EURAL
GNUTTI S.p.A.

Aluminium Bars

EURAL GNUTTI S.p.A.

Dear Customer,

Since 1968 EURAL Gnutti S.p.A. has manufactured semi finished products in aluminium and occupied a position of worldwide leadership in bars and rods. The production facilities include the foundry located in Pontevico, Brescia (Italy) and the extrusion plant in Rovato, Brescia (Italy). With a workforce of over 400 employees and built on an area covering 400.000 sqm, Eural possesses the latest state-of-the-art casting and extrusion equipment.

The passion for aluminium has pushed the Gnutti family to always achieve excellence for its products, to constantly invest in research and development and in the latest technologies so our customers receive the maximum for their applications.
The choice of the most suitable alloy is a crucial step that determines the success of a product. For this reason, EURAL has released this catalogue that gives for each alloy a detailed technical data sheet with all the parameters needed.
International standards leave the manufacturers too wide a margin of variability for creating each alloy. In practice this means that, for each alloy, it is possible to face significant differences in mechanical properties, with not always acceptable results on your final products. EURAL has generated a code that is more stringent than the international regulations and restricts further the oscillations within the same alloy, constantly guaranteeing homogeneous products to always achieve the best mechanical properties.

Eural Gnutti S.p.A. is since 2008 IATF 16949 (Automotive) and, since 2016, AS/EN/JISQ 9100 (Aerospace) certified that guarantees extremely high-quality systems. A modern and automatic system for ultrasonic tests certifies the absolute integrity of each and every billet produced in the foundry, according to class "A" of SAE AMS-STD-2154 regulations. At EURAL each production process is subject to quality controls which go beyond standard requirements.

EURAL firmly believes that dialogue with the customers, through technical and commercial staff, is fundamental to support the choice of the most suitable aluminium alloy, by offering to all customers availability and experience made along over 50 years of business in machining.

EURAL
GNUTTI S.p.A.

Fifty years after its foundation, EURAL Gnutti S.p.A. is the largest producer in the World of cold-finished/drawn bars. EURAL bases its success on this specific product and on developing free-cutting aluminium alloys for machine-shops. EURAL offers services to all its customers that makes the difference on all the competitors:

- Trade missions in more than 50 countries
- Assistance on choosing the proper alloy for each machining need
- Technicians supporting end-user customers worldwide to find out the best machining parameters and reach the best ever performance using EURAL bars
- Technical advice on managing every single step of the process, from planning to production.

EURAL - RESEARCH & DEVELOPMENT

EURAL Gnutti S.p.A. dedicates a significant and ever increasing investment in the development of new solutions for the industry.

New alloys **2033, 2077 & 6026^{LF} LEAD FREE** are the results of years of studies by the Research & Development department. International regulations ruling metal business (RoHS, ELV, REACH) are moving to a drastic limitation of lead (Pb) content in aluminium alloys and in other metals for machining as it is considered highly dangerous to human health and toxic for the environment.

These new solutions, compliant to the most restrictive limitations, do not affect machinability of EURAL bars guaranteeing productivity and quality without compromises.

GREEN

EURAL, aware of the importance of the World where we are living, proudly support the use of recycled aluminium to protect the environment, to reduce the energy consumption needed to produce semis from primary aluminium and, therefore, significantly reduce CO2 emissions thanks to the high level of recycled material in its LEAD FREE alloys.

2033 by EURAL
LEAD FREE

GREEN

According to:
RoHS II, ELV, REACH directives

FREE CUTTING
Aluminium alloy

EURAL
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Applications
2033 LEAD FREE by EURAL is an alloy with multiple potential applications; it gives excellent machinability thanks to very thin chip forming, high mechanical properties, better anodizing and weldability attitude if compared to alloys such as 2011, 2007, 2030.

2033 LEAD FREE by EURAL is strongly recommended as an alloy to replace 2011, 2007, 2030 in view of the incoming restrictions on lead content (RoHS, ELV, REACH).

Green choice
For many years RoHS II regulations permit, with an exception, a maximum lead content in aluminium alloys up to 0,4% by weight. Such limit is under discussion for a further reduction.
REACH recently included lead in the SVHC list as highly toxic element for human health.
2033 LEAD FREE by EURAL is ready in anticipation of any possible future scenario being free of lead.

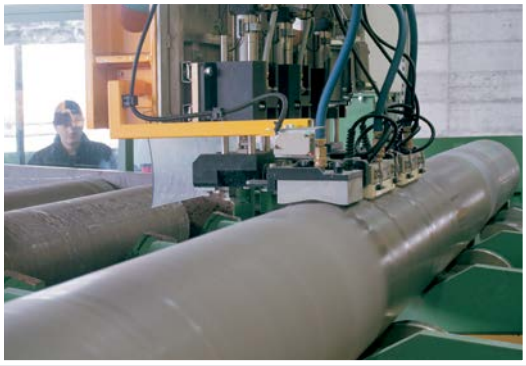
GREEN
Alloy with high recycled aluminium content.

2033 LEAD FREE by EURAL is the result of long and accurate work by EURAL Research & Development Department in order to make available an aluminium alloy with high machinability and having better features than others available in the market today.

High Machinability
2033 LEAD FREE by EURAL has been developed specifically for being machined on high-speed automatic lathes thanks to its excellent chip forming performance.

No tin
Today there are several 2000 series alloys containing tin (Sn) which is well known to cause weakness in machined parts when submitted to high stress or high temperatures (≥160°C).
Tin, due to its brittle nature, has the dangerous tendency to suddenly break without significant previous deformation (strain).
2033 LEAD FREE by EURAL does not contain tin.

Ultrasonic tested billets
All semi-finished products in 2033 LEAD FREE by EURAL are made by Class A ultrasonic tested billets (SAE AMS STD 2154).



Production range
2033 LEAD FREE by EURAL is available both as drawn and extruded condition.
Drawn round bars Ø 5 - 76,2mm
Tempers T3, T351 and T8.
Extruded round bars Ø 30 - 254mm
Tempers T6

Available also in square, flat and hexagonal bars.
A wide range of drawn bars is also available in h9 tolerance.

Alternative to:
2033 LEAD FREE by EURAL is the best alternative to several alloys such as 2007, 2030, 2011, 2028A, 2041, 2044, 7020.
2033 LEAD FREE by EURAL is the best replacement of brass, due to its excellent machinability and high mechanical properties. Moreover, due to future drastic reduction of lead (Pb) content in any metals for machining and, having a specific gravity of 1/3 compared to brass, it results extremely convenient costwise.

RoHS & REACH and other metals
The imminent restrictions about maximum lead content allowed will affect all products obtained by mechanical processing, including steel and brass. These metal, without the lead which was a guarantee of good or acceptable machinability, will not be allowed anymore. For all these cases, the only option in terms of machinability is aluminium and the best choice available today is 2033 LEAD FREE by EURAL.

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EURAL GNUTTI S.p.A.

