



Standard Specifications for Wire

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Umicore's business unit Jewellery and Industrial Metals provides an unrivalled wide range of precious metals products and related services to the jewellery industry and to a variety of industrial applications. Its North American production site is ISO 9001:2015, ISO 14001:2015 and OHSAS 18001-2007 certified.

The 'Standard Specifications' series define the standard specifications for custom orders. They correspond to the needs of the majority of the precious metals industry in North America and illustrate most of Umicore's production capabilities. Should you, however, have a request that seems to fall outside of what is published here, then please don't hesitate to contact us for further assistance. Umicore updates its 'Standard Specifications' regularly based on customer feedback, market trends and technological developments.

For each product the 'Standard Specifications' show:

- Product name and description
- Characteristics needed to fully define the product and a drawing illustrating the definition of those, where appropriate
- Available materials for these products
- Standard production capabilities and tolerances
- Temper
- Standard packaging

In order to speed up the processing of product inquiries and orders we encourage you to use the terminology used in the 'Standard Specifications' and to clearly indicate any requests that deviate from these 'Standard Specifications', such as tighter specifications.

Throughout the 'Standard Specification' series all dimensions are provided in mm and temperatures in °C. Conversions to inches, feet and °F are for reference only.

Round Wire

Product Characteristics:

- Material
- Diameter
- Length¹
- Weight
- Straight lengths, coils or spooled
- Tolerances (if different from the ‘Standard Specifications’)
- Tensile and Elongation or temper (see charts in appendix)
- Surface finish and quality

Available Materials:

From stock: 10Y, 10W, 14Y, 14W, 14D, 18Y, 18W, 18D, 19W, 24Y, SSW, FIS, COS, ANT, FPT, 90W, 95R, 95H

Made to order: 10H, 10G, 10R, 14H, 14G, 14R, 18G, 18R, 22Y, FPD or any customer specified alloy

Production Capabilities:

	MINIMUM	MAXIMUM	TOLERANCE	COMMENTS
DIAMETER	0.15 mm/0.006" (0.20mm/0.0078" for fine Ag)	15.0 mm/0.590"	0.03 mm/0.0012"	>1.01 mm/0.0397"
			0.01 mm/0.0004"	<1.0 mm/0.03937"
LENGTH (STRAIGHT PIECES)	1.0mm/0.03937"	15.0 mm/0.590"		Standard length is 304.8mm/1 ft. to 1219mm/4 ft. Longer lengths are coiled
COILED	0.75 mm/0.0295"	3.0 mm /0.118"		6", 8" and 12" coils available Larger diameter wire may be coiled depending on temper (soft)
WHITE SPOOL	0.10 mm/0.004"	2.0 mm/0.0787"		6" diameter, capacity approx.. 2.5 Kg
BLACK SPOOL	1.0mm/0.03937"	3.0mm/0.118"		12" diameter, capacity approx.. 8 Kg

Other dimensions and tolerances may be available on request

Temper:

Standard temper is soft² unless specified. Other tempers are available on request

Surface:

Uniform in appearance, of typical color for the alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02mm/0.0008" and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished, rolled or drawn the surface will shine up.

Wire can be supplied in one of two finishes:

As drawn: in this case the surface roughness is less than 12µm (diamond dies <1.0mm / .040" less than 8µm). The surface is smooth and reflective

Brushed: in this case the surface roughness is greater than 12µm. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product

¹ Instead of the length also the mass can be used to define the volume ordered.

² The standard temper for wire from Ready-Stock™ is half hard.

Rectangular Wire

Product Characteristics:

- Material
- Thickness
- Width
- Length²

- Straight lengths, coils or spooled
- Tolerances (if different from the 'Standard Specifications')
- Tensile and Elongation or temper (see charts in appendix)
- Surface finish and quality

Available materials:

From stock: 10Y, 10W, 14Y, 14W, 14D, 18Y, 18W, 18D, 19W, 24Y, SSW, FIS, COS, ANT, FPT, 90W, 95R, 95H

Made to order: 10H, 10G, 10R, 14H, 14G, 14R, 18G, 18R, 22Y, FPD or any customer specified alloy

