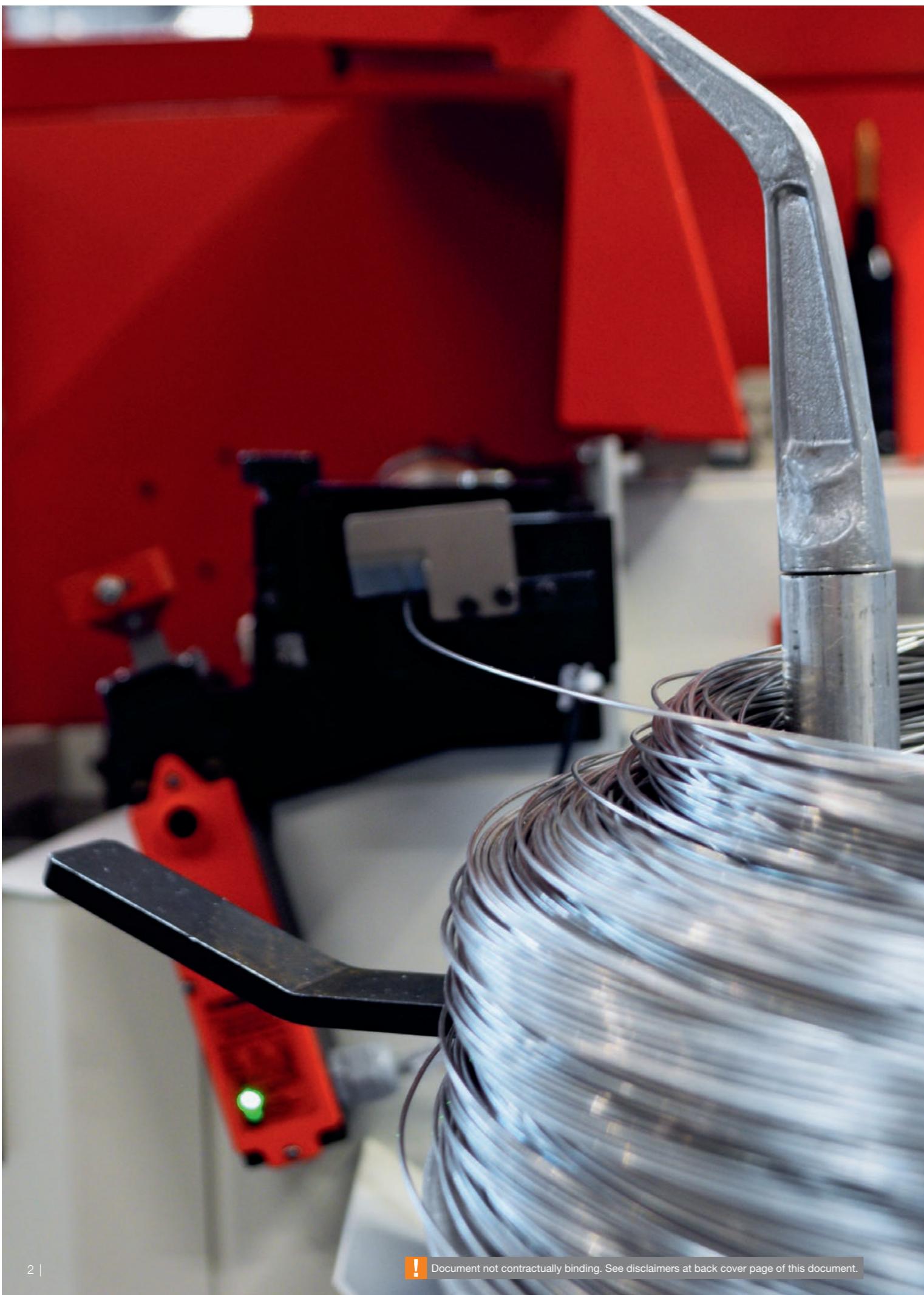


UGIMA®

Creating productivity
Free machining wires



**Swiss
Steel**
Group



Swiss Steel Group, your partner
Leader in cold-drawn stainless steel
and alloy products for free machining
applications

**Discover the excellence of Swiss Steel,
the unrivalled leader in the production of
customised stainless steels and alloys,
specially designed to revolutionise the
free machining industry.**

