



SILVAL[®]
ALLOYS

**PRIMARY PERFORMANCE.
CIRCULAR ORIGINS.**

**HIGH-PERFORMANCE RECYCLED
PRIMARY ALUMINIUM ALLOYS.**



RECYCLING THAT CHANGES THE PARADIGM

Primary performance. Circular origins.

SILVAL supplies the European industry with reliable, consistent recycled primary aluminium alloys: high-performance metallurgy for advanced technical applications, combining quality, sustainability and a low carbon footprint.

Up to 100%
recycled aluminium

0,61 kg CO₂eq/kg Al
carbon footprint, minimum value
EPD-certified

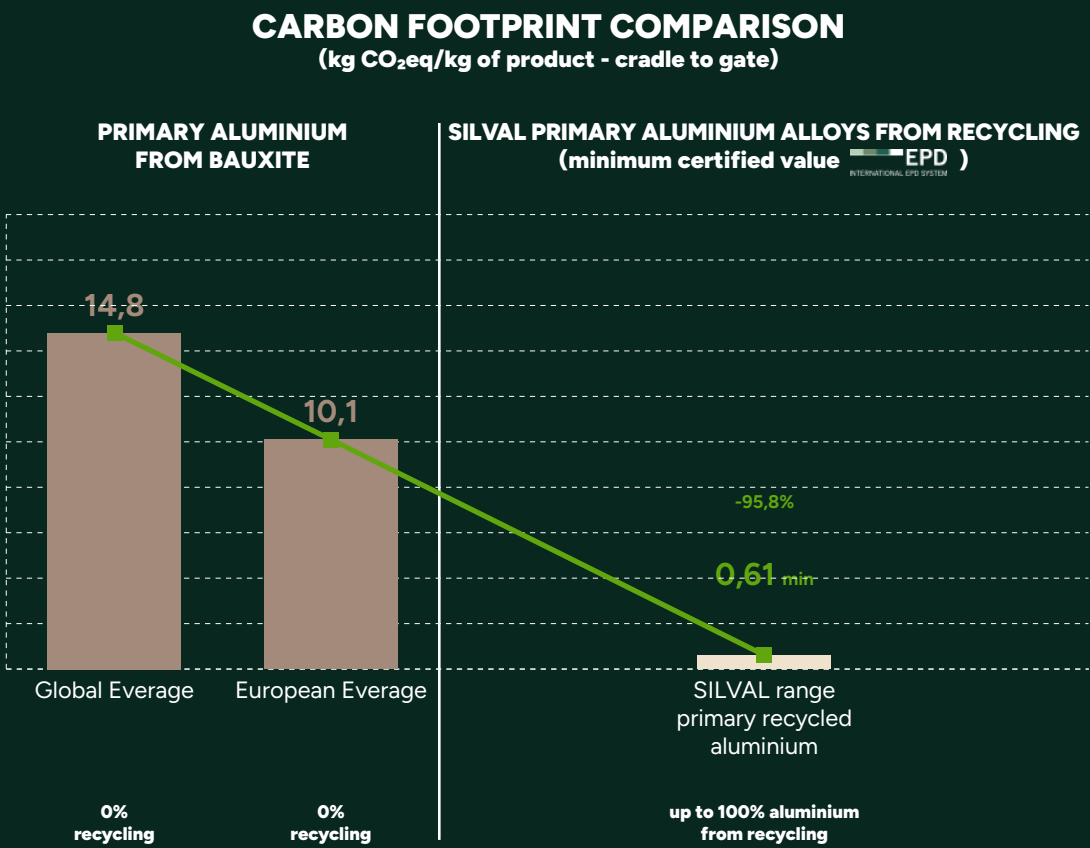
100%
electricity from
renewable sources

**In-house metallurgical
service**
quality and metal
cleanliness analysis

TAILOR MADE
custom alloys backed by
in-house technical support

Documented, validated carbon footprint.

EPDs, Product Carbon Footprints and energy data make sustainability transparent and backed by solid evidence.



EPD Raffmetal, University of Siena and INDACO2 srl / Ecoinvent 3.8 database / SimaPro 9.3 software / Method: EN15804 + A2 / PCR: Basic Aluminium Products and Special Alloys 2022:08 v.1 / Central Product Classification: UN CPC 4153 / www.environdec.com – S-P-06061- S-P-06062- S-P-06063, Environmental Profile Report 2024 V.2.0 May 2025 (10.1 refers to primary Al used in EU), IAI Aluminium Carbon Footprint FAQs

EPD

Verified, comparable environmental data.
A world first in the sector.

ISO 14067

Product Carbon Footprint calculation
with a standard-aligned tool.

ENERGY

100% electricity from
certified renewable sources.

% RECYCLED

Controlled, traceable
raw materials.

SILVAL SPECIAL ALLOYS PLANT

An industrial process designed to turn recycling into performance.

A plant dedicated to special recycled alloys, integrating melting, metal treatment and control at every production stage.

Expertise in scrap processing and selection

Innovative continuous casting process

Continuous quality control, assurance and traceability

Production site with 100% of electricity demand met by renewable sources



ADVANCED RECYCLING

From complex scrap to quality alloys.

Final product quality begins with raw material quality and control at every stage of production.

PROCESSING AND SORTING

Cleaning and sorting reduce organic matter and contaminants.

METALLURGICAL TREATMENTS

Degassing, filtration and inclusion removal.

SCRAP SELECTION

Analysis and selection of scrap fractions best suited to the required alloy specification.

TECHNICAL CONTROL

Chemical composition, hydrogen, density index, microstructure, SEM analysis.

INNOVATIVE MELTING

Controlled parameters preserve alloy quality.

CONTINUOUS CASTING

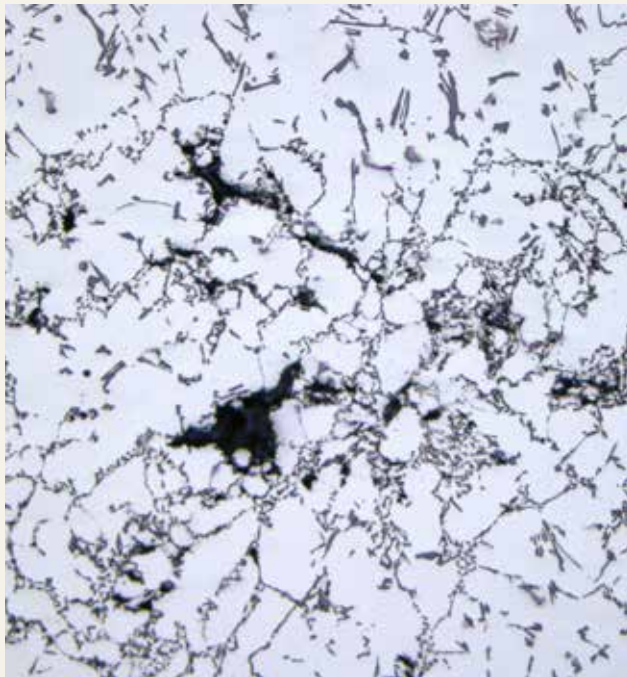
Production and final conformity checks.