Production Capabilities:

mm	inch	mm	inch	mm	inch	mm	inch
0.50 x .750	.019 x .029	1.00 x 6.00	.039 x .236	1.50 x 5.00	.059 x .197	2.00 x 7.00	.078 x .276
0.50 x 1.50	.019 x .059	1.00 x 7.00	.039 x .275	1.50 x 6.00	.059 x .236	2.00 x 8.00	.078 x .315
0.50 x 2.00	.019 x .078	1.00 x 8.00	.039 x .315	1.50 x 7.00	.059 x .276	2.50 x 3.50	.098 x .137
1.00 x 1.50	.039 x .059	1.20 x 1.56	.047 x .061	1.50 x 8.00	.059 x .315	2.50 x 4.00	.098 x .157
1.00 x 2.00	.039 x .078	1.20 x 2.80	.047 x .110	2.00 x 2.50	.078 x .098	2.50 x 4.50	.098 x .177
1.00 x 2.50	.039 x .098	1.50 x 2.00	.059 x .078	2.00 x 3.00	.078 x .118	2.50 x 5.00	.098 x .197
1.00 x 3.00	.039 x .118	1.50 x 2.50	.059 x .098	2.00 x 3.50	.078 x .137	2.50 x 6.00	.098 x .236
1.00 x 3.50	.039 x .137	1.50 x 3.00	.059 x .118	2.00 x 4.00	.078 x .157	3.00 x 4.50	.118 x .177
1.00 x 4.00	.039 x .157	1.50 x 3.50	.059 x .137	2.00 x 4.50	.078 x .177		
1.00 x 4.50	.039 x .177	1.50 x 4.00	.059 x .157	2.00 x 5.00	.078 x .197		
1.00 x 5.00	.039 x .197	1.50 x 4.50	.059 x .177	2.00 x 6.00	.078 x .236		
Tolerance +/- 0.03mm (+/- 0.0012")							
Turks head rolled by special request (produces squared edges) tolerance +/- .03mm (.0012") max 6.0mm							
Rolled wire (no die) thickness Tolerance +/- 0.05mm (.0019") Width tolerance +/- 0.10mm (.00394")							
Smaller thickness available as tape wire							
Length: 1mm flat 1.50mm max coiled must be soft							
Product used for short lengths and small weights with no specific tolerance							

Temper:

Standard temper is soft¹ unless specified. Other tempers are available on request.

Surface:

Uniform in appearance, of typical color for the temper and alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02 mm/0.0008" and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished,

rolled or drawn the surface will shine up.

Wire can be supplied in one of two finishes:

- As drawn: in this case the surface roughness is less than 8 µm. The surface is smooth and reflective.
- Brushed: in this case the surface roughness is greater than 12 µm. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product.

¹ The standard temper for from Ready-Stock™ is half hard.

³ Instead of the length also the mass can be used to define the volume ordered

Square Wire

Product Characteristics:

- Material
- Thickness
- Width
- Length²

- Camber (edgewise bow)
- Tolerances (if different from the 'Standard Specifications')
- Vickers hardness or temper (see charts in appendix)

Available materials:

From stock: 10Y, 10W, 14Y, 14W, 14D, 18Y, 18W, 18D, 19W, 24Y, SSW, FIS, COS, ANT, FPT, 90W, 95R, 95H

Made to order: 10H, 10G, 10R, 14H, 14G, 14R, 18G, 18R, 22Y, FPD or any customer specified alloy

Production Capabilities:

mm	inch	mm	inch	mm	inch	mm	inch
6.0	.236	2.79	.110	1.65	.065	0.635	.025
5.50	.216	2.75	.108	1.59	.063	0.560	.022
5.25	.205	2.60	.102	1.40	.055	0.508	.019
5.00	.197	2.50	.098	1.25	.049	0.460	.018
4.50	.177	2.40	.095	1.10	.043	0.457	.017
4.25	.167	2.25	.088	1.00	.039	0.410	.016
3.75	.148	2.15	.085	0.914	.036		
3.50	.137	2.00	.078	0.812	.032		
3.33	.131	1.90	.075	0.762	.029		
3.17	.125	1.77	.070	0.711	.028		
3.00	.118	1.75	.069	0.660	.026		
Tolerance +/- 0.02mm (.00078")							
Turks head rolled by special request (produces squared edges) tolerance +/- .03mm (.0012") max 6.0mm							
Strand annealed < 0.50mm requires extra day							
Length: 1mm flat 1.50mm max coiled must be soft							
Product used for short lengths and small weights with no specific tolerance							

Temper:

Standard temper is soft² unless specified. Other tempers are available on request.

Surface:

Uniform in appearance, of typical color for the temper and alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02 mm/0.0008" and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished, rolled or drawn the surface will shine up

Wire can be supplied in one of two finishes:

- As drawn: in this case the surface roughness is less than 8 µm. The surface is smooth and reflective.
- Brushed: in this case the surface roughness is greater than 12 µm. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product.