2033 by EURAL LEAD FREE

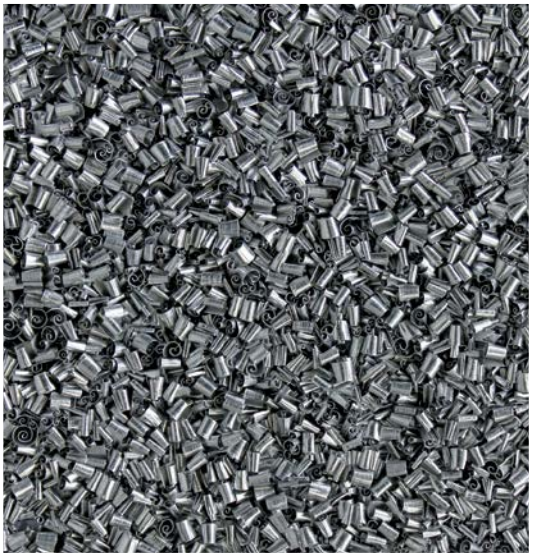
GREEN

Colour code EU pink

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	5 ÷ 76,2	10 ÷ 65	Thick. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	30 ÷ 165	Thick. 30 ÷ 127	-

According to EU directives:
2000/53/EU - 2011/65/EU (RoHS II)
Ready to imminent restrictions on lead content because LEAD FREE



PRESENTATION

This alloy has been developed by EURAL and it is one of the best for high speed automatic lathes. It gives the following advantages:

- Easy machining
- Outstanding chip forming performance (thin chip)
- Longer tool life
- High mechanical properties
- Better anodizing and weldability attitude compared to alloys 2011, 2007, 2030.

This alloy does not contain neither lead (Pb) nor tin (Sn) and therefore it is the best option for the production of parts complying current and incoming possible restrictions of lead (RoHS, ELV, REACH).

Main applications: automotive industry, electric and electronic industry, precision machining, defense, forging, screws, bolts, nuts, threaded parts of thin thickness.

Properties	T3/T6	T8
Machinability	■■■■■	■■■■■
Protective anodizing	■■	■■
Decorative anodizing	■■	■■
Hard anodizing	■■	■■
Resistance to atmospheric corrosion	■■	■■
Resistance to marine corrosion	■	■
MIG-TIG weldability	■	■
Resistance weldability	■■■	■■■
Brazing weldability	■	■
Plastic formability when cold	■■	■
Plastic formability when hot	■■	■■

Legend

■ Excellent ■ Good ■ Acceptable ■ Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,10 ÷ 1,20
Fe	≤ 0,70
Cu	2,20 ÷ 2,70
Mn	0,40 ÷ 1,00
Mg	0,20 ÷ 0,60
Cr	≤ 0,15
Ni	≤ 0,15
Zn	≤ 0,50
Ti	≤ 0,10
Bi	0,05 ÷ 0,80
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg/dm³	2,77
Modulus of elasticity	MPa	70.000
Coefficient of thermal expansion	x10⁻⁶/°C	22,9
Thermal conductivity at 20°C	W/mk	T3: 151 T8: 173
Typical electrical resistivity at 20°C	Ω mm²/m	T3: 0,046 T8: 0,046

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Minimum mechanical properties						
	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T3	≤ 30	370	240	7	95
	T3	30 < D ≤ 80	340	220	7	95
	T351	≤ 80	370	240	5	95
	T8	≤ 80	370	270	8	95
Extruded	T6	≤ 80	370	250	8	95
	T6	80 < D ≤ 250	340	220	8	95

M070201.02 GB REV.09 01/09/22

2011 by EURAL

Colour code
EU red

Colour code
USA brown

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)

EURAL GNUTTI S.p.A.

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	5 ÷ 76,2	10 ÷ 65	Thick. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	30 ÷ 165	Thick. 30 ÷ 127	–

PRESENTATION

This alloy is the most often selected for high speed automatic lathes.
It offers the following advantages:
- easy machining with any equipment;
- cutting stress lower than most of other alloys;
- longer life of cutting tools;
- cutting area always clean due to very thin chip;
- high mechanical properties;
- possibility to anodize finished parts in several colours *.

Due to imminent restrictions on lead content in metals for machining, 2011 alloy will no longer be suitable for the production of RoHS, REACH & ELV-compliant components. EURAL recommends the free-cutting alloy 2033 LEAD FREE as the only option complying with current directives and ready for any possible future scenarios.

Main applications: screws, bolts, nuts, threaded parts.

* To get an optimal surface finishing of anodized pieces, we suggest use suitable lubricants during machining.

Properties	T3/T6	T8
Machinability	■■■■■	■■■■■
Protective anodizing	■■■□□	■■□□□
Decorative anodizing	■□□□□	■□□□□
Hard anodizing	■□□□□	■□□□□
Resistance to atmospheric corrosion	■■□□□	■■□□□
Resistance to marine corrosion	■□□□□	■□□□□
MIG-TIG weldability	■□□□□	■□□□□
Resistance weldability	■■□□□	■■□□□
Brazing weldability	■□□□□	■□□□□
Plastic formability when cold	■■□□□	■□□□□
Plastic formability when hot	■■□□□	■■□□□

Legend

■■■■■ Excellent ■■■■□ Good ■□□□□ Acceptable ■□□□□ Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	≤ 0,40
Fe	≤ 0,70
Cu	5,00 ÷ 6,00
Mn	
Mg	
Cr	
Ni	
Zn	≤ 0,30
Ti	
Pb	0,20 ÷ 0,40
Bi	0,20 ÷ 0,60
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg/dm³	2,83
Modulus of elasticity	MPa	70.000
Coefficient of thermal expansion	x10⁻⁶/°C	22,9
Thermal conductivity at 20°C	W/mk	T3: 151 T8: 172
Typical electrical resistivity at 20°C	Ω mm²/m	T3: 0.043 T8: 0.038

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T3	≤ 40	320	270	10	90
	T3	40 < D ≤ 50	300	250	10	90
	T3	50 < D ≤ 80	280	210	10	90
	T8	≤ 80	370	270	8	115
Extruded	T6	≤ 75	310	230	8	110
	T6	75 < D ≤ 200	295	195	6	110

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EURAL GNUTTI S.p.A.

2007 by EURAL

Meets the requirements of alloy 2030 (EN AW2030)

Colour code
EU black

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	14 ÷ 76,2	20 ÷ 65	Thick. 12 ÷ 55	20 ÷ 63,5
Extruded	30 ÷ 254	30 ÷ 165	Thick. 30 ÷ 127	–

PRESENTATION

Alloy 2007 and 2030 have high mechanical properties and excellent machinability. However, both have a particularly high lead content, which makes them unsuitable for the production of components that comply with the European RoHS and ELV directives.
For such applications, and due to the high toxicity of lead demonstrated by the ECHA (REACH regulation), EURAL suggests the use of 2033 LEAD FREE, which has the same mechanical characteristics and excellent machinability (very thin chip formation).

Main applications: screws, bolts, nuts, threaded parts.

Properties	T3/T4
Machinability	
Protective anodizing	
Decorative anodizing	
Hard anodizing	
Resistance to atmospheric corrosion	
Resistance to marine corrosion	
MIG-TIG weldability	
Resistance weldability	
Brazing weldability	
Plastic formability when cold	
Plastic formability when hot	

Legend

Excellent | Good | Acceptable | Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	≤ 0,80
Fe	≤ 0,80
Cu	3,30 ÷ 4,60
Mn	0,50 ÷ 1,00
Mg	0,40 ÷ 1,80
Cr	≤ 0,10
Ni	≤ 0,20
Zn	≤ 0,80
Ti	≤ 0,20
Pb	0,80 ÷ 1,00
Bi	≤ 0,20
Sn	≤ 0,20
Others	Each 0,10 Total 0,30
Al	Remainder

Physical properties		
Density	Kg/dm³	2,85
Modulus of elasticity	MPa	71.000
Coefficient of thermal expansion	x10⁻⁶/°C	23,5
Thermal conductivity at 20°C	W/mk	140
Typical electrical resistivity at 20°C	Ω mm²/m	0,057

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Minimum mechanical properties						
	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T3	≤ 30	370	240	7	95
	T3	30 < D ≤ 80	340	220	6	95
	T351	≤ 80	370	240	5	95
Extruded	T4, T4510, T4511	≤ 80	370	250	8	95
	T4, T4510, T4511	80 < D ≤ 200	340	220	8	95
	T4, T4510, T4511	200 < D ≤ 250	330	210	7	95

M070201.02 GB REV.09 01/09/22

2077 by EURAL
LEAD FREE

GREEN

According to:
EU directives RoHS II, ELV, REACH

FREE CUTTING
Aluminium alloy

EURAL
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Applications
2077 LEAD FREE by EURAL is a free-cutting aluminium alloy with the best machinability within the hard alloys and with extremely high mechanical properties. It has been developed by Eural Gnutti and can overperform alloys as 2017, 2017A, 2014, 2014A, 2024, 7020 and 7022 and can compete with 7075 alloy.
Its excellent machinability, a guarantee of high yield/productivity, has no comparison within the hard aluminium alloys.