METALLURGICAL CLEANLINESS

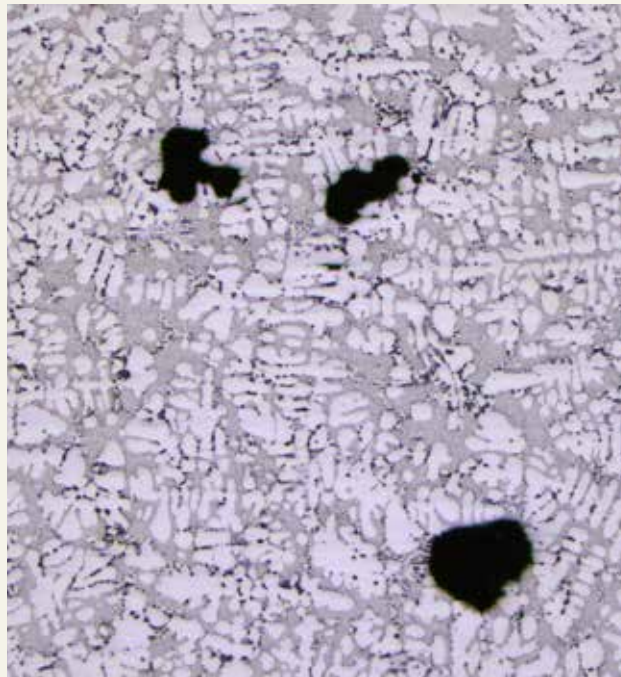
Clean metal. Reliable performance.

Quality and performance start with controlled chemical composition and the removal of unwanted inclusions.



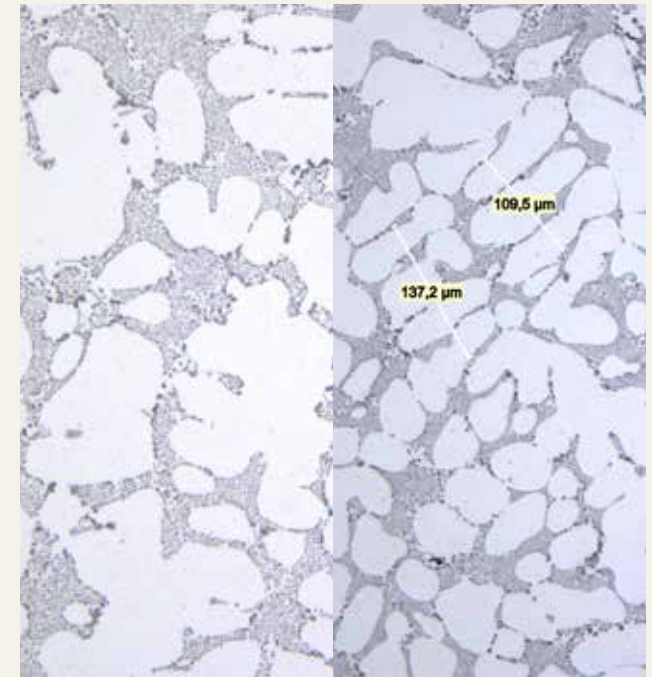
INCLUSIONS

Oxides, spinels, carbides and refractory residues under control.



HYDROGEN AND DENSITY INDEX

Low levels ensure soundness, repeatability and product quality.



MODIFICATION & REFINEMENT

Chemical composition is controlled to achieve the required modification and grain refinement.

ADVANCED CONTROL

Quality is controlled at every stage.

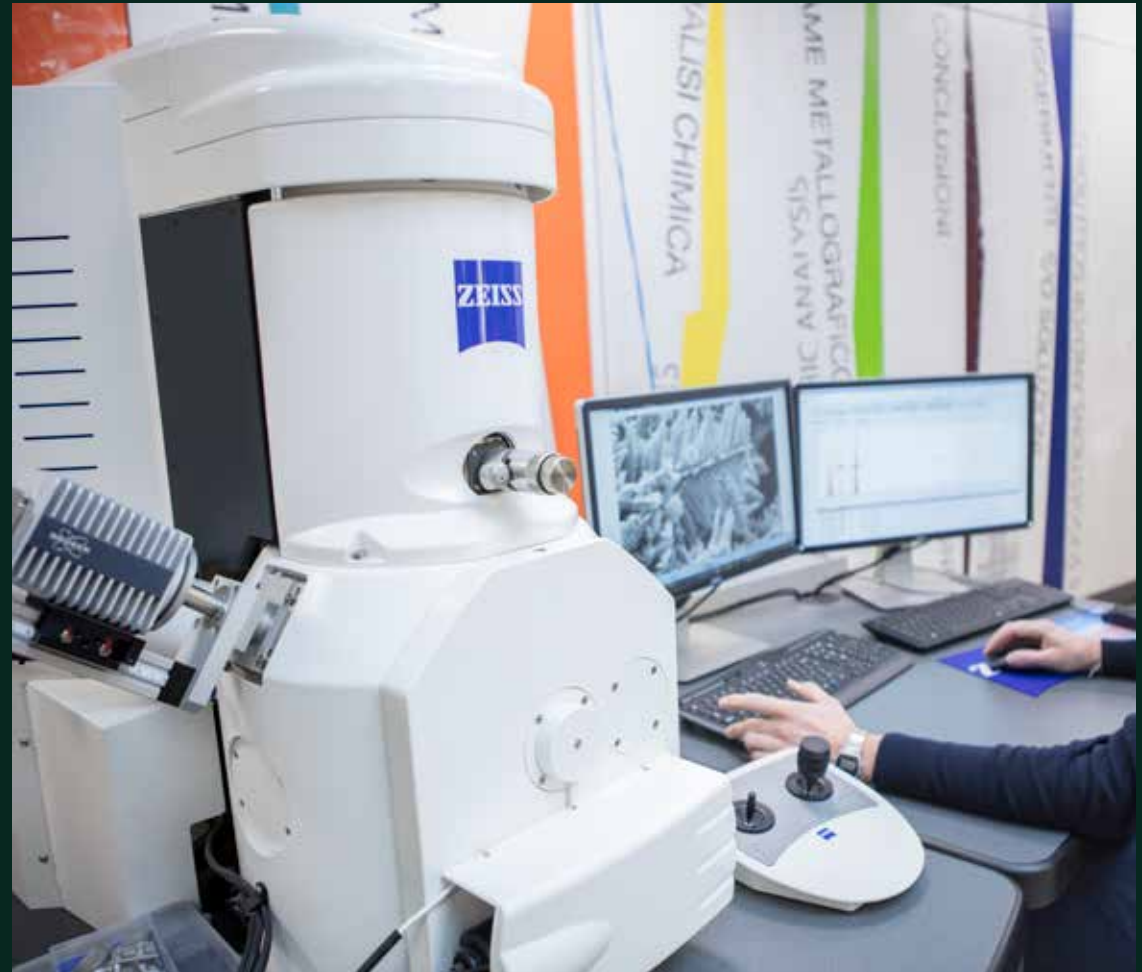
Our in-house laboratory and technical support team check the variables that determine alloy behaviour in real time.