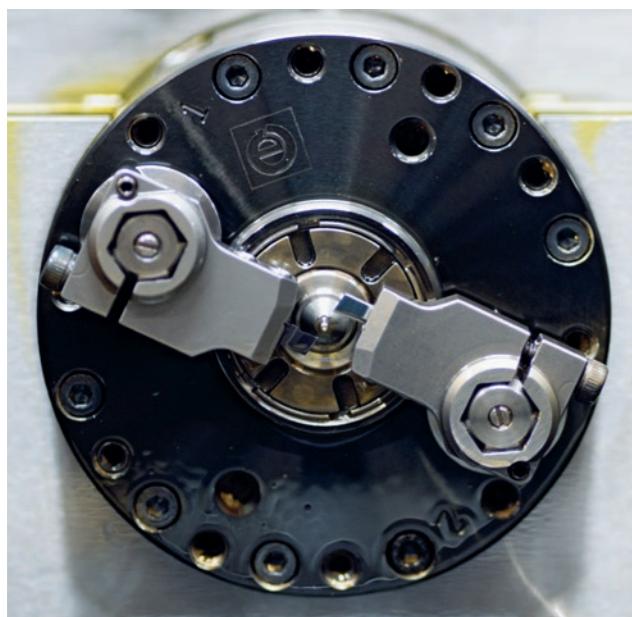
Thanks to our internationally
recognised technical expertise,
we can provide exceptional
solutions for drawn wires and
drawn wires straightened in bars.

At Swiss Steel, we understand the importance of precision and productivity for modern free machining producer. That is why our products combine the strength of UGIMA® grades, which is synonymous with exceptional performance, with unrivalled geometric precision. You can therefore enjoy high usage value and optimum results from all your free machining operations.



In addition to the usual parameters for improving machinability (sulphur content, hardening, etc.), our main grades have the advantage of the UGIMA® manufacturing process. This process involves the control of inclusion state of the product to achieve an increase of 10% to 30% in free machining productivity.

Discover the power of digital technology in the free machining industry, meeting the stringent requirements of the aerospace, defence, medical and watchmaking sectors. At Swiss Steel, we are pioneers in innovation, with unrivalled expertise in managing the entire process, from upstream to downstream, offering our customers first-class technical support in high-added-value markets.



There are many advantages in choosing our products:

– Customised development:

Our products are designed and developed to meet the specific requirements of each application and market and ensure a solution tailored to your needs.

– Sector-specific expertise:

We offer dedicated products for the aerospace, medical and watchmaking markets, guaranteeing targeted, high-performance solutions for these demanding applications.

– Total quality control:

By integrating our upstream and downstream manufacturing operations, we can control every step of the process, from melting to wire drawing, to provide you with products of exceptional quality.

– High-tech solutions for an optimum surface finish:

Our expertise ensures that the surface finish of the drawn wire perfectly matches the specific needs of your market. To satisfy the most demanding markets, we can complement our offer and provide customised solutions that incorporate eddy current control of the wire surface and/or wire rod surface repair for unrivalled performance.

– Wide range of grades:

Choose from our extensive selection of grades, including austenitic, ferritic, martensitic and duplex stainless steels, as well as cobalt- and nickel-based alloys, for customised solutions to meet your most specific needs.

– Reactivity and flexibility:

– Our production plants are highly reactive and versatile, ensuring fast delivery and the ability to meet the most demanding challenges.

By opting for Swiss Steel, you have the benefit of a partner of choice, combining innovation, quality and reactivity to meet your most demanding needs in the free machining industry.