Green choice
For many years RoHS II regulations permit, with an exception, a maximum lead content in aluminium alloys up to 0,4% by weight. Such limit is under discussion for a further reduction.
REACH recently included lead in SVHC list as highly toxic element for human health.
2077 LEAD FREE by EURAL is ready in anticipation of any possible future scenario because it is free of lead.

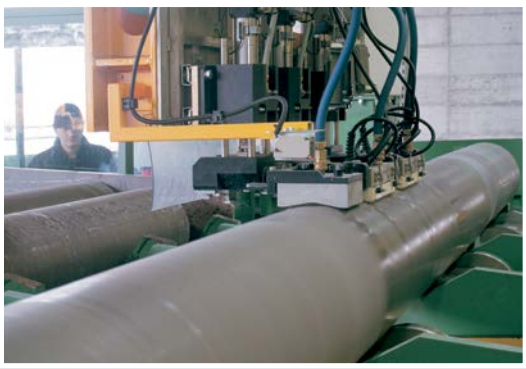
GREEN
Alloy with high recycled aluminium content.

2077 LEAD FREE by EURAL is member of free-cutting alloys, lead free, developed by the Eural Research & Development department and born thanks to the never-ending vision of the Gnutti family. It's an alloy which was missing until today, an alloy that mixes very high mechanical properties and excellent machinability.

High Machinability
2077 LEAD FREE by EURAL has been specifically developed to be machined on high speed automatic lathes thanks to its thin chip formation.

No tin
Today there are several 2000 series alloys with contain tin (Sn) which is well known to cause weakness and cracking of machined parts when submitted to stress or high temperatures (> 160°C).
Tin, due to its brittle nature, has the dangerous tendency to break without significant previous deformation (strain).
2077 LEAD FREE by EURAL does not contain tin.

Ultrasonic tested billets
All semi-finished products in 2077 LEAD FREE by EURAL are made by Class A ultrasonic tested billets (SAE AMS-STD-2154).



Production range
2077 LEAD FREE by EURAL is available both as drawn and extruded condition.
Drawn round bars Ø 10-76,2mm
Temper T6
Extruded round bars Ø 30 – 254mm
Temper T6 and T4

Available also in square, rectangular and hexagonal bars.
A wide range of drawn bars are also available in h9 tolerance.

Alternative alloy to:
2077 LEAD FREE by EURAL is the best alternative option to many hard alloys such as 2017, 2017A, 2014, 2014A, 2024, 7020, 7022 and 7075.
Furthermore, thanks to a very high yield strength (Rp0.2), it can be an option to replace, depending on the final application, certain stainless steel (AISI 303/4/4L/316/L), cast iron (GH 350/500) and brass (CW608N R360).

RoHS & REACH and other metals
The imminent restrictions about the maximum lead content allowed will affect all products obtained by mechanical processing, including steel, cast iron and brass. These metals, without the lead which was a guarantee of good or acceptable machinability, will not be allowed anymore. For all these cases, the only option in terms of machinability is aluminium and the best choice available today is 2077 LEAD FREE by EURAL.

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EURAL GNUTTI S.p.A.

2077 by EURAL LEAD FREE

GREEN

Colour code EU sand

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	10 ÷ 76,2	To be defined	To be defined	To be defined
Extruded	30 ÷ 254	30 ÷ 165	Thick. 30 ÷ 127	-

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)
Ready to imminent restrictions on lead content because LEAD FREE

PRESENTATION

This alloy has very high mechanical properties, high fatigue strength, good forging attitude and excellent machinability on high-speed lathes.
Eural alloy 2077 is the first and only hard alloy with superior characteristics to 2024, which guarantees a chip formation comparable to 2011 and 2033, thus very high productivity, tighter tolerances, better surface roughness and longer tool life.
Eural 2077 is the best alternative to alloys 2017, 2017A, 2014, 2014A, 2024, 7020, 7022, 7075.
Due to its high mechanical properties and excellent machinability, it can replace certain types of steel and cast iron.

Main applications: valves, bolts and nuts, threaded bars, structural and high resistance components for aviation.

Properties	T6	T4
Machinability	■■■■■	■■■■■
Protective anodizing	■■□□□	■■□□□
Decorative anodizing	■■□□□	■■□□□
Hard anodizing	■■□□□	■■□□□
Resistance to atmospheric corrosion	■■□□□	■■□□□
Resistance to marine corrosion	■□□□□	■□□□□
MIG-TIG weldability	■■□□□	■■□□□
Resistance weldability	■■■□□	■■■□□
Brazing weldability	■□□□□	■□□□□
Plastic formability when cold	■■□□□	■□□□□
Plastic formability when hot	■■□□□	■■■□□

Legend

■■■■■ Excellent ■■■■□ Good ■■□□□ Acceptable ■□□□□ Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,40 ÷ 1,00
Fe	≤ 0,70
Cu	4,00 ÷ 5,00
Mn	0,60 ÷ 1,20
Mg	0,60 ÷ 1,20
Cr	≤ 0,20
Ni	≤ 0,20
Zn	≤ 0,25
Ti	≤ 0,15
Ag, Li, Zr	Each ≤ 0,15
Bi	0,20 ÷ 0,90
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm³	2,81
Modulus of elasticity	MPa	77.000
Coefficient of thermal expansion	x10⁻⁶ / °C	22,9
Thermal conductivity at 20°C	W / mk	T6: 151 / T4: 171
Typical electrical resistivity at 20°C	Ω mm² / m	T6: 0,045 / T4: 0,052

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6/T651	≤ 80	480	400	5	130
Extruded	T4/T4511	≤ 75	400	270	10	105
	T4/T4511	75 < D ≤ 150	390	260	9	105
	T4/T4511	150 < D ≤ 200	370	240	8	105
	T4/T4511	200 < D ≤ 254	360	220	7	105
	T6/T6511	≤ 150	455	380	5	130
	T6/T6511	150 < D ≤ 200	420	280	8	120
	T6/T6511	200 < D ≤ 254	400	270	8	110

**HBW only for indicative purposes*

M070201.02 GB REV.09 01/09/22

2017A by EURAL

Colour code
EU green

EURAL GNUTTI S.p.A.

According to EU directives:
200/53/EU (ELV) - 2011/65/EU (RoHS II)

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	14 ÷ 76,2	20 ÷ 65	Thick. 12 ÷ 55	20 ÷ 63,5
Extruded	30 ÷ 254	30 ÷ 165	Thick. 30 ÷ 127	–

PRESENTATION

This alloy has high mechanical properties and excellent resistance to fatigue.
During machining, it creates quite long chips, therefore it is not well suited for automatic lathes.
It can be replaced by 2033 LEAD FREE or 2077 LEAD FREE, having higher mechanical properties, both guarantying a much better machinability and higher productivity.