CONTROLLED VARIABLES

- Chemical composition
- Trace elements
- Hydrogen
- Density index
- Alloy cleanliness
- Microstructure
- Refinement and modification
- SEM analysis

RESULT

- Process stability
- Repeatable performance
- Reliable supply
- Product quality



From process management to assured performance.

Third-party-verified systems ensure product quality, reliable processes and robust ESG commitments.

 ISO 9001 Quality	 ISO 14001 Environment	 CODE OF ETHICS Ethics	 MODEL 231 Corporate liability	 IATF 16949 Automotive	 ISO 50001 Energy
 ISO 45001 Safety	 ASI Responsible aluminium stewardship	 ISO 14067-aligned carbon footprint tool Environment	 ISO 14064 Environment	 AEOF International trade	 TISAX Information security
 EPD Environment Recycled aluminium alloy ingots continuously cast by Raffmetal	 EPD Environment Recycled primary aluminium alloy ingots continuously cast by Silval	 EPD Environment Liquid recycled aluminium alloys by Raffmetal	 EPD Environment Aluminium oxide from recovery, Rapal 01, Raffmetal		

KEY SILVAL ALLOYS AND CHEMICAL PROPERTIES

Alloy		Chemical composition (%)																		
Family	Designation	Si		Fe		Cu		Mn		Mg		Zn		Ti	Sr		Others		% Recycled in total alloy	% Recycled Al in total aluminium
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Max	Min	Max	Each	Tot.		
SILVAL 42100	EN AB 42100 SILVAL AISi7Mg0,3	6,5	7,5	-	0,15	-	0,03	-	0,10	0,30	0,45	-	0,07	0,18	optional		0,03	0,10	70	73
	SILVAL 42100 100% recycled Al	6,5	7,5	-	0,23	-	0,05	0,10	0,15	0,25	0,40	-	0,05	0,15	optional		0,02	0,05	97	100
SILVAL 42200	EN AB 42200 SILVAL AISi7Mg0,6	6,5	7,5	-	0,15	-	0,03	-	0,10	0,50	0,70	-	0,07	0,18	-		0,03	0,10	70	73
SILVAL 42300	EN AB 42300 SILVAL AISi7(Mg)	6,5	7,5	-	0,15	-	0,03	-	0,10	0,10	0,30	-	0,07	0,18	-		0,03	0,10	71	73
SILVAL 42400	EN AB 42400 SILVAL AISi7MnMg	6,5	8,5	-	0,20	-	0,03	0,35	0,75	0,15	0,45	-	0,03	0,15	optional		0,05	0,15	79	83
SILVAL 43300	EN AB 43300 SILVAL AISi9Mg	9,0	10,0	-	0,15	-	0,03	-	0,10	0,25	0,45	-	0,07	0,15	-		0,03	0,10	68	73
SILVAL 43500	EN AB 43500 SILVAL AISi10MnMg	9,0	11,5	-	0,20	-	0,03	0,40	0,80	0,15	0,60	-	0,07	0,15	optional		0,05	0,15	76	83
	SILVAL10	9,5	11,0	-	0,35	-	0,05	0,40	0,55	0,25	0,35	-	0,10	0,15	optional		0,05	0,15	89	100
SILVAL 44000	EN AB 44000 SILVAL AISi11	10,0	11,8	-	0,15	-	0,03	-	0,10	-	0,45	-	0,07	0,15	-		0,03	0,10	68	73
SILVAL 45500	EN AB 45500 SILVAL AISi7MgCu0,5	6,5	7,5	-	0,25	0,2	0,7	-	0,15	0,25	0,45	-	0,07	0,20	optional		0,03	0,10	96	100
SILVAL 44600	EN AB 44600 SILVAL AISi10Mn	8,5	10,5	-	0,15	-	0,05	0,48	0,53	-	0,08	-	0,07	0,15	0,015	0,020	0,03	0,10	29	33
SILVAL 51100	EN AB 51100 SILVAL AIMg3	-	0,45	-	0,40	-	0,03	-	0,45	2,7	3,5	-	0,10	0,15	-		0,05	0,15	96	100
SILVAL 51500	EN AB 51500 SILVAL AIMg5Si2Mn	1,8	2,6	-	0,20	-	0,03	0,40	0,80	5,0	6,0	-	0,07	0,20	-		0,05	0,15	63	67
SILVAL 71100	EN AB 71100 SILVAL AlZn10Si8Mg	7,5	9,5	-	0,40	-	0,08	-	0,45	0,25	0,50	9,0	10,15	0,15	-		0,05	0,15	81	100
SILVAL AISi5Mg	SILVAL AISi5Mg	5,0	6,0	-	0,15	-	0,02	-	0,10	0,40	0,80	-	0,10	0,20	-		0,05	0,15	71	73