Nuances Ugitech	Equivalence		Description		Chemical analysis of Ugitech grades (typical analysis given as a %)											
	AISI ASTM	UNS	N ° EN	EN designation	C	Si	Mn	Ni	Cr	Mo	N	S	P	Others		
Martensitic stainless steels																
UGIMA® 4006	410	S41000	1.4006	X12Cr13	min. max.	0.08 0.15	1	1.5	0.75	11.5 13.5	-	0.03	0.04	-		
UGI® 4005A	416	S41600	1.4005	X12CrS13	min. max.	0.06 0.15	1	1.5	-	12 14	0.6	0.35	0.04	-		
UGIMA® 4021	420	S42000	1.4021	X20Cr13	min. max.	0.16 0.25	1	1.5	-	12 14	-	0.03	0.04	-		
UGIMA® 4028	420	S42000	1.4028	X30Cr13	min. max.	0.26 0.35	1	1.5	-	12 14	-	0.03	0.04	-		
UGIMA® 4034	420	S42000	1.4034	X46Cr13	min. max.	0.43 0.5	1	1	-	12.5 14.5	-	0.03	0.04	-		
UGI® 4029	420F	S42020	1.4029	X29CrS13	min. max.	0.26 0.31	1	1.3	0.5	12 13	0.4	0.25	0.04	-		
UGI® 4035	420/420F		1.4035	X46CrS13	min. max.	0.43 0.48	1	1	0.5	14 15	0.2	0.26	0.04	-		
UGI® 4116N		S44026	1.4116	X50CrMoV15	min. max.	0.45 0.55	1	1	-	14 15	0.5	0.015	V: 0.1 - 0.2	-		
UGIMA® 4057	431	S43100	1.4057	X17CrNi16-2	min. max.	0.12 0.22	1	1.5	1.5 2.5	15 17	-	0.03	0.04	-		
UGI® 4197	420F MOD				min. max.	0.2 0.25	0.6	1.5	0.75 0.95	12 13.5	1.2	0.25	0.03	-		
UGI® 4542	630	S17400	1.4542	X5CrNiCuNb16-4	min. max.	0.07 0.07	0.7	1.5	3 5	15 17	0.6	0.03	0.04	Cu: 3.0 - 5.0 Nb: 5xC - 0.45		
Ferritic stainless steels																
UGIMA® 4511	430LNb	-	1.4511	X3CrNb17	min. max.	0.05 1	1	-	16 18	-	0.03	0.04	Nb: 12xC - 1.0	-		
UGIMA® 4509	441	S43940	1.4509	X2CrTiNb18	min. max.	0.03 1	1	-	17.5 18.5	-	0.015	0.04	Ti: 0.1 - 0.6	-		
UGI® 4104	430F	-	1.4104	X14CrMoS17	min. max.	0.1 0.17	1	1.5	-	15.5 17.5	0.2	0.15	0.04	Nb: 3xC+0.30-1.0	-	
UGI® 4105	430F	-	1.4105	X6CrMoS17	min. max.	0.08 0.08	0.6	1.5	0.6	16 18	0.2	0.15	0.04	-	-	
UGI® 4016	430	S43000	1.4016	X6Cr17	min. max.	0.05 0.05	0.7	1	0.5	16 17	0.5	0.03	0.04	-	-	
Austenitic stainless steels																
UGIMA® 4301	304	S30400	1.4301	X5CrNi18-10	min. max.	0.07 1	2	10.5	8 10.5	17.5 19.5	-	0.11	0.03	0.045	Cu: ≤ 1.0	-
UGIMA® 4307	304L	S30403	1.4307	X2CrNi18-9	min. max.	0.03 1	2	10.5	8 10.5	17.5 19.5	-	0.11	0.03	0.045	-	-
UGIMA® 4306	304L	S30403	1.4306	X2CrNi19-11	min. max.	0.03 1	2	12	10 12	20 20	-	0.11	0.03	0.045	-	-
UGIMA® 4567	304Cu	S30430	1.4567	X3CrNiCu18-9-4	min. max.	0.04 1	2	10.5	8.5 10.5	17 19	-	0.11	0.03	0.045	Cu: 3.0 - 4.0	-
UGIMA® 4305	303	S30300	1.4305	X8CrNiS18-9	min. max.	0.1 1	2	10	8 10	17 19	-	0.11	0.35	0.045	Cu: 0.4 - 0.7	-
UGIMA® 4570	-	-	1.4570	X6CrNiCuS18-9-2	min. max.	0.08 1	2	10	8 10	17 19	0.6	0.11	0.35	0.045	Cu: 1.4 - 1.8	-
UGIMA® 303Cu+	303Cu	S30330	-	X6CrNiCuS18-9-3	min. max.	0.06 1	2	10	8 10	17 19	0.6	-	0.35	0.04	Cu: 2.5 - 3.0	-
UGI® F4401	316	S31600	1.4401	X5CrNiMo17-12-2	min. max.	0.07 1	2	13	10 13	16.5 18.5	2.5	0.11	0.03	0.045	-	-
UGIMA® 4404	316L	S31603	1.4404	X2CrNiMo17-12-2	min. max.	0.03 1	2	13	10 13	16.5 18.5	2.5	0.11	0.03	0.045	-	-
UGIMA® 4435	316L (316Mo)	S31603	1.4435	X2CrNiMo18-14-3	min. max.	0.03 1	2	15	12.5 15	17 19	2.5	0.11	0.03	0.045	-	-
UGIMA® 4541	321	-	1.4541	X6CrNiTi18-10	min. max.	0.08 1	2	12	9 12	17 19	-	0.03	0.045	Ti: 5xC - 0.7	-	
UGIMA® 4571FG	316Ti	S31635	1.4571	X6CrNiMoTi17-12-2	min. max.	0.08 1	2	13.5	10.5 13.5	16.5 18.5	2.5	-	0.03	0.045	Ti: 5xC - 0.7	-
UGIMA® 4598	-	S31621	1.4598	X3CrNiMoS17-11-2	min. max.	0.03 1	2	13	10 13	16.5 18.5	2	0.1	0.2	0.045	Cu: 1.3 - 1.8	-
UGI® 4539	904L	N08904	1.4539	X1NiCrMoCu25-20-5	min. max.	0.02 0.02	0.7	2	24 25	19 20	4	0.01	0.03	Cu: 1.2 - 2.00	-	
UGI® 218	-	S21800			min. max.	0.1 4.5	7	8 9	16 18	0.75 0.75	0.08 0.18	-	Cu: 0.75	-	-	
UGI® 209		S20910	1.4455	X2CrNiMnMoN20-16	min. max.	0.06 0.06	0.75	6	11.5 13.5	20.5 23.5	2	0.2	0.03	0.04	-	-
Alloys																
UGIALLOY® KC35N	F562	R30035	2.4999		nominal	0.01			35	20	9.7	≤ 0.01		Co: 35		
UGIALLOY® PHYNOX®	F0158	R30003/ R30008	2.4711		nominal	≤ 0.15	≤ 1.2	2	16	20	7	≤ 0.01		Co: 40 / Fe: 15		
UGIALLOY® HT90	F0158	N07090	2.4632/2.4969		nominal	≤ 0.13	≤ 1.0	≤ 1.0	Balance	20	7	≤ 0.015		Co: 18 / Ti: 2.5 / Al: 0.7		