Main applications: screws and bolts, high structural resistance components for aviation and defense.

Properties	T3/T4
Machinability	●●●○○
Protective anodizing	●●●○○
Decorative anodizing	●○○○○
Hard anodizing	●○○○○
Resistance to atmospheric corrosion	●●●○○
Resistance to marine corrosion	●○○○○
MIG-TIG weldability	●●●○○
Resistance weldability	●●●●○
Brazing weldability	●○○○○
Plastic formability when cold	●○○○○
Plastic formability when hot	●●●○○

Legend

Excellent | Good | Acceptable | Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,20 ÷ 0,80
Fe	≤ 0,70
Cu	3,50 ÷ 4,50
Mn	0,40 ÷ 1,00
Mg	0,40 ÷ 1,00
Cr	≤ 0,10
Ni	
Zn	≤ 0,25
Zr+Ti	≤ 0,25
Pb	
Bi	
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm³	2,79
Modulus of elasticity	MPa	75.000
Coefficient of thermal expansion	x10⁻⁶ / °C	23,6
Thermal conductivity at 20°C	W / mk	134
Typical electrical resistivity at 20°C	Ω mm² / m	0,051

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T3	≤ 80	400	250	10	105
	T351	≤ 80	400	250	8	105
Extruded	T4, T4510, T4511	≤ 75	400	270	10	105
	T4, T4510, T4511	75 < D ≤ 150	390	260	9	105
	T4, T4510, T4511	150 < D ≤ 200	370	240	8	105
	T4, T4510, T4511	200 < D ≤ 250	360	220	7	105

M070201.02 GB REV.09 01/09/22

2024 by EURAL

GNUTTI S.p.A.

Colour code
EU red

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬣
Drawn	20 ÷ 76,2	–	–	–
Extruded	30 ÷ 254	50 ÷ 165	Thick. 30 ÷ 127	–

According to EU directives:
200/53/EU (ELV) - 2011/65/EU (RoHS II)

PRESENTATION

This alloy has high mechanical properties and excellent resistance to fatigue.
During machining, it creates quite long chips, therefore it is not well suited for automatic lathes.
For a much better machinability and higher mechanical properties, EURAL suggests to use alloy 2077 LEAD FREE.

Main applications: screws and bolts, high structural resistance components for aviation and defense.

Properties	T3
Machinability	
Protective anodizing	
Decorative anodizing	
Hard anodizing	
Resistance to atmospheric corrosion	
Resistance to marine corrosion	
MIG-TIG weldability	
Resistance weldability	
Brazing weldability	
Plastic formability when cold	
Plastic formability when hot	

Legend

Excellent | Good | Acceptable | Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	≤ 0,50
Fe	≤ 0,50
Cu	3,80 ÷ 4,90
Mn	0,30 ÷ 0,90
Mg	1,20 ÷ 1,80
Cr	≤ 0,10
Ni	
Zn	≤ 0,25
Ti	≤ 0,15
Pb	
Bi	
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm³	2,79
Modulus of elasticity	MPa	70.000
Coefficient of thermal expansion	x10⁻⁶ / °C	23,1
Thermal conductivity at 20°C	W / mk	120
Typical electrical resistivity at 20°C	Ω mm² / m	0,057

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T3	10 < D ≤ 80	425	290	9	120
	T351	≤ 80	425	310	8	120
	T6	≤ 80	425	315	5	125
	T651	≤ 80	425	315	4	125
	T8	≤ 80	455	400	4	130
	T851	≤ 80	455	400	3	130
Extruded	T3, T3510, T3511	≤ 50	450	310	8	120
	T3, T3510, T3511	50 < D ≤ 100	440	300	8	120
	T3, T3510, T3511	100 < D ≤ 200	420	280	8	120
	T3, T3510, T3511	200 < D ≤ 250	400	270	8	120
	T8, T8510, T8511	≤ 150	455	380	5	130

M070201.02 GB REV.09 01/09/22

6026LF by EURAL
LEAD FREE

GREEN

According to
RoHS II, ELV, REACH directives

FREE CUTTING
Aluminium alloy

EURAL
GNUTTI S.p.A.

Application fields
6026LF LEAD FREE by EURAL is extremely versatile due to its medium-high mechanical properties, good attitude to anodizing, good weldability, good attitude to forging and good corrosion resistance.
6026LF LEAD FREE by EURAL is suitable for components used in several industries such as automotive, electric and electronics, valves, oleo-hydraulic, pneumatics, defence, furniture & lighting.

Green choice
For many years RoHS II regulations permit, with an exception, a maximum lead content in aluminium alloys up to 0,4% by weight. Such limit is under discussion for a further reduction.
REACH recently included lead in SVHC list as highly toxic element for human health.
6026LF LEAD FREE by EURAL is ready in anticipation to any possible future changes because it is free of lead.

GREEN
Alloy with high recycled aluminium content.

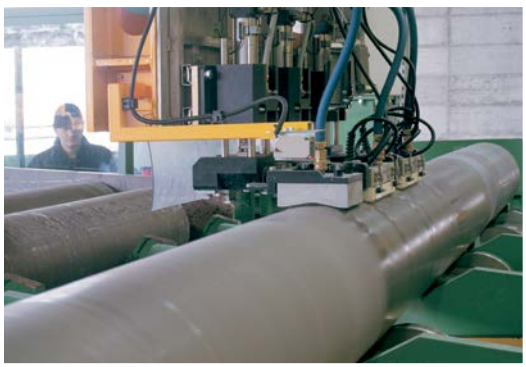
Birth of 6026LF

6026LF LEAD FREE by EURAL is an innovative alloy designed and developed by Eural Gnutti S.p.A. R&D laboratories in order to meet the strictest requirements in critical automotive applications such as brake systems.
Today 6026LF LEAD FREE by EURAL is approved for several different business applications.

High machinability
6026LF LEAD FREE by EURAL is particularly suitable for being machined on high speed automatic lathes thanks to its thin chip formation.

No tin
In many 6000 series alloys lead (Pb) has been replaced by tin (Sn) which, as it has been proved, can cause weakness and cracking of the machined parts when submitted to stress and high temperature (>160°C).
Tin, due to its brittle nature, has the dangerous tendency to break without significant previous deformation (strain).
6026LF LEAD FREE by EURAL does not contain tin.

Ultrasonic tested billets
All semi-finished products in 6026LF LEAD FREE by EURAL are made of 100% ultrasonic tested billets according to **SAE AMS-STD-2154 class A.**



Production program
6026LF LEAD FREE by EURAL is available in drawn or extruded conditions.
Drawn round bars Ø 6 – 76,2mm
Temper T6, T8 and T9.
Extruded round bars Ø 30 – 254mm
Temper T6.
Square, rectangular, hexagonal bars are available.
A wide range of drawn bars are also available in h9 tolerance.

Alternative to:
6026LF LEAD FREE by EURAL is the best alternative to several aluminium alloys such as 2007, 2011, 2015, 2028, 2030, 2044, 6012, 6012A, 6020, 6021, 6023, 6028, 6033, 6040, 6041, 6042, 6061, 6065, 6082, 6262, 6064A, 6262A, 6351, and 7020.
6026LF LEAD FREE by EURAL is an excellent replacement of brass due to its excellent machinability, good attitude to forging, and medium-high mechanical properties. Moreover, since 6026LF has a specific gravity of 1/3 compared to brass, it results extremely convenient costwise.

