

Aluminium from recycled raw material

**TAILOR MADE ALLOYS**  
**MADE IN SWEDEN**

 **STENA**  
ALUMINIUM

# LEADING IN THE NORDICS

We are the Nordic region's leading producer of customized aluminium alloys, made from recycled material. Every year, we deliver 75,000 tonnes of aluminium alloys. Our customers are primarily foundries in Northern Europe, which in turn supply the automotive and engineering industries with components.

An aerial photograph of an industrial facility, likely an aluminium recycling plant. The image shows several large, dark-roofed buildings. In the foreground and middle ground, there are numerous large piles of scrap metal and aluminium alloys, some appearing as bright, reflective surfaces and others as darker, more textured masses. There are also several blue containers or bins scattered around the site. The overall scene is one of active industrial processing and recycling.

# 75,000

TONNES OF ALUMINIUM ALLOYS

The number '300' is rendered in a large, bold, sans-serif font. Each digit is filled with a close-up photograph of aluminium alloy ingots, showing their metallic texture and rectangular shapes. The background of the entire page is a blurred, high-angle view of a large quantity of these ingots.

# 300

DIFFERENT ALUMINIUM ALLOYS

We offer up to 300 different aluminium alloys. No matter what you want to manufacture, we can develop an alloy with the right properties.

Thanks to our extensive material expertise, we can optimize the properties and value of your aluminium alloy – both for the process and for the final component. When you need technical expertise, support in product and process development, or help with metallurgical issues, our know-how is always close at hand.

As our customer, you gain access to decades of experience in recycling and manufacturing aluminium. We started producing aluminium alloys in 1949 in Älmhult, where our smelting plant is still located today.

The fact that Stena Aluminium is part of the Stena Metall Group provides additional value for you as a customer. In collaboration with our sister company Stena Recycling, we can help you with the recycling of all types of waste, optimized resource management, and strengthening your overall sustainability efforts.

**FOR YOUR SUCCESS,  
TODAY AND TOMORROW.**



**YOUR PARTNER  
THROUGHOUT  
THE PROCESS**



**ALLOYS TAILORED  
TO YOUR NEEDS**

Aluminium is a fantastic material with many properties.  
We can always tailor aluminium alloys exactly to your needs.

We produce aluminium alloys with varying properties in terms of, for example, conductivity, corrosion resistance and durability. We support you in your contact with customers by finding the right specifications to meet your customer's requirements, as well as writing quotes and compiling environmental documentation.

A close-up photograph of numerous aluminum ingots, showing their metallic texture and curved shapes. The ingots are piled together, creating a complex pattern of light and shadow. The background is dark, making the metallic surfaces stand out.

## RIGHT QUALITY AND DELIVERY PRECISION

We maintain high quality in the aluminium alloys we deliver. Our experts carry out thorough quality checks and comprehensive analyzes – from the moment we receive the raw material, throughout the entire processing and production process, and all the way to the customer.

We can deliver all alloys in the form of ingots or liquid aluminium. Most of the raw materials we work with come from Stena Recycling, which enables more efficient handling of aluminium scrap and greater delivery reliability.

We control the entire value chain and enable the endless recycling of aluminum.

## HELP REDUCE YOUR CLIMATE IMPACT

Since we use recycled aluminium in our production, carbon dioxide emissions per tonne of aluminum are very low.

When delivering liquid aluminium, you as a customer also save large amounts of energy. We are constantly working to reduce our own climate impact, and our processes use renewable electricity.

We have trained staff in a variety of environmental issues and have a high level of transparency and traceability in our processes when it comes to life cycle analyses. We help you with all the documentation you need to compile comprehensive environmental reporting.

## TECHNICAL SUPPORT AND ADVICE

When you need technical support, assistance with product development or help with metallurgical issues, our experts are available to help you.

We can help you with everything from optimizing product properties to more efficient smelting and casting processes for aluminium. Our solutions are tailored to your needs, and we are happy to contribute early on in the order and quotation phase with your customer.



# PART OF SOMETHING BIGGER

Stena Aluminium is part of Stena Metall, a family-owned Group that was founded in 1939. Today, Stena Metall operates in seven business areas and is present in more than 200 locations across nine countries.

Every year, the Group recycles and processes six million tonnes of waste and end-of-life products, providing customers with essential raw materials, steel products, recycled aluminium and marine fuels.