¹ The standard temper for from Ready-Stock™ is half hard.

² Instead of the length also the mass can be used to define the volume ordered

Half Round Wire

Product Characteristics:

- Material
- Thickness
- Width
- Length²
- Camber (edgewise bow)
- Tolerances (if different from the 'Standard Specifications')
- Vickers hardness or temper (see plate charts in appendix)
- Surface finish and quality

Available materials:

From stock: 10Y, 10W, 14Y, 14W, 14D, 18Y, 18W, 18D, 19W, 24Y, SSW, FIS, COS, ANT, FPT, 90W, 95R, 95H

Made to order: 10H, 10G, 10R, 14H, 14G, 14R, 18G, 18R, 22Y, FPD or any customer specified alloy

mm	inch	mm	inch	mm	inch	mm	inch
.28 x .55	.011 x .021	1.00 x 5.00	.039 x .197	1.50 x 3.00	.059 x .118	2.00 x 3.00	.078 x .118
.50 x .75	.019 x .029	1.00 x 6.00	.039 x .236	1.50 x 3.25	.059 x .128	2.00 x 3.50	.078 x .137
.50 x 1.00	.019 x .039	1.10 x 1.50	.043 x .059	1.50 x 3.50	.059 x .137	2.00 x 4.00	.078 x .157
.75 x 1.50	.029 x .059	1.13 x 5.55	.044 x .218	1.50 x 4.00	.059 x .157	2.00 x 4.50	.078 x .177
.76 x 3.80	.030 x .150	1.20 x 1.56	.047 x .061	1.50 x 4.50	.059 x .177	2.00 x 5.00	.078 x .197
.90 x 1.80	.035 x .071	1.20 x 2.80	.047 x .110	1.50 x 5.00	.059 x .197	2.00 x 6.00	.078 x .236
1.00 x 1.00	.039 x .039	1.30 x 2.50	.051 x .098	1.50 x 6.00	.059 x .236	2.00 x 7.00	.078 x .276
1.00 x 1.50	.039 x .059	1.30 x 2.62	.051 x .103	1.50 x 7.00	.059 x .276	2.00 x 8.00	.078 x .315
1.00 x 2.00	.039 x .078	1.45 x 2.90	.057 x .114	1.50 x 8.00	.059 x .315	2.06 x 4.11	.055 x .162
1.00 x 2.50	.039 x .098	1.50 x 2.00	.059 x .078	1.65 x 2.50	.065 x .098	3.00 x 3.00	.118 x .118
1.00 x 3.00	.039 x .118	1.50 x 2.50	.059 x .098	2.00 x 2.00	.078 x .078	3.00 x 4.50	.118 x .177
1.00 x 4.00	.039 x .157			2.00 x 2.50	.078 x .098		

Tolerance +/- 0.05mm (.00196") height +/- 0.10mm (.0039") width

Length maximum 1 m straight, Product is usually coiled

Odd sizes with **no** matching dies : 1.125mm x 5.55mm 2.50mm x 4.75mm 2.55mm x 7.75mm
1.5 x 18mm 1.7 x 15mm 1.7 x 18mm 2 x 15.3mm 1.5 x 10mm 1.8 x 13mm

Temper:

Standard temper is soft¹ unless specified. Other tempers are available on request.

Surface:

Uniform in appearance, of typical color for the temper and alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02 mm/0.0008" and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished, rolled or drawn the surface will shine up.

Wire can be supplied in one of two finishes:

- As drawn: in this case the surface roughness is less than 8 µm. The surface is smooth and reflective.
- Brushed: in this case the surface roughness is greater than 12 µm. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product.

¹ The standard temper for from Ready-Stock™ is half hard.

² Instead of the length also the mass can be used to define the volume ordered

Triangular Wire

Product Characteristics:

- Material Straight lengths, coils or spooled
- Height Tolerance (if different from the “standard Specifications)
- Width Tensile and elongation or temper (see chart in appendix)
- Length¹ Surface finish and quality
- Weight

Available Materials:

From stock: 10Y, 10W, 14Y, 14W, 14D, 18Y, 18W, 18D, 19W, 24Y, SSW, FIS, COS, ANT, FPT, 90W, 95R, 95H

Made to order: 10H, 10G, 10R, 14H, 14R, 18G, 22Y, FPD or any customer specific alloy