Compatibility in drawings
Original alloy 6026 was born in 2002 and has been registered by Eural to the Aluminum Association and to EN standards with a lead content of Pb ≤ 0,4% (0 - 0,4%).
Therefore, 6026LF LEAD FREE by EURAL does not need any variations in drawings where 6026 is already indicated.

Lead (Pb) and tin (Sn) can be present as traces within the limits of 0,05%, as any other chemical element, as prescribed by international regulations.

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EURAL GNUTTI S.p.A.

6026LF by EURAL LEAD FREE

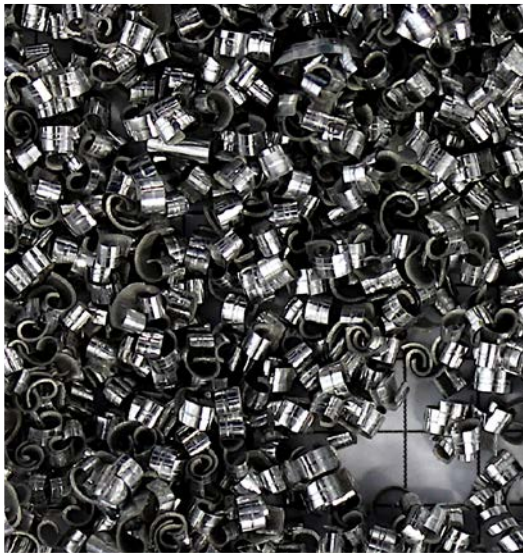
GREEN

Colour code EU white

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	6 ÷ 76,2	10 ÷ 65	Spess. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	50 ÷ 165	Spess. 30 ÷ 157	–

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)
Ready to imminent restrictions on lead content because LEAD FREE



PRESENTATION

Alloy 6026LF LEAD FREE is the best option for machinability since recent limitations by RoHS (2018/740/EU) and REACH on lead content allowance (Pb ≤ 0,1%). It is particularly suitable for being machined on high-speed automatic lathes. 6026LF LEAD FREE offers:

- Excellent chip forming performance
- Good attitude to anodizing, big thickness also
- Good corrosion resistance
- Excellent surface finishing (low roughness)
- Good for forging

It is definitely a better solution than aluminium+Tin (Sn) alloys because free from any limitations on possible application (final parts subjected to high stress, low or high temperatures). It can replace 2007, 2011, 2015, 2028, 2030, 2044, 6012, 6012A, 6020, 6021, 6023, 6028, 6033, 6040, 6041, 6042, 6061, 6065, 6082, 6262, 6064A, 6262A, 6351, 7020 alloys.

Main applications: automotive industry, electric and electronic industry, hot forging, screws, bolts, nuts, threaded parts, furniture & lighting.

Properties	T6	T8/T9
Machinability	■■■□	■■■□
Protective anodizing	■■■□	■■■□
Decorative anodizing	■■■□	■■■□
Hard anodizing	■■■■	■■■■
Resistance to atmospheric corrosion	■■■□	■■■□
Resistance to marine corrosion	■■□□	■■□□
MIG-TIG weldability	■■■□	■■■□
Resistance weldability	■■■□	■■■□
Brazing weldability	■■□□	■■□□
Plastic formability when cold	■■□□	■□□□
Plastic formability when hot	■■■□	■■■□

Legend

■■■□ Excellent ■■□□ Good ■□□□ Acceptable □□□□ Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,60 ÷ 1,40
Fe	≤ 0,70
Cu	0,20 ÷ 0,50
Mn	0,20 ÷ 1,00
Mg	0,60 ÷ 1,20
Cr	≤ 0,30
Ni	
Zn	≤ 0,30
Ti	≤ 0,20
Sn	≤ 0,05
Pb	≤ 0,05* (traces)
Bi	0,50 ÷ 1,50
Others	Each 0,05 Total 0,15
Al	Remainder

**6026 is registered with Pb ≤ 0,40*

Physical properties		
Density	Kg/dm³	2,72
Modulus of elasticity	MPa	75.500
Coefficient of thermal expansion	x10⁻⁶/°C	23,4
Thermal conductivity at 20°C	W/mk	172
Typical electrical resistivity at 20°C	Ω mm²/m	0,039

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Minimum mechanical properties						
	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6	≤ 80	370	300	8	95
	T8	≤ 80	345	315	4	95
	T9	≤ 80	360	330	4	95
Extruded	T6	≤ 140	370	300	8	95
	T6	140 < D ≤ 200	340	250	8	90
	T6	200 < D ≤ 250	300	200	8	90

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6064A by EURAL

Colour code
EU yellow

Colour code
USA orange

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)

EURAL GNUTTI S.p.A.

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	6 ÷ 76,2	10 ÷ 65	Thick. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	50 ÷ 165	Thick. 30 ÷ 127	–

PRESENTATION

This alloy has good machinability and high properties. Moreover it has resistance to corrosion and suitability to hard, protective and decorative anodizing.
Its original chemical composition oblige to have lead (Pb) content within this range 0,2-0,4%. Once the imminent restrictions by REACH & RoHS on lead content in metals for machining will be in force, alloy 6064A will not be conform anymore.
Eural strongly suggest as alternative option, compliant to current and to any possible future restrictions on lead (Pb) 6026^{LF} LEAD FREE.

Main applications: particulars for braking systems for automotive, structural components for civil constructions, railroad and heavy street vehicles.

Properties	T6	T8/T9
Machinability	■■■□□	■■■□□
Protective anodizing	■■■□□	■■■□□
Decorative anodizing	■■■□□	■■■□□
Hard anodizing	■■■■□	■■■■■
Resistance to atmospheric corrosion	■■■□□	■■■□□
Resistance to marine corrosion	■■□□□	■■□□□
MIG-TIG weldability	■■■□□	■■■□□
Resistance weldability	■■■□□	■■■□□
Brazing weldability	■■□□□	■■□□□
Plastic formability when cold	■■□□□	■□□□□
Plastic formability when hot	■■■□□	■■■□□

Legend

■■■■■ Excellent ■■■□□ Good ■□□□□ Acceptable □□□□□ Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,40 ÷ 0,80
Fe	≤ 0,70
Cu	0,15 ÷ 0,40
Mn	≤ 0,15
Mg	0,80 ÷ 1,20
Cr	0,04 ÷ 0,14
Ni	
Zn	≤ 0,25
Ti	≤ 0,15
Pb	0,20 ÷ 0,40
Bi	0,40 ÷ 0,80
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm^3	2,72
Modulus of elasticity	MPa	69.000
Coefficient of thermal expansion	x10^{-6} / °C	23,4
Thermal conductivity at 20°C	W / mk	172
Typical electrical resistivity at 20°C	Ω mm^2 / m	0,039

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6	≤ 80	310	260	8	95
	T8	≤ 80	345	315	4	95
	T9	≤ 80	360	330	4	95
Extruded	T6, T6510, T6511	≤ 140	310	260	8	95
	T6, T6510, T6511	140 < D ≤ 250	260	240	8	90

M070201.02 GB REV.09 01/09/22

EURAL GNUTTI S.p.A.

6262A by EURAL

Colour code
EU green

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	6 ÷ 76,2	10 ÷ 65	Thick. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	50 ÷ 165	Thick. 30 ÷ 127	–

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)

PRESENTATION

This is an ecologic alloy, it does not have lead, it has good machinability and high mechanical characteristics. Moreover, it has a good resistance to corrosion and suitability to hard, protective and decorative anodizing.
It is an alternative to 6012, 6262, 6020, 6023 alloys.