FOCUS ON

EN AB 42100 SILVAL

AlSi7Mg0,3

70% RECYCLED
IN TOTAL ALLOY

SILVAL 42100
100% recycled Al

97% RECYCLED
IN TOTAL ALLOY

EN AB 43500 SILVAL

AlSi10MnMg

76% RECYCLED
IN TOTAL ALLOY

EN AB 44600 SILVAL

AlSi10Mn

29% RECYCLED
IN TOTAL ALLOY

EN AB 51500 SILVAL

AlMg5Si2Mn

63% RECYCLED
IN TOTAL ALLOY

EN AB 71100 SILVAL

AlZn10Si8Mg

81% RECYCLED
IN TOTAL ALLOY

EN AB 42100 SILVAL AISi7Mg0,3

MECHANICAL PROPERTIES

(Mechanical properties measured on separately cast test pieces at an ambient temperature of +20 °C)

CASTING PROCESS (condition)			GRAVITY	
TEMPER			F	T6
DIAMETER (mm)			6-8	6-8
Ultimate tensile strength	Rm	MPa	180 - 240	290 - 340
0.2% proof stress	Rp02	MPa	90 - 150	220 - 280
Elongation	A	%	4 - 9	5 - 9

F = as cast
T6 = 530 °C for 8 hours - 155 °C for 8 hours

PHYSICAL PROPERTIES

(These properties depend on variations in chemical composition within the specification, metallurgical structure, casting soundness and casting conditions. Values are therefore indicative.)

DENSITY	2,66 kg/dm³	ELECTRICAL CONDUCTIVITY	EN 1706:2020	20 - 27 MS/m
SPECIFIC HEAT (at 100 °C)	0,92 J/gK	THERMAL CONDUCTIVITY	EN 1706:2020	160 - 180 W/(m K)
ELASTIC MODULUS	73 GPa	THERMAL EXPANSION (from 20 °C to 100 °C)	EN 1706:2020	22·10 ⁻⁶ /K

TECHNOLOGICAL PROPERTIES

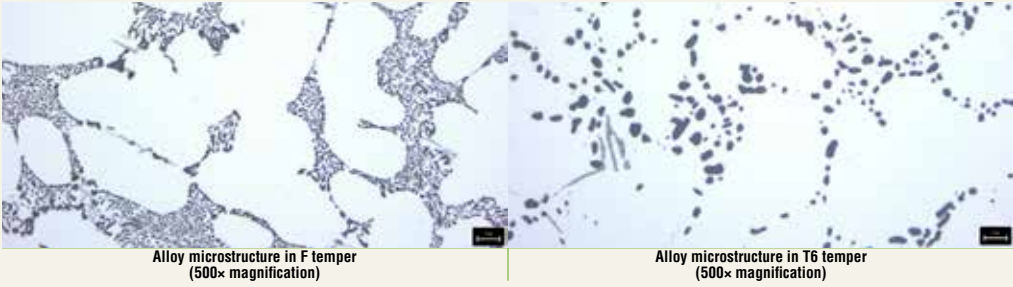
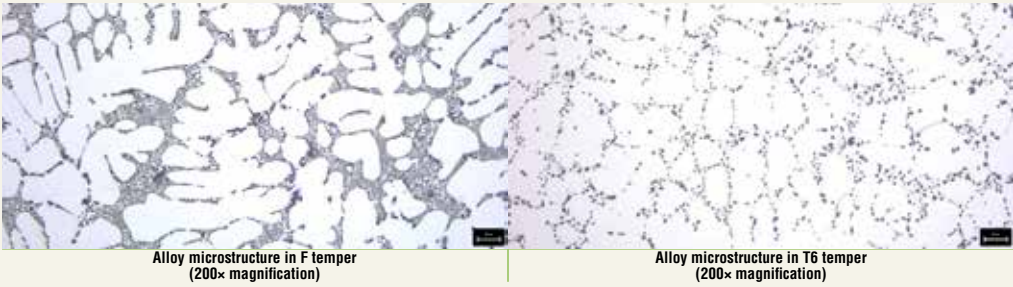
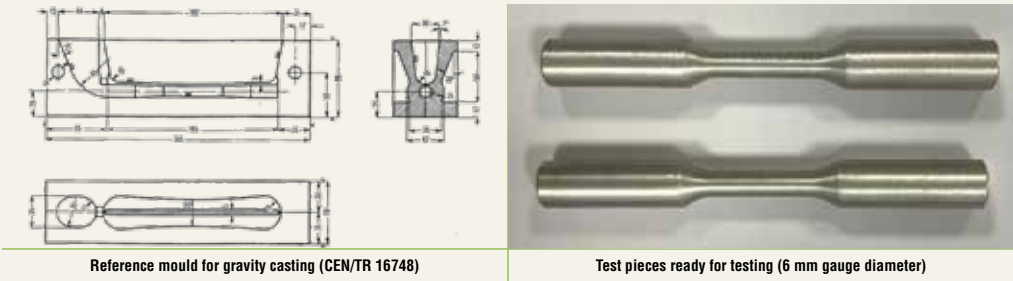
(Qualitative ratings from EN 1706:2020)

CASTABILITY	B	SUITABILITY FOR DECORATIVE ANODISING	D
HOT TEARING RESISTANCE	A	WELDABILITY	B
PRESSURE TIGHTNESS	B	POLISHABILITY	C
MACHINABILITY (as cast)	-	STRENGTH AT ROOM TEMPERATURE	A
MACHINABILITY (after heat treatment)	B	STRENGTH AT HIGH TEMPERATURE (200 °C)	C
GENERAL CORROSION RESISTANCE	B	DUCTILITY	A

A: EXCELLENT, B: GOOD, C: AVERAGE, D: FAIR, E: POOR, F: INADEQUATE

TYPICAL APPLICATIONS

Versatile alloy for complex, thin-walled, heat-resistant castings. Used for automotive components, construction and household appliances. Alloy **compliant (for information only)** with food-contact standard **EN 601**.



SILVAL 42100 100% recycled Al

MECHANICAL PROPERTIES

(Mechanical properties measured on separately cast test pieces at an ambient temperature of +20°C)

CASTING PROCESS (condition)			GRAVITY	
TEMPER			F	T6
DIAMETER (mm)			6-8	6-8
Ultimate tensile strength	Rm	MPa	170 - 230	270 - 330
0.2% proof stress	Rp02	MPa	90 - 140	220 - 280
Elongation	A	%	4 - 8	4 - 8

F = as cast
T6 = 530°C for 8 hours - 155°C for 8 hours

PHYSICAL PROPERTIES

(These properties depend on variations in chemical composition within the specification, metallurgical structure, casting soundness and casting conditions. Values are therefore indicative.)