Through our partnership with Stena Recycling, we source most of the recycled aluminium we use. In addition, we can also offer you additional services in recycling, waste management and circularity. All to help your company further strengthen its contribution to a circular economy and a sustainable society.

Our group also has a dedicated research and development department. Through collaborations with universities, other institutions, and in close dialogue with customers and their customers, we develop existing alloys and create new ones for various applications.

At Stena Aluminium, we believe in the power of working together. Through strong partnerships, we develop our own business and that of our customers'. We create value every day, and it has been that way since the beginning.



# CUSTOMER-SPECIFIC ALLOYS

Our alloys are primarily used in the automotive, electronics, engineering and furniture industries. We can customize aluminium alloys to meet customer requirements for product properties.

We produce up to 300 different alloys with varying properties in terms of conductivity, heat transfer, corrosion resistance, strength, polishability, yield strength, machinability, weldability and much more.

We can deliver all alloys in the form of ingots or liquid aluminium. The ingots are stacked in bundles and strapped together in pairs for more efficient handling. Liquid aluminum is delivered in specially built thermoses, each containing eight tonnes of aluminium. Each truck transports three thermoses. The temperature of the aluminium in the thermos is adjusted to your needs and can therefore be used immediately in your production. Large amounts of energy are saved by not having to melt down aluminum ingots. Each delivery of liquid aluminium reduces carbon dioxide emissions by two tonnes.

## ALLOY KEYS

### ALLOYS FOR DIE CASTING

Europe EN 1706	Sweden SS	Germany VAR	US AA	Japan JIS	UK BS	France NF	Italy UNI
43400		239 D		ADC3			
44300		230 D	A413.0	ADC2	LM20	A-S12	
44400	4255					AS-9	
44500	4263						
46000	4250	226 D		ADC10	LM24	A-S9U3	5075
46100				ADC12Z	LM2		
46500	4252	226/3		ADC10Z	LM24	A-S9U3X	4525
47100	4260	231D			LM20	A-S12U	5079

With reservations for any errors, there are no exact comparisons between the alloys. Instead comparable types of alloys are indicated.

### ALLOYS FOR SAND AND CHILL CASTING

Europe EN 1706	Sweden SS	Germany VAR	US AA	Japan JIS	UK BS	France NF	Italy UNI
42000	4244		356.0	AC4C	LM25	A-S7G	3599
43000	4253	239		AC4A, Al-Si 10Mg			
43100	4253	239		AC4A, Al-Si 10Mg		A-S10G	3051
43200	4253	233		AC4A			
44100	4261	230	B413.0	AC3A, Al-Si 12	LM6	A-S13	4514
44200	4261	230					
44400	4255					AS-9	
46200	4251	226	B380.1	AC4B	LM27	A-S7U3G	3601
46400							7369
47000	4260	231		Al-Si 12 Cu		A-S12U	3048

With reservations for any errors, there are no exact comparisons between the alloys. Instead comparable types of alloys are indicated.

# STENAL 460

Improved casting alloy for high performance.

Stenal 460 is an improved version of EN AB-46000 that offers higher strength, improved fatigue properties and better ductility. With lower iron content, added strontium and balanced manganese, stricter process control and reduced porosity are ensured. This enables heat treatment, customized properties and lower rejection rates. Ideal for demanding applications.

## CHEMICAL COMPOSITION

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Sb	P	Ca
Min %	8.70	0.50	2.70	0.30	0.35	-	-	-	-	-	0.05	0.030	-	-	-
Max %	9.40	0.60	3.30	0.47	0.45	-	0.30	1.20	0.20	0.10	0.10	0.05	0.005	0.002	0.003

Other elements each max 0.05% and a total of max 0.25%. Note: The Sr content is higher for ingot delivery condition. For castings 0.02–0.03%. Sr is consumed in the melt and the level may need to be maintained by adding Sr separately.

## MECHANICAL PROPERTIES

	Conditions	Tensile strength, $R_m$ [MPa] min.	Yield strength $R_{p0.2}$ MPa min.	Elongation $A_{25m}$ [%]
Die casting	**HPDC	280	150	3.5
	*AC/WC	360/350	220/225	2.8/2.6

\*Air-cooled (ac) and water-cooled (wc) separately cast test bars with a thickness of 4mm, material potential, process dependent.

\*\*HPDC, test bar with circular cross-section, diameter 6mm. Normally expected values. True properties only when testing the component.