Main applications: machining on high-speed automatic lathes, particulars for automotive applications, automatic transmission shafts, valves and clutches, hydraulic parts.

NOTE: it is particularly suitable for the realization of parts not subject to extreme heat solicitations (max 160°C) and therefore it is appropriate for automotive parts as automatic transmission shafts.
For applications at higher temperatures, we suggest to use 6026^{LF} LEAD FREE by EURAL.

Properties	T6	T8/T9
Machinability	■■■□	■■■□
Protective anodizing	■■■□	■■■□
Decorative anodizing	■■■□	■■■□
Hard anodizing	■■■■	■■■■
Resistance to atmospheric corrosion	■■■□	■■■□
Resistance to marine corrosion	■■□□	■■□□
MIG-TIG weldability	■■■□	■■■□
Resistance weldability	■■■□	■■■□
Brazing weldability	■■□□	■■□□
Plastic formability when cold	■■□□	■□□□
Plastic formability when hot	■■□□	■■□□

Legend

■■■■ Excellent ■■■□ Good ■■□□ Acceptable ■□□□ Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,40 ÷ 0,80
Fe	≤ 0,70
Cu	0,15 ÷ 0,40
Mn	≤ 0,15
Mg	0,80 ÷ 1,20
Cr	0,04 ÷ 0,14
Ni	
Zn	≤ 0,25
Ti	≤ 0,10
Bi	0,40 ÷ 0,90
Sn	0,40 ÷ 1,00
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm^3	2,72
Modulus of elasticity	MPa	69.000
Coefficient of thermal expansion	x10^{-6} / °C	23,4
Thermal conductivity at 20°C	W / mk	172
Typical electrical resistivity at 20°C	Ω mm^2 / m	0,038

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Minimum mechanical properties						
	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6	≤ 80	290	240	10	-
	T8	≤ 50	345	315	4	-
	T9	≤ 50	360	330	4	-
Extruded	T6	≤ 220	260	240	10	75

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6082 by EURAL

Colour code
EU turquoise

EURAL GNUTTI S.p.A.

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	6 ÷ 76,2	10 ÷ 65	Thick. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	30 ÷ 165	Thick. 30 ÷ 127	–

PRESENTATION

This alloy has medium mechanical properties, but high resistance to corrosion and excellent attitude to weldability, hot forging and anodizing.

Main applications: highly stressed structural parts for ground and nautical means of transport, anti-impact lateral bars, door frame, space frame and sub frame for cars, hydraulic systems, stairs and scaffoldings, platforms, screws and rivets, particulars for nuclear plants, food industry.

Properties	T6
Machinability	
Protective anodizing	
Decorative anodizing	
Hard anodizing	
Resistance to atmospheric corrosion	
Resistance to marine corrosion	
MIG-TIG weldability	
Resistance weldability	
Brazing weldability	
Plastic formability when cold	
Plastic formability when hot	

Legend

Excellent | Good | Acceptable | Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,70 ÷ 1,30
Fe	≤ 0,50
Cu	≤ 0,10
Mn	0,40 ÷ 1,00
Mg	0,60 ÷ 1,20
Cr	≤ 0,25
Ni	
Zn	≤ 0,20
Ti	≤ 0,10
Pb	
Bi	
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm³	2,71
Modulus of elasticity	MPa	69.000
Coefficient of thermal expansion	x10⁻⁶ / °C	24
Thermal conductivity at 20°C	W / mk	167
Typical electrical resistivity at 20°C	Ω mm² / m	0,037

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6	≤ 80	310	255	10	95
Extruded	T6	≤ 150	310	260	8	95
	T6	150 < D ≤ 200	280	240	6	95
	T6	200 < D ≤ 250	270	200	6	95

M070201.02 GB REV.09 01/09/22

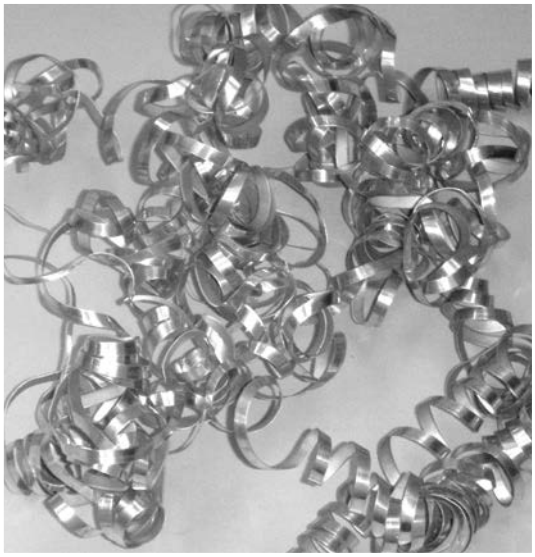
6061 by EURAL

Colour code
EU blue

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	6 ÷ 76,2	10 ÷ 65	Thick. 12 ÷ 55	10 ÷ 63,5
Extruded	30 ÷ 254	50 ÷ 165	Thick. 30 ÷ 127	–

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)



PRESENTATION

This alloy has medium mechanical properties, but high resistance to corrosion and excellent attitude to weldability, hot forging and anodizing.

Main applications: highly stressed structural parts for ground and nautical means of transport, anti-impact lateral bars, door frame, space frame and sub frame for cars, hydraulic systems, stairs and scaffoldings, platforms, screws and rivets, particulars for nuclear plants, food industry.

Properties	T6
Machinability	
Protective anodizing	
Decorative anodizing	
Hard anodizing	
Resistance to atmospheric corrosion	
Resistance to marine corrosion	
MIG-TIG weldability	
Resistance weldability	
Brazing weldability	
Plastic formability when cold	
Plastic formability when hot	

Legend

Excellent | Good | Acceptable | Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	0,40 ÷ 0,80
Fe	≤ 0,70
Cu	0,15 ÷ 0,40
Mn	≤ 0,15
Mg	0,80 ÷ 1,20
Cr	0,04 ÷ 0,35
Ni	
Zn	≤ 0,25
Ti	≤ 0,15
Pb	
Bi	
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm³	2,71
Modulus of elasticity	MPa	69.000
Coefficient of thermal expansion	x10⁻⁶ / °C	23,5
Thermal conductivity at 20°C	W / mk	173
Typical electrical resistivity at 20°C	Ω mm² / m	0,037

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Minimum mechanical properties						
	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6	≤ 80	290	240	10	95
Extruded	T6	≤ 200	260	240	8	95

M070201.02 GB REV.09 01/09/22

7075 by EURAL

Colour code
EU violet

Colour code
USA black

According to EU directives:
2000/53/EU (ELV) - 2011/65/EU (RoHS II)

PRODUCTION PROGRAM

Unit: mm	●	■	▬	⬢
Drawn	25 ÷ 76,2	–	–	–
Extruded	30 ÷ 254	50 ÷ 165	Thick. 30 ÷ 127	–

PRESENTATION

This alloy has extremely high mechanical properties and high resistance to fatigue. Moreover, it has good resistance to corrosion and attitude to hard, protective and decorative anodizing.

Main applications: high resistance structural parts for mechanical industry, aviation, defense, motorbike and automotive.