DENSITY	2,66 kg/dm³	ELECTRICAL CONDUCTIVITY	EN 1706:2020	20 - 27 MS/m
SPECIFIC HEAT (at 100 °C)	0,92 J/gK	THERMAL CONDUCTIVITY	EN 1706:2020	160 - 180 W/(m K)
ELASTIC MODULUS	73 GPa	THERMAL EXPANSION (from 20 °C to 100 °C)	EN 1706:2020	22-10 ⁻⁶ /K

TECHNOLOGICAL PROPERTIES

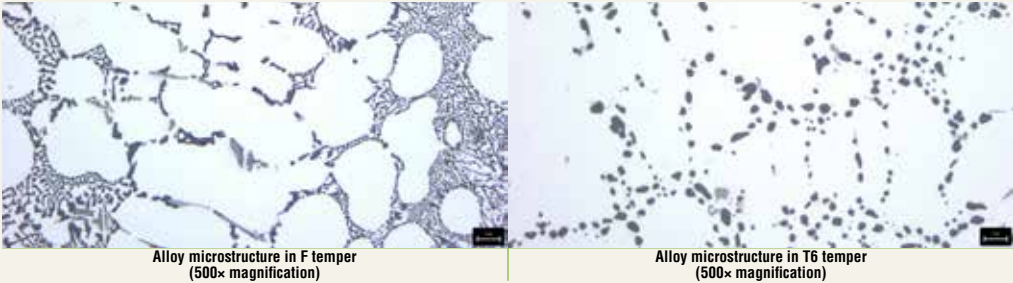
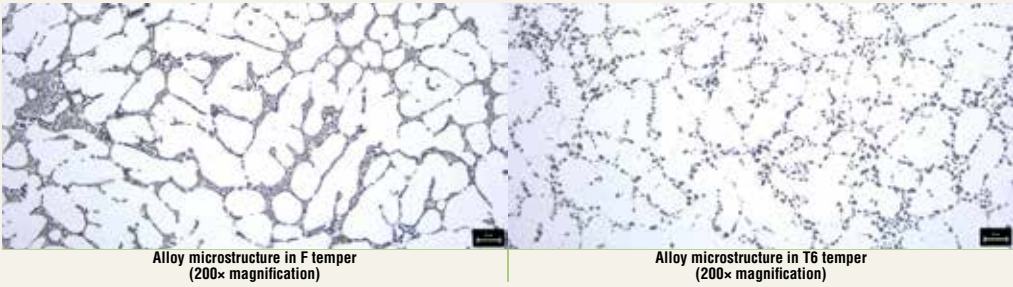
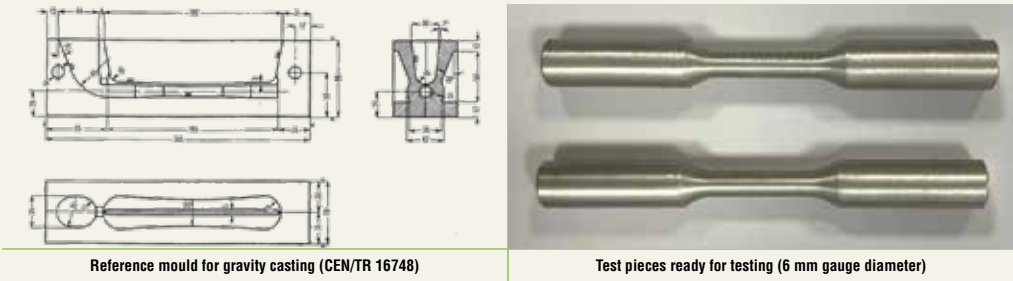
(Qualitative ratings from EN 1706:2020)

CASTABILITY	B	SUITABILITY FOR DECORATIVE ANODISING	D
HOT TEARING RESISTANCE	A	WELDABILITY	B
PRESSURE TIGHTNESS	B	POLISHABILITY	C
MACHINABILITY (as cast)	-	STRENGTH AT ROOM TEMPERATURE	A
MACHINABILITY (after heat treatment)	B	STRENGTH AT HIGH TEMPERATURE (200°C)	C
GENERAL CORROSION RESISTANCE	B	DUCTILITY	A

A: EXCELLENT, B: GOOD, C: AVERAGE, D: FAIR, E: POOR, F: INADEQUATE

TYPICAL APPLICATIONS

Versatile alloy for complex, thin-walled, heat-resistant castings. Used for automotive components, construction and household appliances. Alloy **compliant (for information only)** with food-contact standard **EN 601**.



EN AB 43500 SILVAL AISi10MnMg

MECHANICAL PROPERTIES

(Mechanical properties measured on separately cast test pieces at an ambient temperature of +20°C)

CASTING PROCESS (condition)			DIE CASTING	
TEMPER			F	T6
THICKNESS (mm)			2-4	2-4
Ultimate tensile strength	Rm	MPa	250 - 290	290 - 350
0.2% proof stress	Rp02	MPa	120 - 150	200 - 280
Elongation	A	%	5 - 10	6 - 12

F = as cast
T6 = 490°C for 3 hours - 155°C for 3 hours

PHYSICAL PROPERTIES

(These properties depend on variations in chemical composition within the specification, metallurgical structure, casting soundness and casting conditions. Values are therefore indicative.)

DENSITY	2,66 kg/dm³	ELECTRICAL CONDUCTIVITY	EN 1706:2020	19 - 25 MS/m
SPECIFIC HEAT (at 100 °C)	0,92 J/gK	THERMAL CONDUCTIVITY	EN 1706:2020	140 - 170 W/(m K)
ELASTIC MODULUS	74 GPa	THERMAL EXPANSION (from 20 °C to 100 °C)	EN 1706:2020	21·10 ⁻⁶ /K

TECHNOLOGICAL PROPERTIES

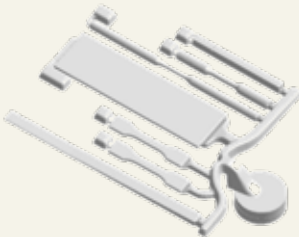
(Qualitative ratings from EN 1706:2020)

CASTABILITY	A	SUITABILITY FOR DECORATIVE ANODISING	E
HOT TEARING RESISTANCE	A	WELDABILITY	B
PRESSURE TIGHTNESS	C	POLISHABILITY	D
MACHINABILITY (as cast)	B / C	STRENGTH AT ROOM TEMPERATURE	A
MACHINABILITY (after heat treatment)	B	STRENGTH AT HIGH TEMPERATURE (200 °C)	C
GENERAL CORROSION RESISTANCE	B	DUCTILITY	A

A: EXCELLENT, B: GOOD, C: AVERAGE, D: FAIR, E: POOR, F: INADEQUATE

TYPICAL APPLICATIONS

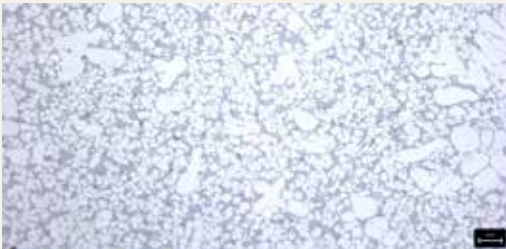
Excellent castability across all casting methods. Suitable for thin-walled parts that require good elongation rather than high mechanical strength.
Alloy **compliant (for information only)** with food-contact standard **EN 601**.