# STENAL 445

Optimized AlSi12 alloy for demanding die casting.

Stenal 445 is an improved version of EN AB-44500, developed for die casting with enhanced mechanical strength, fatigue properties and ductility. It has a narrower alloy range, reduced iron content, added strontium and balanced manganese for better process control and lower porosity. Copper can be reduced for improved corrosion resistance. The alloy supports heat treatment when porosity is low, enabling customized properties and reduced rejection rates. Ideal for complex or thin-walled components that require high performance.

## CHEMICAL COMPOSITION

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Sb	P	Ca
Min %	11.00	0.45	-	0.32	0.30	-	-	-	-	-	0.07	0.03	-	-	-
Max %	12.00	0.60	0.18	0.47	0.40	-	-	0.30	-	-	0.15	0.05	0.003	0.005	0.25

Other elements, max 0.05% each. Total content of other elements, max 0.25%. The strontium level is higher in delivered ingots to compensate for the oxidation that occurs during remelting and holding. For finished castings, an appropriate strontium level is 0.02–0.03%. During longer downtimes, it may be necessary to add strontium.

## MECHANICAL PROPERTIES

	Conditions	Tensile strength, $R_m$ [MPa] min.	Yield strength $R_{p0.2}$ MPa min.	Elongation $A_{25m}$ [%]
Die casting	F	270	170	2
	T4/T5	240/300	130/245	7/1

Measured from separately cast test bars with a thickness of 4mm, material potential, process dependent. True properties only when testing the component.

# RHEOCOOL

An alloy developed for rheocasting, with good castability in a semi-solid state. The alloy is developed for 5G and electric vehicles where high thermal conductivity is crucial. The higher the thermal conductivity, the less material is needed because the height of the heat sinks can be reduced in the design.

## CHEMICAL COMPOSITION

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Sb	P	Ca
Min %	2.00	0.40	-	-	0.25	-	-	-	-	-	-	-	-	-	-
Max %	2.60	1.00	0.15	0.15	0.60	0.10	0.10	0.05	0.094	0.25	0.05	0.05	-	-	-

Other elements each max 0.05% and a total of max 0.25%.

## MECHANICAL PROPERTIES

Tensile strength, $R_m$ [MPa] min.	Yield strength $R_{p0.2}$ MPa min.	Elongation $A_{25m}$ [%]	Thermal conductivity w/m °K
170-210	70-110	5.5-12.5	165-175*

## HEAT TREATMENT\*

150-170	80-100	6.5-9	181-192*
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\*Thermal conductivity at 100 °C

# RHEOGREEN

An alloy developed for rheocasting, with good castability in a semi-solid state. It typically contains about 30-40% solid phase. It has relatively good mechanical properties. Key characteristics are good mould filling capability and high thermal conductivity. The alloy is designed to replace alloys such as DIN226/46000/ADC12. It gives designers the opportunity to create very complex shapes with thin walls.

## CHEMICAL COMPOSITION

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Sb	P	Ca
Min %	2.00	-	-	-	0.15	-	-	-	-	-	-	-	-	-	-
Max %	5.50	1.00	2.10	0.60	0.60	0.15	0.55	1.20	0.094	0.15	0.20	-	-	-	-

Other elements each max 0.05% and a total of max 0.25%.

## MECHANICAL PROPERTIES

Tensile strength, $R_m$ [MPa] min.	Yield strength $R_{p0.2}$ MPa min.	Elongation $A_{25m}$ [%]	Brinell hardness $HB_{(5/250)}$ room temperature	Thermal conductivity w/m °K
250	135	2.5	75	150-155

# ALLOYS FOR DIE CASTING

In addition to the European standards, you will find all die casting alloys in our product range.