Grades for medical devices

Swiss Steel is the supplier of choice for high-end stainless steels and alloys, specially designed to meet the needs of your medical devices and equipment.

Opt for our top-quality drawn wires and drawn wires straightened in bars, the basic raw materials that ensure superior performance for your most stringent medical applications.

Ugitech designation	EN designation	AISI designation	Low sulfur grade	MDR 2017/745 involves LR grade (Co < 0,1%)	UGIMA®	Forgeability (improved)	Remelting process	ASTM F899	ISO 7153	EN 10088-3	NF S94-090	ASTM	ISO	DMI
UGI® 4005A	1.4005	416	-		option		-	■	■	■				
UGI® 4006	1.4006	410	option		option	yes	-	■	■	■				
UGI® 4016	1.4016	430	option			yes	-	■	■	■				
UGI® 4021	1.4021	420A	option	option LR	option	(option)	-	■	■	■	■			
UGI® 4028	1.4028	420B	option	option LR	option	(option)	-	■	■	■	■			
UGI® 4031	1.4031	420C			-	yes	-	■	■	■				
UGI® 4034	1.4034	420C	option	option LR	-	yes	-	■	■	■	■			
UGI® 4035	1.4035	420F	-	option LR	-	yes	-	■	■	■				
UGI® 4037	1.4037		yes		-	yes	-	■						
UGI® 4197	1.4197/1.4121	420F MOD	-	option LR	-		-	■	■	■				
UGI® 4122	1.4122	-	-		-	yes	-	■	■	■				
UGI® 4116N	1.4116	-	option	on request	option	(option)	-	■	■	■				
UGI® 4057	1.4057	431	option	option LR	option	(option)	yes	■	■	■	■			
UGI® 4542	1.4542	630 (17-4PH)	option	option LR	option	yes	yes	■	■	■	■			
UGI® 4104	1.4104	430F	-	option LR	option		-	■	■	■				
UGI® 4105	1.4105	430F	-		-		-	■	■	■				
UGI® 4305	1.4305	303	-	on request	option		-	■	■	■				
UGI® 4307	1.4307	304L	option	on request	option	(option)	yes	■	■	■	■			
UGI® 4310	1.4310	302/304H	yes	on request	-	yes	-	■	■	■	■			
UGI® 4404	1.4404	316L	option	on request	option	(option)	yes	■	■	■	■			
UGI® 4435	1.4435	316LMo	option		option	(option)	yes	■	■	■	■			
UGIPURE® 4441	1.4441	316LVM	yes	yes	-	yes	yes	■	■	■	■	F138	5832-2	■
UGIPURE® 4472	1.4472	UNS 31675	yes	yes	-	yes	yes	■	■	■	■	F1586	5832-9	■
UGI® 4568	1.4568	631 (17-7PH)	yes		-		-	■		■				
UGIMA® 4598	1.4598	316LCu	-		option		-		■			F1058	5832-7	■
UGIALLOY® PHYNOX®	2.4711	R30003/30008		Alloys Co			yes							
UGIALLOY® KC35N	2.4999	R300035		Alloys Co			yes					F562	5832-6	■
UGIALLOY® HT605	2.4964	R30605		Alloys Co			yes					F90	5832-5	■