NADIA reference die for die casting (CEN/TR 16748)



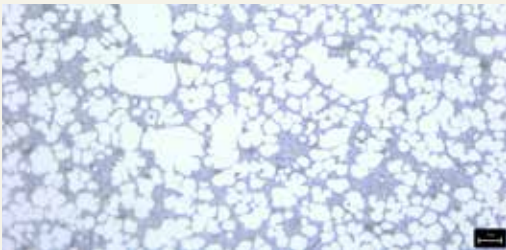
Test pieces ready for testing (3 mm thick)



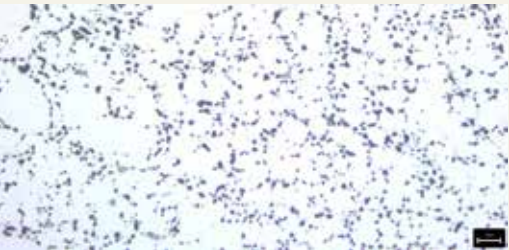
Alloy microstructure in F temper (200× magnification)



Alloy microstructure in T6 temper (200× magnification)



Alloy microstructure in F temper (500× magnification)



Alloy microstructure in T6 temper (500× magnification)

EN AB 44600 SILVAL AISi10Mn

MECHANICAL PROPERTIES

(Mechanical properties measured on separately cast test pieces at an ambient temperature of +20°C)

CASTING PROCESS (condition)			DIE CASTING
TEMPER			F
THICKNESS (mm)			2-4
Ultimate tensile strength	Rm	MPa	240
0.2% proof stress	Rp02	MPa	100
Elongation	A	%	10

F = as cast

PHYSICAL PROPERTIES

(These properties depend on variations in chemical composition within the specification, metallurgical structure, casting soundness and casting conditions. Values are therefore indicative.)

DENSITY	2,66 kg/dm³	ELECTRICAL CONDUCTIVITY	EN 1706:2020	20 - 25 MS/m
SPECIFIC HEAT (at 100 °C)	0,92 J/gK	THERMAL CONDUCTIVITY	EN 1706:2020	145 - 170 W/(m K)
ELASTIC MODULUS	74 GPa	THERMAL EXPANSION (from 20 °C to 100 °C)	EN 1706:2020	21·10 ⁻⁶ /K

TECHNOLOGICAL PROPERTIES

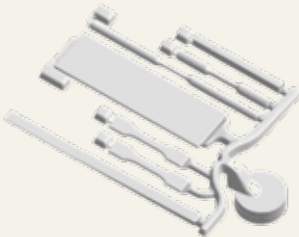
(Qualitative ratings from EN 1706:2020)

CASTABILITY	A	SUITABILITY FOR DECORATIVE ANODISING	E
HOT TEARING RESISTANCE	A	WELDABILITY	A
PRESSURE TIGHTNESS	B	POLISHABILITY	D
MACHINABILITY (as cast)	B / C	STRENGTH AT ROOM TEMPERATURE	B
MACHINABILITY (after heat treatment)	B	STRENGTH AT HIGH TEMPERATURE (200°C)	C
GENERAL CORROSION RESISTANCE	B	DUCTILITY	A

A: EXCELLENT, B: GOOD, C: AVERAGE, D: FAIR, E: POOR, F: INADEQUATE

TYPICAL APPLICATIONS

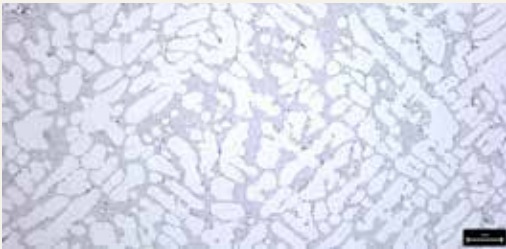
Suitable for complex castings, with good pressure tightness and weldability. Used in automotive, engine manufacturing, rail, aerospace and defence applications. Alloy **compliant (for information only)** with food-contact standard **EN 601**.



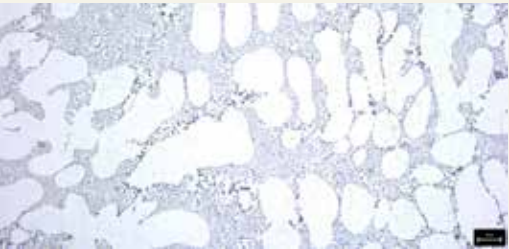
NADIA reference die for die casting (CEN/TR 16748)



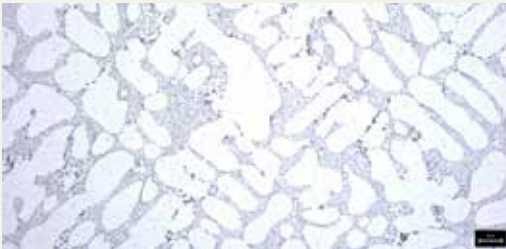
Test pieces ready for testing (3 mm thick)



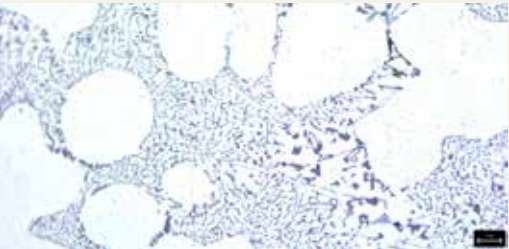
Alloy microstructure in F temper (100× magnification)



Alloy microstructure in F temper (200× magnification)



Alloy microstructure in F temper (200× magnification)



Alloy microstructure in F temper (500× magnification)

EN AB 51500 SILVAL AIMg5Si2Mn

MECHANICAL PROPERTIES

(Mechanical properties measured on separately cast test pieces at an ambient temperature of +20°C)

CASTING PROCESS (condition)			DIE CASTING		
TEMPER			F		
THICKNESS (mm)			2-4	4-6	6-12
Ultimate tensile strength	Rm	MPa	270 - 310	250 - 280	210 - 250
0.2% proof stress	Rp02	MPa	150 - 200	130 - 170	100 - 145
Elongation	A	%	10 - 18	9 - 14	7 - 10

F = as cast

PHYSICAL PROPERTIES

(These properties depend on variations in chemical composition within the specification, metallurgical structure, casting soundness and casting conditions. Values are therefore indicative.)