## EN 1676

		CHEMICAL COMPOSITION (IN WEIGHT %)											CASTING PROPERTIES				HEAT TREATMENT				
Alloy designations:		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti <sup>1)</sup>	Other <sup>2)</sup> each	Other <sup>2)</sup> total	Solidification range** °C approx.	Casting temperature** °C approx.	Fluidity*	Resistance to hot tearing*	Shrinkage** % approx.	Density** approx. value kg/dm <sup>3</sup>	
Numeric	Chemical formula																				
EN AB-43400	Al Si10Mg(Fe)	9.0-11.0	0.45-0.9 (1.0)	0.08 (0.10)	0.55	0.25-0.50 (0.20-0.50)	-	0.15	0.15	0.15	0.05	0.15 (0.20)	0.05	0.15	600-550	600-650	A	A	0.5-0.8	2.65	Normally not heat treated.
EN AB-44300	Al Si12(Fe)(a)	10.5-13.5	0.45-0.9 (1.0)	0.08 (0.10)	0.55	-	-	-	0.15	-	-	0.15	0.05	0.25	580-570	600-700	A	A	0.5-0.8	2.65	Not age-hardenable.
EN AB-44400	Al Si9	8.0-11.0	0.55 (0.65)	0.08 (0.10)	0.50	0.10	-	0.05	0.15	0.05	0.05	0.15	0.05	0.15	600-550	650-700	A	A	0.5-0.8	2.65	Not age-hardenable.
EN AB-44500	Al Si12(Fe)(b)	10.5-13.5	0.45-0.90 (1.0)	0.18 (0.20)	0.55	0.40	-	-	0.30	-	-	0.15	0.05	0.25	600-550	600-700	A	A	0.5-0.8	2.65	Normally not heat treated.
EN AB-46000	AlSi9Cu3(Fe)	8.0-11.0	0.6-1.1 (1.3)	2.0-4.0	0.55	0.15-0.55 (0.05-0.55)	0.15	0.55	1.2	0.35	0.15	0.20 (0.25)	0.05	0.25	600-490	600-650	B	B	0.5-0.8	2.75	Normally not heat treated.
EN AB-46100	Al Si11Cu2(Fe)	10.0-12.0	0.45-1.0 (1.1)	1.5-2.5	0.55	0.30	0.15	0.45	1.7	0.25	0.15	0.20 (0.25)	0.05	0.25	580-530	650-700	A	B	0.5-0.8	2.75	Normally not heat treated.
EN AB-46500	Al Si9Cu3(Fe)(Zn)	8.0-11.0	0.6-1.2 (1.3)	2.0-4.0	0.55	0.15-0.55 (0.05-0.55)	0.15	0.55	3.0	0.35	0.15	0.20 (0.25)	0.05	0.25	600-490	650-700	B	B	0.5-0.8	2.75	Normally not heat treated.
EN AB-47100	Al Si12Cu1(Fe)	10.5-13.5	0.6-1.1 (1.3)	0.7-1.2	0.55	0.35	0.10	0.30	0.55	0.20	0.10	0.15 (0.20)	0.05	0.25	580-530	600-680	A	A	0.5-0.8	2.65	Normally not heat treated.

EN = European standard  
AB = Aluminium ingots

Comments: The values in brackets are the composition of castings (EN AC), when they differ from ingots.

<sup>1)</sup>Composition with respect to Ti does not include titanium with compounds intended for grain refinement. <sup>2)</sup>"Other" does not include elements for grain refinement or purification of melt, such as Na, Sr, Sb and P.

\*according to EN 1706 \*\*according to Aluminium Gusslegierung VAR Classification: A=Excellent B=Good C=Fair D=Not recommended E=Unsuitable

**EN 1706**

Alloy designations:

Numeric	ISO
EN AC-43400	ISO Al Si10Mg(Fe)
EN AC-44300	ISO Al Si12(Fe)(a)
EN AC-44400	ISO Al Si9
EN AC-44500	ISO Al Si12(Fe)(b)
EN AC-46000	ISO Al Si9Cu3(Fe)
EN AC-46100	ISO Al Si11Cu2(Fe)
EN AC-46500	ISO Al Si9Cu3(Fe)(Zn)
EN AC-47100	ISO Al Si12Cu1(Fe)

EN = European standard  
AC = Component cast in aluminium

**MECHANICAL PROPERTIES<sup>1)</sup>**

Conditions <sup>2)</sup>	Tensile strength, R <sub>m</sub> MPa <sup>3)</sup> min.	Yield strength R <sub>p0.2</sub> MPa <sup>3)</sup> min.	Elongation A50% min.	Brinell hardness HBS min.
DF	240	140	1	70
DF	240	130	1	60
DF	220	120	2	55
DF	240	140	1	60
DF	240	140	<1	80
DF	240	140	<1	80
DF	240	140	<1	80
DF	240	140	1	70

<sup>1)</sup> Values given are only guideline values. This is the minimum value for separately cast bars with a thickness of 2.0mm. Correct values can only be given by testing the whole component.  
<sup>2)</sup> DF = Die casting, casting condition  
<sup>3)</sup> 1MPa = 1N/mm<sup>2</sup>