N.B.: UGIMA® is a special process for improving machinability

PHYNOX® is an Aperam trademark

IMD: Implantable medical device

Swiss Steel supplies products whose chemical, mechanical and metallographic properties comply with the standards and regulations required and used by medical device (MD) manufacturers.

It is the responsibility of medical device manufacturers to check, ensure and control the safety and biocompatibility of medical devices, particularly those at the patient/device interface.

Technical recommendations

Low sulphur content: suitable for invasive instruments, thin-walled components, endoscope components, small-diameter products, fatigue-resistant components, etc.

“Remelting process” option: critical medical devices subjected to fatigue stress and lasting contact with human tissue.



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Grades for watchmaking applications

Watch movement

Dimensional range 1.0 to 15 mm

Ugitech designation (EN)	Other designation	Remelted	Main Specs	Abrasion resistance			Seizure resistance	Non-magnetic
				Machinability	Hardness	Seizure resistance		
Austenitics								
UGIMA® 4305	303			■■■	■■■	■■■	■■■	■■■
UGIMA® 4570	303Cu			■■■	■■■	■■■	■■■	■■■
UGIMA® 4404	316L			■■■	■■■	■■■	■■■	■■■
UGIMA® 4598	316LCu			■■■■■	■■■	■■■	■■■	■■■
UGI® 4435 ICH	316Mo			■■■■■	■■■	■■■	■■■	■■■
UGI® 4435 IRH	316Mo			■■■■■	■■■	■■■	■■■	■■■
UGI® 4441 HUP	316LVM	ESR	ISO 5832-1	■■■	■■■	■■■	■■■	■■■
UGI® 4472 HUP		ESR	ISO 5832-9	■■■	■■■	■■■	■■■	■■■
UGI® 4455 HUP	XM 19	ESR		■■■	■■■	■■■	■■■	■■■
Martensitics								
UGI® 4116N			EN 10088-3	■■■	■■■	■■■	■■■	■■■
UGI® 4197	420F MOD		ASTM F899	■■■■■	■■■	■■■	■■■	■■■
Maraging Steel								
UGIALLOY® DURIMPHY®	VAR			■■■	■■■	■■■	■■■	■■■
Cobalt-based alloys								
UGIALLOY® PHYNOX®	VAR		ISO 5832-7	■■■	■■■	■■■	■■■	■■■
UGIALLOY® KC35N		VAR or ESR	ISO 5832-6	■■■	■■■	■■■	■■■	■■■

PHYNOX® and DURIMPHY® are Aperam trademarks

Watch strap

Dimensional range 1.0 to 18 mm available in Drawn wires, Bars and Profiles

Ugitech designation (EN)	Other designation	Remelted	Main Specs	Corrosion resistance			Cleanliness	Polishability	Scratch resistance Hardness	Yield Strength
				Bezel	Case	Links				
Austénitiques										
UGIMA® 4404	316L			■■■	■■■	■■■	■■■	■■■	■■■	■■■
UGI 4435 ICH	316Mo			■■■	■■■	■■■	■■■	■■■	■■■	■■■
UGI® 4435 IRH	316Mo			■■■	■■■	■■■	■■■	■■■	■■■	■■■
UGI® 4441 HUP	316LVM	ESR	ISO 5832-1	■■■	■■■	■■■	■■■	■■■	■■■	■■■
UGI® 4472 HUP (diam < 14 mm)		ESR	ISO 5832-9	■■■	■■■	■■■	■■■	■■■	■■■	■■■
UGI® 4455 HUP	XM 19	ESR		■■■	■■■	■■■	■■■	■■■	■■■	■■■
Alliages base cobalt										
UGIALLOY® PHYNOX®	VAR		ISO 5832-7	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■
UGIALLOY® KC35N		VAR or ESR	ISO 5832-6	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■

