchange. When you choose to receive products as a settlement for your refined material, you receive a larger quantity of product at a much lower cost.

DHF Vault Account

A DHF Vault Account can be compared to a bank. When you use DHF Refining Services, the metal weight refined out of material is recorded as a deposit and can be withdrawn through one of our four settlement options.

Refining Categories

DHF Co. will accept mixed material, however, we recommend separating your scrap. We feel it is in your best financial interest to always have a current and accurate accounting of your materials. We use the following categories for refining:

DHF Express—only the primary metal is payable

- DHF Gold Express
- DHF Silver Express
- DHF Platinum Express
- DHF Palladium Express

DHF Scrap & Bullion—single or multiple metal

- DHF Gold Scrap and Bullion
- DHF Silver Scrap and Bullion
- DHF Platinum Group Scrap and Bullion

DHF Polishings—single or multiple metal

- DHF Gold Polishings
- DHF Silver Polishings
- DHF Platinum Polishings

When preparing to ship your package to us, please remember to conform to your shipper's specifications so that you will be able to insure your package for the anticipated value.

If your material does not fit these categories, please call and ask about our additional capabilities.

- Don't underestimate your scrap. Many people do not realize what a valuable asset their scrap is. A procedure for handling scrap should be an important part of your business.

- Because of a fluctuating market, we feel you should turn in your materials as often as feasible. This also lessens security risks.

- Keep accurate records. We cannot stress this enough. You should be doing a detailed, scheduled accounting of your materials so that you know what materials you have on hand, how much you've used, and what should be in your scrap. Any discrepancies may signal a security problem.

- We offer in-plant surveys to evaluate your existing refining program, and will make recommendations if needed.

- Ask for your DHF Refining Kit—packing slip, and mailing label. Containers available.

Age Hardening: A two-step process for hardening and strengthening alloys. The process requires an annealing step at elevated temperatures followed by quenching to produce a super-saturated solid solution. A subsequent “aging” treatment at lower temperatures causes the formation of precipitates which harden and strengthen the metal.

Alloy: A metal composed of a combination of two or more chemical elements.

Assay: An analysis used to determine the presence, absence, or quantity of one or more precious metals contained in a sample.

Annealing: The process of heating and cooling to soften and make a metal more malleable.

Casting: The process of pouring molten metal into a mold. Also, the name given to the result.

Centrifugal casting: A casting process by which a mold is force-filled by rotation of the metal and the mold in a centrifugal machine.

Drawing: The process of shaping metal by pulling it through a hole of a specific shape and size and using tensile force to achieve plastic deformation of the material.

Ductility: The ability of metal to be deformed without fracturing.

Enameling: The process of using an opaque vitreous composition (paint) applied by fusion to a metal surface to create a colorful, smooth, glossy surface. DHF Co. recommends Fine Silver, 18K Yellow Standard, and 22K Yellow Standard.

Extrusion: Shaping metal into continuous forms, such as rods, tubing, or other cross section shapes, by forcing it through a die and using compressive forces.

Fire-stain, fire scale: An oxide that forms below the surface of copper bearing alloys such as sterling silver; when thick, the oxide is due mainly to overheating or unprotected heating. It is sometimes difficult to remove and can be avoided by painting the surface with flux before heating or by quick dipping, after subjection to heat, in a 50% solution of nitric acid and water followed by thorough rinsing in water.

Fusing: The process of heating a piece of metal until it starts to melt and join with another piece without the use of solder. When the metal begins to liquefy and move, the area where they are touching will join together.

Grain-refiner: An ingredient contained in some DHF Co. alloys to produce a finer grain structure. This improves the flow characteristics and allows the metal to fill more completely within the mold. This also increases the reusability of your karat gold castings.

Hardening: The process of making alloy, as hard as possible. Hardening metal can be done by heating it or simply by working with the metal.

Heat treating: A process of hardening, tempering, or annealing steel or other metals.

Hydrogen: A colorless, odorless, tasteless, flammable gaseous substance that is used to melt metal.

Karat (Kt or K): The gold content of metal; refers to the quality of purity in Gold.

24 Karat (24K) – Pure Gold or Fine Gold.

18 Karat (18K) – 75% Pure Gold and 25% alloy.

14 Karat (14K) – 58.33% Pure Gold and 41.67% alloy.

10 Karat (10K) – 41.67% Pure Gold and 58.33% alloy.



Malleability: The property of metal that allows it to be formed by hammering or rolling processes.

Millimeter: A measure of length widely used in the jewelry industry. There are 25.4 millimeters in one inch.

Pennyweight (DWT.): Is a unit of Troy weight for precious metals. There are 20 pennyweights in one troy ounce.

Pickle: An acid solution used for the removal of oxides or “flux glass” from metal surfaces, usually after soldering. Pickle is a mixture of about 9 parts water and one part sulphuric acid. Used by jewelers for cleaning gold and silver work after soldering. Pickle solutions are preferably used hot in copper pans or heat-resistant glass beakers. As of late, a commercial pickling product in the form of granules has replaced the sulphuric acid.

Platinum: One of the noble metals, platinum was discovered in Europe in the mid 1700s. The metal has a high melting temperature as well as a high density factor when compared to Gold and Silver.

Plus Alloys: DHF Co. alloys which have an ingredient added to produce as-cast brightness and in some applications eliminate the need for stripping (bombing).

Porosity: A catch-all word for casting trouble and comes in many forms. The most common porosity is very small bubbles on or just under the surface. Sometimes they will wait until the final polish to make their appearance. See page 17 for more information.

Propane: A colorless, easily liquefied, gaseous hydrocarbon, used for heating and melting metal.

Reticulation: The process of heating the surface of Sterling Silver or another copper based metal to a point where the metal flows along the surface. The end result is a piece of metal with a rippled finish.

Scrap: Metal unsuitable for direct use that can be reclaimed by smelting and refining.

Solder: An alloy of metal with a low melting point intended to join surfaces of metals.

Sprue: The gating network providing the passageway for liquid metal to flow through in casting.

Tarnish: Surface discoloration of metal due to the formation of a thin film of oxide or sulfide when the metal is exposed to air or gases.

Welding: The process of uniting two metallic parts by heating and allowing the metals to flow together or by hammering or compressing with or without previous heating.



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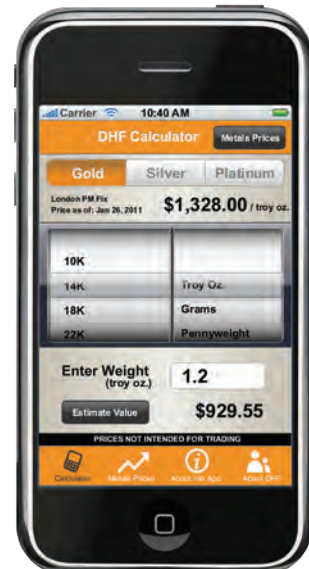


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