**GENERAL DESCRIPTION OF PROPERTIES**

Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability as well as high chemical resistance.
Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability as well as high chemical resistance.
Near-eutectic alloy with excellent casting properties but with risk of adhesion to tools. Good resistance to hot tearing as well as high chemical resistance.
Eutectic alloy with excellent casting properties. Good machinability with relatively high chemical resistance.
Very good castable universal alloy, especially suitable for die casting Slight tendency to sinking and forming internal porosity. Good machinability.
Alloy with very good castability, excellent fluidity and good machinability.
Very good castable universal alloy, especially suitable for die casting Slight tendency to sinking and forming internal porosity. Very good machinability.
Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability.

**POSSIBLE USES**

For complicated, thin-wall, pressure-tight castings subject to fatigue loading, with high strength and good corrosion resistance.
For complicated, thin-wall, pressure-tight castings subject to fatigue loading, with good corrosion resistance. Especially for difficult, thin-wall castings with good elongation.
For castings with requirements for toughness and corrosion resistance.
For complicated, thin-wall, pressure-tight castings subject to fatigue loading, with high strength and relatively good corrosion resistance.
For all-round use. Even for complicated thin-wall castings. Especially for die castings with high stresses.
For all-round use. Especially for thin-wall castings.
For all-round use. Even for complicated thin-wall castings. Especially for die castings with high stresses.
For complicated, thin-wall, pressure-tight castings subject to fatigue loading.