PHYNOX® is an Aperam trademark

Possibility of certified controls in compliance with ISO 17025

Nature of test	Measured characteristics	Method reference
Physical-chemical analysis	Chemical Analysis	X-ray fluorescence, spectrometry, combustion and infrared absorption
Grain size determination	Grain size index	NF EN ISO 643 ASTM E112
Determination of non-metallic inclusion content	Inclusion content	ISO 4967*, ASTM E45
Detection of metallurgical defects by chemical attack	Micrographic observation	ASTM A604 / 604M
Determination of delta ferrite	Delta ferrite content	AMS 2315
Mechanical properties: Tensile test	Rp0.2, Rm, A %, Z %	ISO6992-1, ASTM E8 / E8M
Mechanical properties: Hardness test	HRC, HB, HV	ISO 6506-1, ISO 6507-1, ISO 6508-1

* Inclusion cleanliness tests to DIN 50602 applicable to watchmaking specifications



Characteristics of Swiss Steel screw machining wire products

	Drawn wires	Drawn wires straightened in bars	Shaped wire (square, oval and other cross-section on request)
Standard	EN 10088-3 2H-2D	EN 10088-3 2H-2D-2B	EN-10088-3
Dimensional range	1 to 14 mm	1 to 14 mm	2 to 70 mm ²
Tolerances	Standard: ISO 8 / ISO 9 Thinner on request	Standard: ISO 8 / ISO 9 Ground on request (up to ISO 5 depending on Ø)	Variation up to ±0.02 mm Standard deviation on request
Lengths	-	Standard 3 m + 50 - 0 mm Other lengths on request	1 to 6 m on request
Lengths	50% TR	50% TR On request: 30% TR	-
Straightness	-	To EN 10218-2	5 mm/m, 3 mm/m on request and specific straightening direction on request
Roughness	1 ≤ d < 2.50 average Ra 0.4 µm CLA 2.50 ≤ d < 5.0 average Ra 0.8 µm CLA 5.0 ≤ d average Ra 1.2 µm CLA	Maximum arithmetic roughness Ra <0.4 µm to Ra ≤ 1.6 µm	Ra < 1 µm
Mechanical characteristics	Custom-made, according to grade and size	Custom-made, according to grade and size	According to grade/size Annealed state, work-hardened
End finishes	-	Chamfer on request according to Ø	-
Non-destructive testing	Eddy current on request	Eddy current on request	Continuous dimensional measurement (SPC)
Surface finish	Bright non-degreased oil-treated drawn wire (soap-coated matt on request) Ground on request	Bright non-degreased oil-treated drawn wire (soap-coated matt on request) Ground on request	-
Surface defect commitment	According to EN 10088-3 / on request, possibility of supplying drawn wire from wire rod repaired by shaving or rough turning	According to EN 10088-3 / on request, possibility of supplying drawn wire from wire rod repaired by shaving or rough turning	-

Conditioning

Drawn wires

- Pallet drums with cover Ø 800 mm - H 600 - 250 kg
- 30 to 250 kg coils on pallet or basket spool
Inner coil diameter:
Ø 1 to 1.50 mm = 350 mm
Ø > 1.50 mm = 500 mm
Ø > 5 mm = 800 mm
- 250 kg or 400 kg reels
On request
- Traverse-wound coil inner diameter = 600 mm
- Basket

Bars

- Wood crate
- 250 to 1000 kg reels
- Coils
- Bars in wood crates (2 to 6 m)

The essential solution to numerous high-performance applications

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- [Aerospace](#)

Services tailored to your needs

- A quality system that meets the most demanding requirements and is recognised by ISO 9001, ISO 14001, ISO TS 16949 and ISO 9100 certifications.
- Our technical support and the experts at our research centre can help you develop your projects.



Swiss Steel Group

Production sites: Ugitech SA

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www.swisssteel-group.com

The information and data presented here in are typical or average values and are not a guarantee of maximum or minimum values. Only the information reported on our material certificates is to be considered as relevant.

Applications specifically suggested for material described herein are made for the purpose of illustration only to enable the reader to make its own evaluation and are not intended as warranties, either express or implied, of fitness for any purposes.