Properties	T6
Machinability	
Protective anodizing	
Decorative anodizing	
Hard anodizing	
Resistance to atmospheric corrosion	
Resistance to marine corrosion	
MIG-TIG weldability	
Resistance weldability	
Brazing weldability	
Plastic formability when cold	
Plastic formability when hot	

Legend

Excellent | Good | Acceptable | Not recommended

Samples of finished products made of Eural bars

Chemical composition	
Si	≤ 0,40
Fe	≤ 0,50
Cu	1,20 ÷ 2,00
Mn	≤ 0,30
Mg	2,10 ÷ 2,90
Cr	0,18 ÷ 0,28
Ni	
Zn	5,10 ÷ 6,10
Ti	≤ 0,20
Pb	
Bi	
Others	Each 0,05 Total 0,15
Al	Remainder

Physical properties		
Density	Kg / dm³	2,80
Modulus of elasticity	MPa	72.000
Coefficient of thermal expansion	x10⁻⁶ / °C	23,5
Thermal conductivity at 20°C	W / mk	130
Typical electrical resistivity at 20°C	Ω mm² / m	0,052

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Minimum mechanical properties

	Temper	Diam. mm	Rm MPa	Rp0,2 MPa	A%	HBW Typical
Drawn	T6	≤ 80	540	485	7	150
	T651	≤ 80	540	485	5	150
	T73	≤ 80	455	385	10	135
	T7351	≤ 80	455	385	8	135
Extruded	T6, T6510, T6511	≤ 100	560	500	7	150
	T6, T6510, T6511	100 < D ≤ 150	550	440	5	150
	T6, T6510, T6511	150 < D ≤ 200	440	400	5	150
	T73, T73510, T73511	≤ 75	475	405	7	135
	T73, T73510, T73511	75 < D ≤ 100	470	390	6	135
	T73, T73510, T73511	100 < D ≤ 150	440	360	6	135

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EURAL
GNUTTI S.p.A.

2033 & 2077 & 6026^{LF} LEAD FREE
by Eural

"How to machine"

In "**How to Machine**" catalog:

- What is FREE-CUTTING and how such solutions can play a crucial role for any successful project
- How to achieve small chips and reduce cycle times
- Chip-breaking elements, lubricants and coolants, turning, drilling and milling inserts
- How chip formation changes by switching to different machining inserts with 2033, 2077 & 6026^{LF} alloys
- Possible machining parameters by choosing free-cutting **LEAD FREE** aluminium alloys by Eural

DOWNLOAD
www.eural.com

EURAL has been a leading producer of aluminium bars since 1968 and one of the keys to its great success is being close to all customers, understanding their requirements and meeting their expectations. After 50 years of industry knowledge **EURAL** can now also create new solutions to support and improve the production of our customers.

EURAL's technicians travel worldwide wherever support is needed to understand, cooperate and to share the benefits of using Eural products.

For these reasons, we have produced a technical guide:
"How To Machine - Useful tips for excellent performances".

In this guide you will find tips on how to approach the machining of free-cutting **LEAD FREE** solutions from **EURAL**.
It's full of all our experience into this business.

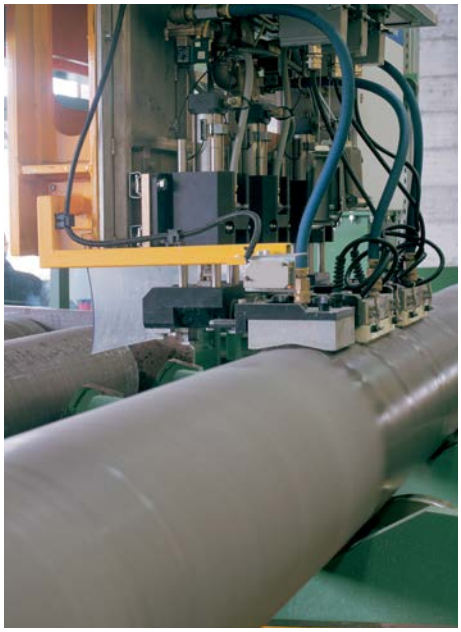
EURAL supplies aluminium with technology.

GREEN

Alloys with high recycled aluminium content.

alu

Billets extraction in foundry



Automatic ultrasonic control system for the entire length of the billet according to class "A" of SAE AMS-STD-2154 regulation

Particular of bars warehouse

5500-T Indirect extrusion press

Imprint of Eural logo, alloy code and batch number on all extruded bars

R&D Department

Quality Department

Quality Department

Eural Gnutti extrusion plant in Rovato (Brescia), Italy

Eural Gnutti foundry plant in Pontevico (Brescia), Italy

National and Company Alloy Designations

EURAL GNUTTI S.p.A.

ALLOY	AA	EN	EN (CS)	ASTM	BS	BS(OLD)	DIN	WNR	JIS	JIS(OLD)	NF	NF(OLD)	SFS
	Intl.	Intl.	Intl.	USA	GB	GB	DE	DE	JP	JP	FR	FR	FI
2033			Al Cu2,5BiMnMg										
2011	2011	2011	Al Cu6BiPb	2011	2011	FC1	AlCuBiPb	3.1655	A2011		2011	A-U5PbBi	
2030	2030	2030	Al Cu4PbMg	\			~AlCuMgPb				2030	A-U4Pb	
2007	2007	2007	Al Cu4PbMgMn	\			AlCuMgPb	3.1645				~ A-U4Pb	
2077			Al Cu4,5MnMgBi										
2017A	2017A	2017A	Al Cu4MgSi(A)	~2017	2017A		AlCuMg1	3.1325	~A2017	A3x2	2017A	A-U4G	
2024	2024	2024	Al Cu4Mg1	2024	2024	2L97	AlCuMg2	3.1355	A2024	A3x4	2024	A-U4G1	
6026	6026	6026	Al MgSiBi	6026									
6064A	6064A	6064A	Al Mg1SiBi	\									
6061	6061	6061	Al Mg1SiCu	6061	6061	H20	AlMg1SiCu	3.3211	A6061	A2x4	6061	A-GSUC	
6082	6082	6082	Al Si1MgMn		6082	H30	AlMgSi1	3.2315			6082	A-GSM0.7	2593
6262	6262	6262	Al Mg1SiPb	6262									
6262A	6262A	6262A	Al Mg1SiSn	\									
7075	7075	7075	Al Zn5,5MgCu	7075	7075	2L95	AlZnMgCu1,5	3.4365	A7075	A34x6	7075	A-Z5GU	

ALLOY	SNCH	SS	UNI	UNI(OLD)	UNS	NS	UNE	ASV	ALUSUISSE	CSA(OLD)	GOST(OLD)
	CH	SE	IT	IT							
2011	AlCu6BiPb	4355	9002/5	6362	A92011		L-3192		2500	CB60	
2030	AlCu4MgPb				A92030						
2007	AlCu4MgPb	4335	9002/8				L-3121		2118		
2017A			9002/2	3579	~A92017		L-3120		2100	CM41	D1/V65
2024	AlCu4Mg1,5		9002/4	3583	A92024		L-3140		2150	CG42	D16
6026											
6064A											
6061			9006/2	6170	A96061		L-3420	2079	6061	GS11N	AD33/AV
6082	AlMgSi1Mn	4212	~9006/4	3571		17305	L-3451	2005	6112	SG11R	AD35
6262											
6262A											
7075	AlZn6MgCu1,5		9007/2	3735	A97075		L-3710	2082	7215	ZG62	B95(V95)