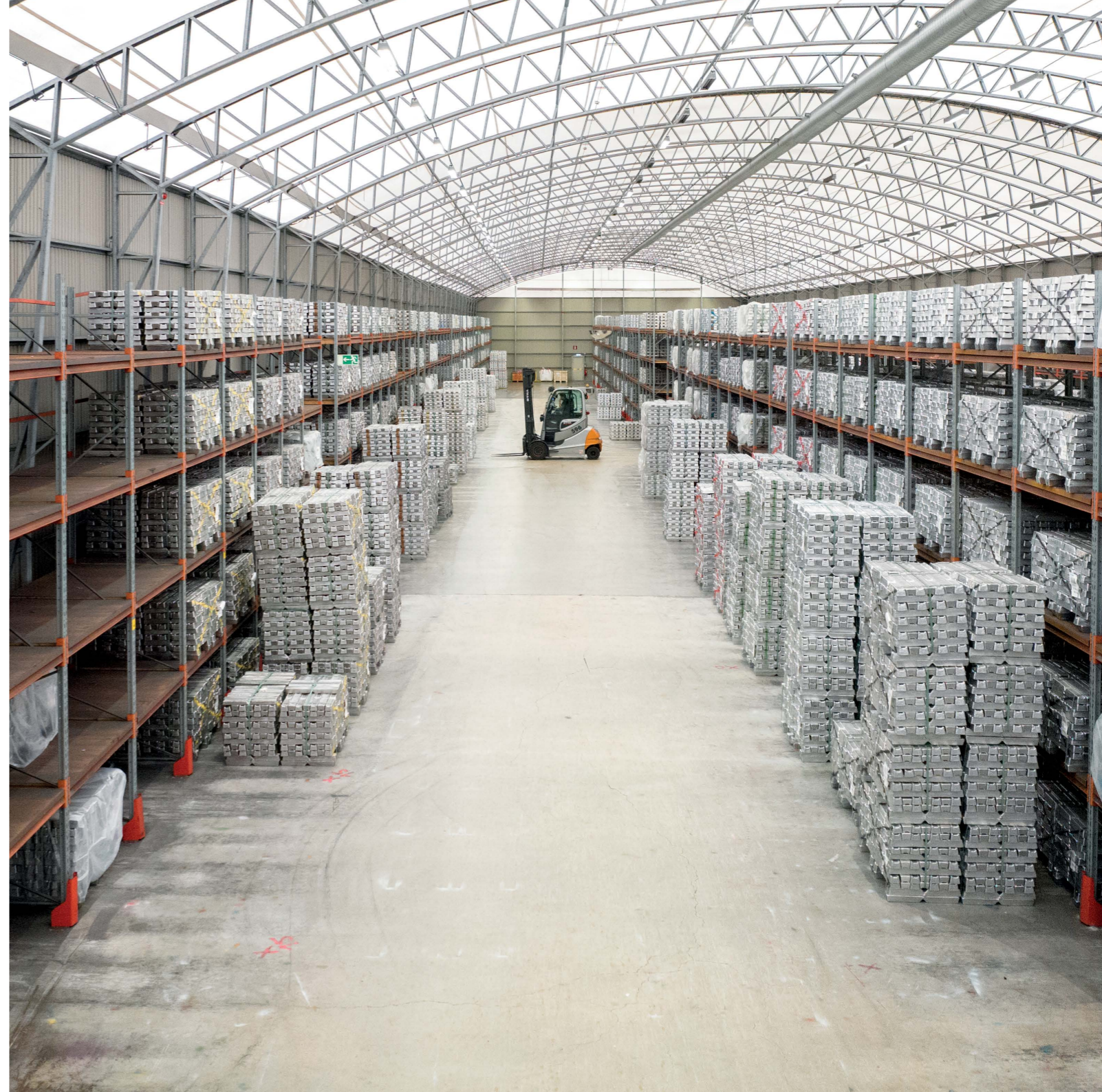
**MECHANICAL AND PHYSICAL PROPERTIES**

Pressure sealing*	Strength	Machinability	Weldability <sup>4)</sup>	Corrosion resistance	Decorative anodization	Polishability	Linear expansion coefficient 20-100 °C	Electrical conductivity MS/m	Thermal conductivity w/m K
C	B	B	C	B/C	E	B/C	21x10 <sup>-6</sup>	16-21	130-150
C	B	C	D	B/C	E	D	20x10 <sup>-6</sup>	16-22	130-160
C	C	C	D	B/C	E	D	21x10 <sup>-6</sup>	16-22	130-150
C	B	C	D	B/C	E	D	20x10 <sup>-6</sup>	16-22	130-160
C	B	B	F	D	E	C	21x10 <sup>-6</sup>	13-17	110-120
C	B	C	F	D	E	C	20x10 <sup>-6</sup>	14-18	120-130
C	B	B	F	D	E	C	21x10 <sup>-6</sup>	13-17	110-120
C	B	C	F	C	E	C	20x10 <sup>-6</sup>	15-20	120-150

<sup>4)</sup> The weldability of die castings depends on the quantity of internal gas and, in most cases, is very poor. With special die casting technology, satisfactory to good weldability can be obtained.

# ALLOYS FOR SAND AND CHILL CASTING

In addition to the European standards, you will find all sand and chill casting alloys in our product range.



EN 1676

CHEMICAL COMPOSITION (IN WEIGHT %)

CASTING PROPERTIES

HEAT TREATMENT<sup>5)</sup>

Alloy designations:

Si Fe Cu Mn Mg Cr Ni Zn Pb Sn Ti<sup>0)</sup>

Other<sup>2)</sup> each Other<sup>2)</sup> total Solidification range\*\* °C approx. Casting temperature\*\* °C approx. Fluidity\* Resistance to hot tearing\* Shrinkage\*\* % approx. Density\*\* approx. value kg/dm<sup>3</sup>