DENSITY	2,66 kg/dm³	ELECTRICAL CONDUCTIVITY	EN 1706:2020	14 - 16 MS/m
SPECIFIC HEAT (at 100 °C)	0,92 J/gK	THERMAL CONDUCTIVITY	EN 1706:2020	110 - 130 W/(m K)
ELASTIC MODULUS	74 GPa	THERMAL EXPANSION (from 20 °C to 100 °C)	EN 1706:2020	24·10 ⁻⁶ /K

TECHNOLOGICAL PROPERTIES

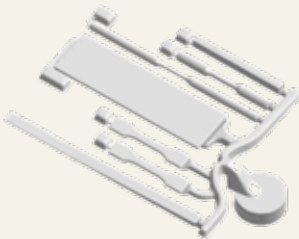
(Qualitative ratings from EN 1706:2020)

CASTABILITY	B	SUITABILITY FOR DECORATIVE ANODISING	E
HOT TEARING RESISTANCE	D	WELDABILITY	C
PRESSURE TIGHTNESS	C	POLISHABILITY	A
MACHINABILITY (as cast)	A	STRENGTH AT ROOM TEMPERATURE	B
MACHINABILITY (after heat treatment)	-	STRENGTH AT HIGH TEMPERATURE (200°C)	B
GENERAL CORROSION RESISTANCE	A	DUCTILITY	A

A: EXCELLENT, B: GOOD, C: AVERAGE, D: FAIR, E: POOR, F: INADEQUATE

TYPICAL APPLICATIONS

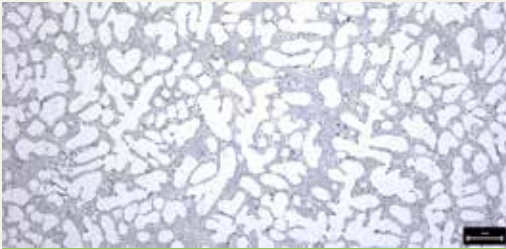
Suitable wherever high ductility and good strength are required without heat treatment, such as safety components in engineering vehicles. Alloy **not compliant** with food-contact standard **EN 601**.



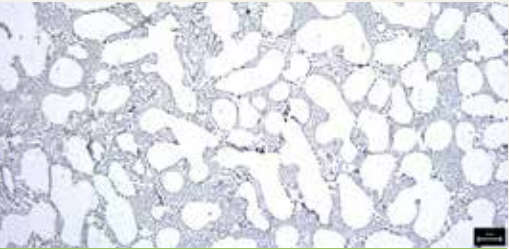
NADIA reference die for die casting (CEN/TR 16748)



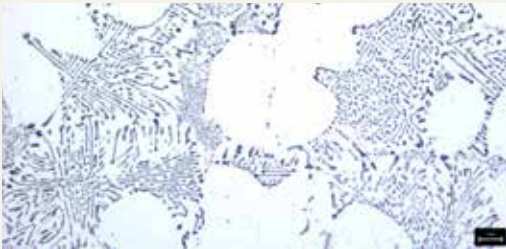
Test pieces ready for testing (3 mm thick)



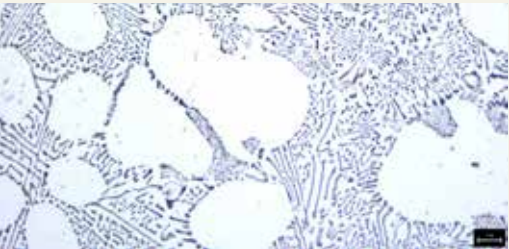
Alloy microstructure in F temper (100× magnification)



Alloy microstructure in F temper (200× magnification)



Alloy microstructure in F temper (500× magnification)



Alloy microstructure in F temper (500× magnification)

EN AB 71100 SILVAL AlZn10Si8Mg

MECHANICAL PROPERTIES

(Mechanical properties measured on separately cast test pieces at an ambient temperature of +20°C)

CASTING PROCESS (condition)			DIE CASTING	GRAVITY
TEMPER			T1	T1
THICKNESS/DIAMETER (mm)			2-4	6-8
Ultimate tensile strength	Rm	MPa	300 - 350	280 - 320
0.2% proof stress	Rp02	MPa	230 - 280	220 - 250
Elongation	A	%	1 - 4	1 - 4

T1 = controlled cooling and artificial ageing

PHYSICAL PROPERTIES

(These properties depend on variations in chemical composition within the specification, metallurgical structure, casting soundness and casting conditions. Values are therefore indicative.)

DENSITY	2,85 kg/dm³	ELECTRICAL CONDUCTIVITY	EN 1706:2020	17 - 20 MS/m
SPECIFIC HEAT (at 100 °C)	0,86 J/gK	THERMAL CONDUCTIVITY	EN 1706:2020	120 - 130 W/(m K)
ELASTIC MODULUS	75 GPa	THERMAL EXPANSION (from 20 °C to 100 °C)	EN 1706:2020	21·10⁻⁶/K

TECHNOLOGICAL PROPERTIES

(Qualitative ratings from EN 1706:2020)

CASTABILITY	B	SUITABILITY FOR DECORATIVE ANODISING	E
HOT TEARING RESISTANCE	A	WELDABILITY	A
PRESSURE TIGHTNESS	B	POLISHABILITY	C
MACHINABILITY (as cast)	A	STRENGTH AT ROOM TEMPERATURE	B
MACHINABILITY (after heat treatment)	-	STRENGTH AT HIGH TEMPERATURE (200°C)	C
GENERAL CORROSION RESISTANCE	C	DUCTILITY	C

A: EXCELLENT, B: GOOD, C: AVERAGE, D: FAIR, E: POOR, F: INADEQUATE

TYPICAL APPLICATIONS

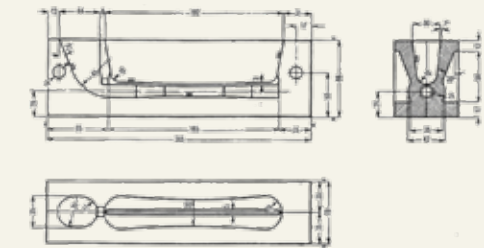
Self-hardening alloy with excellent strength and elongation, especially in permanent mould casting, and excellent polishability. Used in mechanical engineering, transport and hydraulic castings.