Line marking

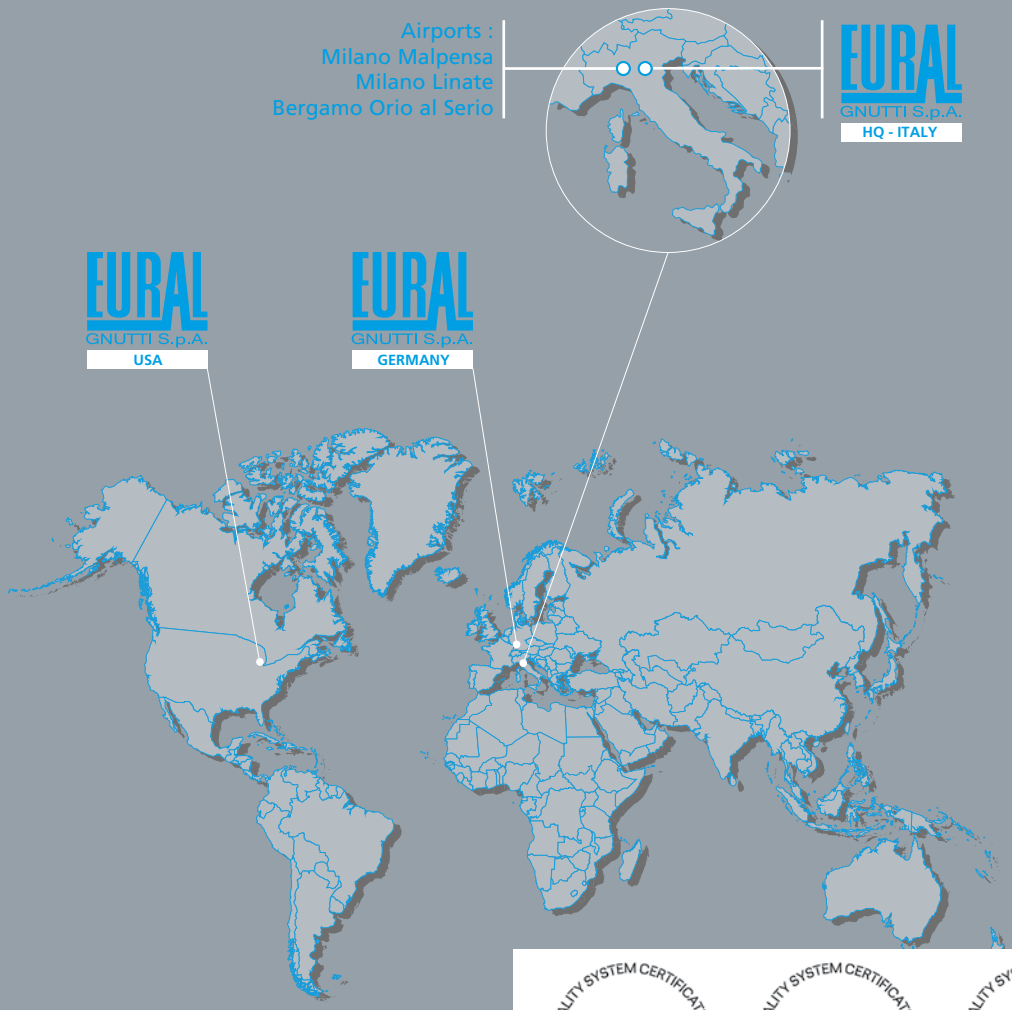
EURAL GNUTTI S.p.A.

Weight of aluminium bars in Kg/linear meter

Calculated on the Absolute Gravity (2,8 Kg/dm³)

mm.	●	■	⬣
5	0,0 55	-	-
6	0,079	-	-
7	0,107	-	-
8	0,140	0,179	0,155
9	0,178	0,226	0,196
10	0,219	0,280	0,242
11	0,266	0,338	0,293
12	0,316	0,403	0,349
13	0,371	0,473	0,409
14	0,431	0,548	0,475
15	0,494	0,630	0,545
16	0,562	0,716	0,620
17	0,635	0,809	0,700
18	0,712	0,907	0,785
19	0,793	1,011	0,875
20	0,879	1,120	0,969
21	0,969	1,234	1,069
22	1,064	1,355	1,173
23	1,163	1,481	1,282
24	1,266	1,613	1,396
25	1,374	1,750	1,515
26	1,486	1,893	1,679
27	1,603	2,041	1,767
28	1,724	2,195	1,901
29	1,849	2,355	2,039
30	1,979	2,520	2,182
31	2,113	2,690	2,330
32	2,251	2,867	2,483
33	2,394	3,049	2,640
34	2,542	3,236	2,803
35	2,693	3,430	2,970
36	2,850	3,628	3,142
37	3,010	3,833	3,319
38	3,175	4,043	3,501
39	3,344	4,258	3,688
40	3,518	4,480	3,879
41	3,696	4,706	4,076
42	3,879	4,939	4,277
43	4,066	5,177	4,483
44	4,257	5,420	4,694
45	4,552	5,670	4,910
46	4,653	5,924	5,131
47	4,857	6,185	5,356
48	5,066	6,451	5,586
49	5,280	6,722	5,822
50	5,497	7,000	6,062
51	5,719	7,282	6,307
52	5,946	7,571	6,556
53	6,177	7,865	6,811
54	6,412	8,165	7,071
55	6,652	8,470	7,335
56	6,896	8,780	7,604
57	7,144	9,097	7,878
58	7,397	9,419	8,157
59	7,655	9,746	8,441
60	7,916	10,080	8,729
61	8,183	10,418	9,023
62	8,453	10,763	9,321
63	8,728	11,113	9,624
64	9,007	11,468	9,932
65	9,291	11,830	10,245
66	9,579	12,196	10,562
67	9,872	12,569	10,885
68	10,169	12,947	11,212
69	10,470	13,330	11,544
70	10,775	13,720	11,881
71	11,096	14,115	12,223
72	11,400	14,515	12,570
73	11,719	14,921	12,922
74	12,042	15,332	13,278
75	12,370	15,750	13,639
76	12,702	16,173	14,006
77	13,038	16,601	14,377
78	13,379	17,035	14,753
79	13,724	17,475	15,133
80	14,074	17,920	15,519
81	14,428	18,370	15,909
82	14,786	18,827	16,305
83	15,149	19,290	16,705
84	15,517	19,756	17,109
85	15,888	20,230	17,519
86	16,264	20,708	17,934
87	16,645	21,193	18,353
88	17,030	21,683	18,778
89	17,419	22,178	19,207
90	17,813	22,680	19,641
91	18,210	23,186	20,080
92	18,613	23,649	20,524
93	19,020	24,217	20,972
94	19,413	24,740	21,426
95	19,837	25,270	21,884
96	20,267	25,805	22,347
97	20,691	26,345	22,815
98	21,120	26,891	23,288
99	21,553	27,442	23,766
100	21,991	28,000	24,248
105	24,245	30,870	-
110	26,609	33,880	-
115	29,083	37,030	-
120	31,667	40,320	-
125	34,344	43,750	-
130	37,165	47,320	-
135	40,078	51,000	-
140	43,102	54,880	-
145	46,236	58,870	-
150	49,480	63,000	-
155	52,833	67,270	-
160	56,297	71,680	-
165	59,870	76,230	-
170	63,554	80,920	-
175	67,347	-	-
180	71,251	-	-
190	79,347	-	-
200	87,920	-	-
210	96,980	-	-
220	106,43	-	-
225	111,33	-	-
230	116,33	-	-
240	126,66	-	-
250	137,44	-	-

M070201.02 GB REV.09 01/09/22



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GNUTTI S.p.A.

QUALITY SYSTEM CERTIFICATION DNV ISO 9001 AS/EN/JISQ 9100
QUALITY SYSTEM CERTIFICATION DNV IATF 16949
QUALITY SYSTEM CERTIFICATION DNV ISO 9001
ENVIRONMENTAL SYSTEM CERTIFICATION DNV ISO 14001
ENERGY MANAGEMENT SYSTEM DNV ISO 50001

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