Numeric Chemical formula

Numeric	Chemical formula	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti <sup>0)</sup>	Other <sup>2)</sup> each	Other <sup>2)</sup> total	Solidification range** °C approx.	Casting temperature** °C approx.	Fluidity*	Resistance to hot tearing*	Shrinkage** % approx.	Density** approx. value kg/dm <sup>3</sup>	HEAT TREATMENT <sup>5)</sup>
EN AB-42000	Al Si7Mg	6.5-7.5	0.45 (0.55)	0.15 (0.20)	0.35	0.25-0.65 (0.20-0.65)	-	0.15	0.15	0.15	0.05	0.20 <sup>3)</sup> (0.25)	0.05	0.15	620-570	700-750	B	A	S:1-1.2 K:0.8-1	2.65	Solution annealing at 520-530 °C for 3-6 hours, after which it is quenched and artificially aged at 150-175 °C for 15-5 hours.
EN AB-43000	Al Si10Mg(a)	9.0-11.0	0.40 (0.55)	0.03 (0.05)	0.45	0.25-0.45 (0.20-0.45)	-	0.05	0.10	0.05	0.05	0.15	0.05	0.15	600-550	670-750	A	A	S:1-1.2 K:0.8-1	2.65	Solution annealing at 520-530 °C for 3-6 hours, after which it is quenched and artificially aged at 150-175 °C for 15-5 hours.
EN AB-43100	Al Si10Mg(b)	9.0-11.0	0.45 (0.55)	0.08 (0.10)	0.45	0.25-0.45 (0.20-0.45)	-	0.05	0.10	0.05	0.05	0.15	0.05	0.15	600-550	670-750	A	A	S:1-1.2 K:0.8-1	2.65	Solution annealing at 520-530 °C for 3-6 hours, after which it is quenched and artificially aged at 150-175 °C for 15-5 hours.
EN AB-43200	Al Si10Mg(Cu)	9.0-11.0	0.55 (0.65)	0.30 (0.35)	0.55	0.25-0.45 (0.20-0.45)	-	0.15	0.35	0.10	-	0.15 (0.20)	0.05	0.15	600-550	670-750	A	A	S:1-1.2 K:0.8-1	2.65	Solution annealing at 520-530 °C for 3-6 hours, after which it is quenched and artificially aged at 150-175 °C for 15-5 hours.
EN AB-44100	Al Si12(b)	10.5-13.5	0.55 (0.65)	0.10 (0.15)	0.55	0.10	-	0.10	0.15	0.10	-	0.15 (0.20)	0.05	0.15	580-570	670-750	A	A	S:1-1.2 K:0.8-1	2.65	Cannot be artificially aged. Annealed at 520-530 °C for 3-5 hours, after which it is quenched in water.
EN AB-44200	Al Si12(a)	10.5-13.5	0.40 (0.55)	0.03 (0.05)	0.35	-	-	-	0.10	-	-	0.15	0.05	0.15	580-570	670-750	A	A	S:1-1.1 K:0.8-1	2.65	Cannot be artificially aged. Annealed at 520-530 °C for 3-5 hours, after which it is quenched in water.
EN AB-44400	Al Si9	8.0-11.0	0.55 (0.65)	0.08 (0.10)	0.50	0.10	-	0.05	0.15	0.05	0.05	0.15	0.05	0.15	600-500	680-750	A	A	K:0.8-1	2.75	Not age-hardenable.
EN AB-46200	Al Si 8Cu3	7.5-9.5	0.7 (0.8)	2.0-3.5	0.15-0.65	0.15-0.55 (0.05-0.55)	-	0.35	1.2	0.25	0.15	0.20 (0.25)	0.05	0.25	600-500	680-750	B	B	S:1-1.1 K:0.9-1	2.65	Not normally age hardened.
EN AB-46400	Al Si9Cu1 Mg	8.3-9.7	0.7 (0.8)	0.8-1.3	0.15-0.55	0.30-0.65 (0.25-0.65)	-	0.20	0.8	0.10	0.10	0.18 <sup>3)</sup> (0.20)	0.05	0.25	600-550	680-750	B	B	S:1-1.1 K:0.8-1	2.65	Solution annealed at 520-530 °C for 3-6 hours, after which it is quenched in water and artificially aged at 150-175 °C for 15-5 hours.
EN AB-47000	Al Si12(Cu)	10.5-13.5	0.7 (0.8)	0.9 (1.0)	0.05-0.55	0.35	0.10	0.30	0.55	0.20	0.10	0.15 (0.20)	0.05	0.25	580-530	680-750	A	A	S:1-1.2 K:0.8-1	2.65	Not age-hardenable.

EN = European standard  
AB = Aluminium ingots  
Comments: The values in brackets are the composition of castings (EN AC), when they differ from ingots.

<sup>1)</sup>Composition with respect to Ti does not include titanium with compounds intended for grain refinement.  
<sup>2)</sup>"Other" does not include elements for grain refinement or purification of melt such as Na, Sr, Sb, and P.  
<sup>3)</sup>Lowest Ti content is not used if grain refinement is not relevant or is satisfied in another way.

<sup>4)</sup>S = Sand casting K = Chill casting  
<sup>5)</sup>Shorter time and/or higher temperature for chill castings. Longer time and/or lower temperature for sand castings. The time is counted from when the temperature is reached.

Classification: A=Excellent B=Good C=Fair D=Not recommended E=Unsuitable  
\*according to EN 1706  
\*\*according to Aluminium Gusslegierung VAR

EN 1706

**MECHANICAL PROPERTIES FOR SEPARATELY CAST TEST BARS**

**GENERAL DESCRIPTION OF PROPERTIES**

**POSSIBLE USES**

**MECHANICAL AND PHYSICAL PROPERTIES**

Alloy designations:

Conditions<sup>1)</sup> Tensile strength, Yield strength Elongation Brinell  
 R<sub>m</sub> MPa<sup>2)</sup> min. R<sub>p0.2</sub> MPa<sup>2)</sup> min. A50% min. hardness  
 HBS min.

