

# Technical Data Sheet

## UGICHROM® Chromium-plated stainless steel bars

24-10-2014 – REV02

### General presentation

UGICHROM® is the result of combining the high efficiency of micro-fissuring chromium plating with the technology of the most advanced stainless steel bars. The UGICHROM® product range is recommended for hydraulic and pneumatic mechanisms.

### General properties

#### Choice for performance:

- Low friction coefficient.
- High resistance to wear.
- Increased corrosion resistance.
- Micro-fissuring chromium plating guarantees excellent performance under extreme conditions of service.
- Improved machinability (up to +20% of productivity).
- High mechanical properties.
- Accurate geometrical and dimensional properties.

### Standards

The various UGICHROM® grades conform to harmonized European standard EN 10088-3.

### Recommended grades

UGICHROM® grades	Designation EN 10088-3	Symbolic designation	US and other designations	Mechanical properties	
				Rm	Rp
Standard grades					
4057	1.4057	X17CrNi16-2	431	900/1050	>700
4460	1.4460	X3CrNiMo27-5-2	329	620/880	>460
4418	1.4418	X4CrNiMo16-5-1		900/1100	>700
4542	1.4542	X5CrNiCuNb16-4	630	930/1100	>725
4307	1.4307	X2CrNi18-9	304(L)	>450	>175
4305	1.4305	X8CrNis18-9	303	>500	>190
4404	1.4404	X2CrNiMo17-12-2	316(L)	>500	>200
Special UGITECH PRECISION grades					
4021	1.4021	X20Cr13	420	800/950	>600
4028	1.4028	X30Cr13	420	850/1000	>650
4571	1.4571	X2CrNiMo17-12-2	316Ti	>500	>200
4462	1.4462	X2CrNiMoN22-5-3	F51	650/880	>450
4507	1.4507	X2CrNiMoCu25-6-3	52N+	760/890	>550
New stainless steel solutions					
4362	1.4362	X2CrNiN23-4	35N	650/880	>430



**Swiss Steel Group**

Production sites: Ugitech SA  
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### Technical characteristics:

The mechanical properties of UGICHROM® are suitable for all hydraulic applications:

CHARACTERISTICS	Standard product	Special product
Diameter tolerance	Iso f7	On request
Bar length dia. 12 to 19 mm	2900 mm +200/-0	On request
Bar length dia. 20 to 125 mm	6000 mm +/- 500 mm	On request
Roundness	< 1/2 f7 Iso	
Straightness (to EN 10278)	< 0.5 mm/ml	Up to 0.2 mm for dia. >30 mm
Roughness	Ra < 0.2 µm	Up to Ra < 0.08 µm
Chromium structure	Microcracked	
Sizes	Dia. 12 to 125 mm	On request
Thickness of the chromium dia. 12 to 19.5 mm	18 µm +/-3	Max. 50 µm
Thickness of the chromium dia. 20 to 115 mm	25 µm +/-5	Max. 100 µm

### Corrosion resistance

As UGICHROM® is "stainless in mass" there are no corrosion resistance problems over time, provided that the chosen grade is appropriate to the place of use.

### Passive layer

Stainless steels produce a very fine surface film of oxide consisting of chromium oxides and hydroxides a few Angströms thick. This oxide, commonly called a passive layer, protects the stainless steel against external attacks and gives it the property known as non-oxidability which guarantees the corrosion resistance of these alloys. The passive layer is an intrinsic part of the material, unlike the "Nickel-Chromium" coating deposited on carbon steels, which explains why stainless steel exhibits the basic corrosion resistance and adhesion advantages of chromium under harsh mechanical operating conditions (buckling). Once formed, this passive layer is completely stable since its thickness remains constant. The passive layer inhibits any exchange between the metal and the outside: in the event of damage to the material (scratch, cut, impact, drilling, deformation, etc.), it reforms spontaneously. This self-restructuring is also called "Repassivation".



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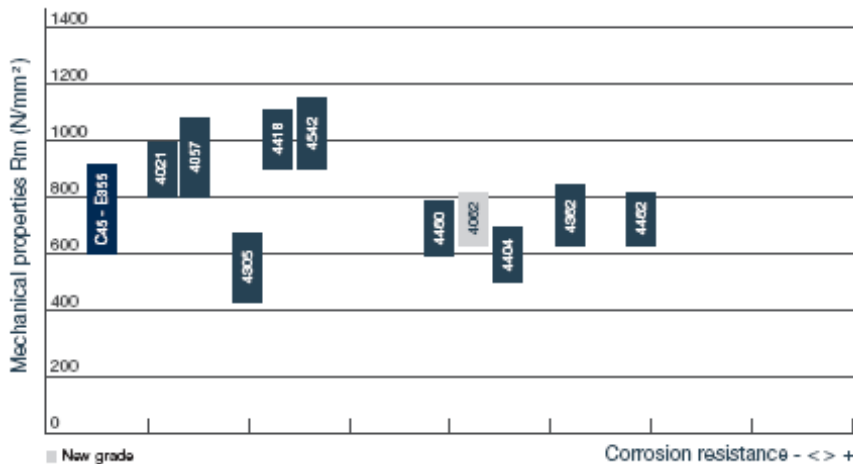
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### Choosing the most suitable grade

Only choosing the grade that is most appropriate to the operating environment increases the durability of hydraulic cylinders, depending on use. The following table shows how to obtain the best compromise between mechanical strength and corrosion resistance:



### Conditioning

The UGICHROM® product range offers a wide variety of conditioning options suitable for all customers' needs:

#### Individual protection:

- Without individual protection: in layers in crates, with or without separators
- Plastic rings Diameter 12 to 125 mm
- Recycled cardboard tube Diameter 14 to 125 mm
- Extruded plastic Diameter 12 to 110 mm

Possibility of continuous ink jet marking on individual extruded plastic protection.

#### Packaging:

- Banded, non-packaged products
- Ackilux package protection
- Reinforced NIMP15 treated wooden crate



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