Alloy **not compliant** with food-contact standard **EN 601**.



NADIA reference die for die casting (CEN/TR 16748)

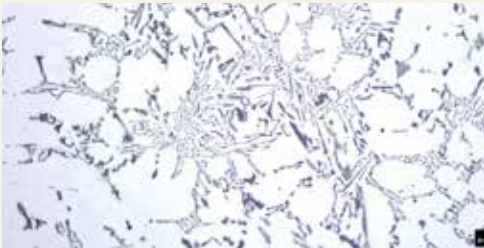
Test pieces ready for testing (3 mm thick)



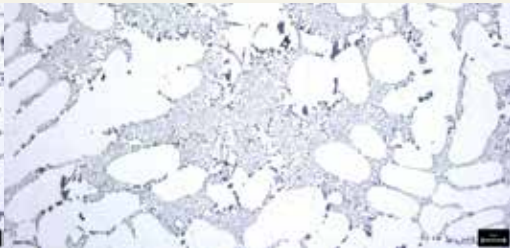
Reference mould for gravity casting (CEN/TR 16748)



Test pieces ready for testing (6 mm gauge diameter)



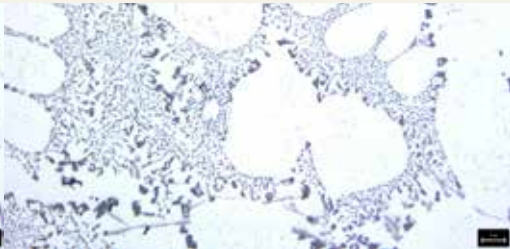
Alloy microstructure without Sr (200× magnification)



Alloy microstructure with Sr (200× magnification)



Alloy microstructure without Sr (500× magnification)



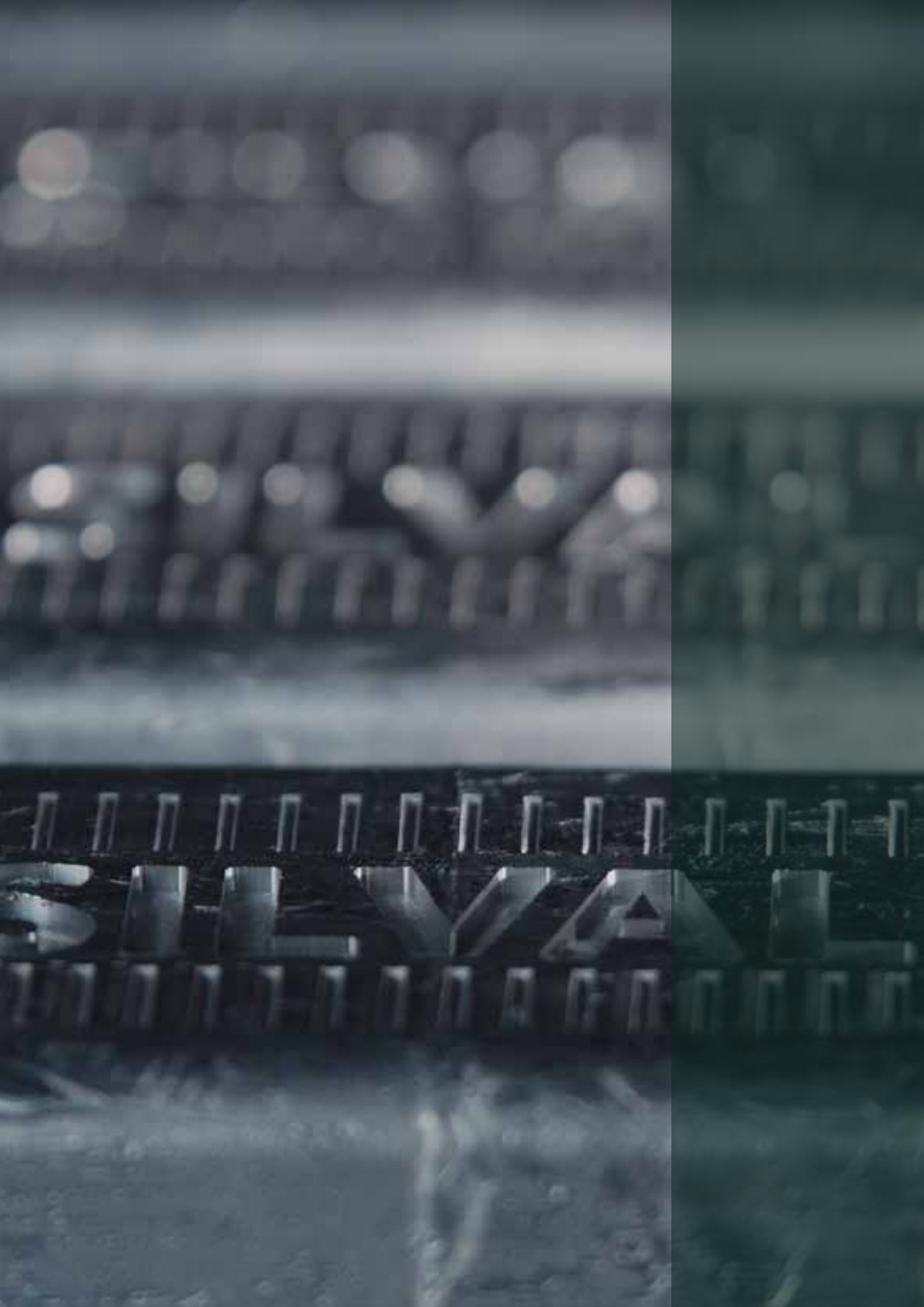
Alloy microstructure with Sr (500× magnification)

The right alloy is developed with the customer.

LET'S DISCUSS YOUR APPLICATION

Our R&D, Quality, Technical Support and Sustainability teams guide alloy selection through lab testing, process compatibility, melting parameters and environmental data assessment.

To speak to a technical adviser, email qualita@raffmetal.it or contact your sales representative.



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