Production Capabilities:

mm	inch	mm	inch	mm	inch	mm	inch
2.45 x 3.2	.096 x .126						
1.65 x 2.10	.065 x .083						
2.10 x 2.65	.083 x .104						
2.30 x 4.55	.090 x .179						
Only sizes available – for other sizes new tooling must be purchased							
Tolerance +/- 0.03 mm (.0012”) height +/- 0.10mm (.0039”) width							
Length: 1 to 2 foot lengths standard, coils 12” ID (must be soft to be coiled)							
Product used for short lengths and small weights with no specific tolerance							

Other dimensions and tolerances may be available on request

Temper:

Standard temper is soft² unless specified. Other tempers are available on request

Surface:

Uniform in appearance, of typical color for the alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02mm/0.0008” and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished, rolled or drawn the surface will shine up.

Wire can be supplied in one of two finishes:

As drawn: in this case the surface roughness is less than 12um. The surface is smooth and reflective

Brushed: in this case the surface roughness is greater than 12um. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product

¹ instead of length also the mass can be used to define the volume ordered.

² the standard temper for wire from Ready-Stock™ is half hard

Tape Wire

Product Characteristics:

- Material Weight
- Thickness Tolerance (if different from the standard Specification)
- Width Tensile and elongation or temper (see chart in appendix)
- Length¹

Available Materials:

From stock: none

Made to order: 10H, 10G, 10R, 10Y, 10W, 14Y, 14W, 14D, 18Y, 18W, 18D, 19W, 24Y, SSW, FIS, COS, ANT, FPT, 90W, 95R, 95H, 14H, 14R, 18G, 22Y, FPD or any customer specific alloy

Production Capabilities:

Maximum width available	3.0mm / 0.120"	Minimum width available	0.25mm / 0.010"
Maximum thickness available	0.55mm / 0.020"	Minimum thickness available	0.07mm / 0.003"
Tolerance width	+ / - .005mm / .0002"		
Tolerance thickness	+ / - .004mm / .00015"		
Always spooled, max 1000 gr per spool			
Rounded edges			
Solder filled by special request			
Consult department for larger quantity deliveries over 1000 grams			

Other dimensions and tolerances may be available on request

Temper:

Standard temper is soft² unless specified. Other tempers are available on request

Surface:

Uniform in appearance, of typical color for the alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02mm/0.0008" and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished, rolled or drawn the surface will shine up.

Wire can be supplied in one of two finishes:

As drawn: in this case the surface roughness is less than 12um. The surface is smooth and reflective

Brushed: in this case the surface roughness is greater than 12um. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product

¹ instead of length also the mass can be used to define the volume ordered.

² the standard temper for wire from Ready-Stock™ is half hard

Solder Filled Wire

Product Characteristics:

- Material Straight lengths, coils or spooled
- Diameter Tolerance (if different from the “standard Specifications)
- Length¹ Tensile and elongation or temper (see chart in appendix)
- Weight Surface finish and quality

Available Materials:

From stock: none

Made to order: 10Y, 10W, 14Y, 14W, , SSW,

Production Capabilities:

Tolerance 1.01mm to 4.0mm +/- 0.03mm (.0397" to .157"+/- .0012")
0.10mm to 1.0mm +/- 0.01mm (.004" to .039"+/- .0004")

, 50mm to 3.0mm (.0197" to .118") usually coiled 6 or 8"

<.50mm (.0197") shipped on white spool

Spool capacity 2.5 Kg

Strand anneal required for <.50mm (.0197") or by request

Large volume orders consult department for deliveries over 2500 grams

Other dimensions and tolerances may be available on request

Temper:

Standard temper is soft² unless specified. Other tempers are available on request

Surface:

Uniform in appearance, of typical color for the alloy ordered, and free of orange peel, foreign inclusions, oxide or tarnish, scratches greater than 0.02mm/0.0008" and blisters. Items ordered at soft temper may not appear shiny when first received. Once polished, rolled or drawn the surface will shine up.

Wire can be supplied in one of two finishes:

As drawn: in this case the surface roughness is less than 12um. The surface is smooth and reflective

Brushed: in this case the surface roughness is greater than 12um. The surface is smooth and no clear reflection is visible.

Packaging:

Box or envelope depending on the size of the product

¹ instead of length also the mass can be used to define the volume ordered.

² the standard temper for wire from Ready-Stock™ is half hard

Product Specs for Chain Making

Material	700 °C 1292 °F Strand	755 °C 1391 °F Strand	820 °C 1508 °F W/ Quench	1100 °C 2012 °F Strand
Sterling Silver	40 - 44 (Ksi)	N/A	N/A	N/A
10K Y AMP 006	N/A	67 – 70 (Ksi)	N/A	N/A
10K y AMP S/F	N/A	70 – 73 (Ksi)	N/A	N/A
10K W 530	N/A	N/A	75 – 80 (Ksi)	N/A
10K W 530 S/F	N/A	83 – 88 (Ksi)	N/A	N/A
14K Y AMP 006	N/A	67 – 70 (Ksi)	N/A	N/A
14K y AMP S/F	N/A	70 – 73 (Ksi)	N/A	N/A
14K W 530	N/A	N/A	75 – 80 (Ksi)	N/A
14K W 530 S/F	N/A	83 – 88 (Ksi)	N/A	N/A
18K W 830	N/A	N/A	83 – 88 (Ksi)	N/A
95Pt 5Ru <0.381mm 0.015"	N/A	N/A	N/A	80 – 90 (Ksi)
95Pt 5Ru >0.382mm 0.015"	N/A	N/A	80 – 90 (Ksi)	N/A

Gauge Conversion Chart

B & S Gauge	Diameter (mm)	Diameter (inches)	B & S Gauge	Diameter (mm)	Diameter (inches)
1	7.35	0.2894	21	.728	0.0287
2	6.54	0.2575	22	.644	0.0254
3	5.83	0.2295	23	.573	0.0226
4	5.19	0.2043	24	.511	0.0201
5	4.62	0.1819	25	.455	0.0179
6	4.11	0.1618	26	.405	0.0159
7	3.66	0.1441	27	.360	0.0142
8	3.26	0.1283	28	.321	0.0126
9	2.91	0.1146	29	.286	0.0113
10	2.59	0.1020	30	.255	0.0100
11	2.30	0.0906	31	.227	0.0089
12	2.05	0.0807	32	.202	0.0080
13	1.83	0.0720	33	.180	0.0071
14	1.63	0.0642	34	.160	0.0063
15	1.45	0.0571	35	.142	0.0056
16	1.29	0.0508	36	.127	0.0050
17	1.15	0.0453	37	.113	0.0044
18	1.02	0.0402	38	.101	0.0040
19	.912	0.0359	39	.090	0.0035
20	.812	0.0320	40	.080	0.0031

METAL DESCRIPTION LEGEND

CODE	DESCRIPTION
10Y	10 karat yellow gold
10W 525	10 karat white gold (standard alloy)
10W 530	10 karat white gold (chain making)
10G	10 karat green gold
10R	10 karat red gold
14Y	14 karat yellow gold
14H	14 karat yellow heat treatable
14W 525	14 karat white gold (standard alloy)
14w 530	14 karat white gold (chain making)
14D	14 karat palladium white gold
14G	14 karat green gold
14R	14 karat red gold
18Y	18 karat yellow gold
18W	18 karat white gold
18D	18 karat palladium white gold
18G	18 karat green gold
18R	18 karat red gold
19Y	19 karat yellow gold
19W	19 karat white gold
22Y	22 karat yellow gold

KARAT	MINIMUM GOLD CONTENT	COMMENTS
9	37.50%	High karat alloys available on request
10	41.67%	High karat alloys available on request
14	58.33%	High karat alloys available on request
18	75.00%	High karat alloys available on request
19	79.17%	High karat alloys available on request
22	91.67%	High karat alloys available on request
24	99.90%	99.95% and 99.99% available on request

Silver

CODE	DESCRIPTION	MINIMUM SILVER CONTENT	COMMENTS
SSW	Sterling silver	92.50%	93.5% silver available on request
FIS	Fine silver	99.90%	99.95% and 99.99% available on request
COS	Coin silver	89.90%	
SOF	Solder flush	92.50%	
ANT	Arctic Fox™ Anti-tarnish silver	92.70%	

Platinum

CODE	MINIMUM PLATINUM CONTENT	DESCRIPTION
90W	90.00%	90% Platinum 10% Iridium
95W	95.00%	95% Platinum 5% Iridium
95H	95.20%	95% Platinum Heat Treatable®
95R	95.20%	95% Platinum 5% Ruthenium
FPT	99.90%	99.9% Platinum (99.99% available on request)

Palladium

CODE	MINIMUM PALLADIUM CONTENT	DESCRIPTION
FPD	99.90%	99.9% Palladium
95D	95.00%	95% Palladium 5% Silver and Gallium

Impurity Levels for All Jewellery Products

Nickel	100 ppm max. (for alloys without nickel as alloying element)
Lead	50 ppm max.
Cadmium	50 ppm max

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