Pressure sealing\* Strength Machin- ability\* Weld ability\* Corrosion resistance Deco- rative anodization Polish- ability Linear expansion coefficient 20-100 °C Electrical conductivity MS/m Thermal conductivity w/m K

Numeric	ISO	SF	140	80	2	50			B	B	B/C	B	B/C	D	C	22x10 <sup>-6</sup>	19-25	150-170
EN AC-42000	ISO Al Si7Mg	ST6	220	180	1	75	Eutectic alloy with good casting properties. Good machinability, good weldability, and high chemical resistance.	For complicated, pressure-tight castings subject to fatigue loading. Good corrosion resistance and high strength after heat treatment.										
		KF	170	90	2.5	55												
		KT6	260	220	1	90												
		KT64	240	200	2	80												
EN AC-43000	ISO Al Si10Mg(a)	SF	150	80	2	50	Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.	For complicated, thin-wall, pressure-tight castings subject to fatigue loading. Very good corrosion resistance and high strength after heat treatment.	B	B	B/C	A	B	E	D	21x10 <sup>-6</sup>	18-25	140-170
		ST6	220	180	1	75												
		KF	180	90	2.5	55												
		KT6	260	220	1	90												
		KT64	240	200	2	80												
EN AC-43100	ISO Al Si10Mg(b)	SF	150	80	2	50	Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.	For complicated, thin-wall, pressure-tight castings subject to fatigue loading. Good corrosion resistance and high strength after heat treatment.	B	B	B/C	A	C	E	D	21x10 <sup>-6</sup>	18-25	140-170
		ST6	220	180	1	75												
		KF	180	90	2.5	55												
		KT6	260	220	1	90												
		KT64	240	200	2	80												
EN AC-43200	ISO Al Si10Mg(Cu)	SF	160	80	1	50	Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability and excellent weldability.	For complicated, thin-wall, pressure-tight castings subject to fatigue loading. High strength after heat treatment but with limited properties regarding corrosion resistance.	B	B	B/C	A	C	E	C	21x10 <sup>-6</sup>	16-24	130-170
		ST6	220	180	1	75												
		KF	180	90	1	55												
		KT6	240	200	1	80												
EN AC-44100	ISO Al Si12(b)	SF	150	70	4	50	Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.	For complicated, thin-wall, pressure-tight castings subject to fatigue loading. Good elongation and good corrosion resistance.	A	D	C	A	B/C	E	D	20x10 <sup>-6</sup>	16-23	130-160
		KF	170	80	5	55												
EN AC-44200	ISO Al Si12(a)	SF	150	70	5	50	Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.	For complicated, thin-wall, pressure-tight castings subject to fatigue loading. Good elongation and very good corrosion resistance.	A	D	C	A	B	E	D	20x10 <sup>-6</sup>	17-24	140-170
		KF	170	80	6	55												
EN AC-44440	ISO Al Si9	SF	170	80	4	50	Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability, excellent weldability and high chemical resistance.	For castings that requires good toughness and resistance to corrosion.	C	C	C	D	C	E	D	21x10 <sup>-6</sup>	16-22	130-150
		KF	180	90	5	55												
EN AC-46200	ISO Al Si8Cu3	SF	150	90	1	60	Very good castability, universal alloy. Slight tendency to sinking and forming internal porosity. Good machinability and good weldability.	For all-round use even for complicated thin-wall castings.	B	B	B	B	D	E	C	21x10 <sup>-6</sup>	14-18	110-130
		KF	170	100	1	75												
EN AC-46400	ISO Al Si9Cu1 Mg	SF	135	90	1	60	Very good castability, universal alloy. Slight tendency to sinking and forming internal porosity. Good machinability and good weldability.	For all-round use even for complicated thin-wall castings.	B	A	B	B	D	E	D	21x10 <sup>-6</sup>	16-22	130-150
		KF	170	100	1	75												
		KT6	275	235	1.5	105												
EN AC-47000	ISO Al Si12(Cu)	SF	150	80	1	50	Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability, excellent weldability.	For complicated, thin-wall, pres- sure-tight castings subject to fatigue loading, but with limitations regarding corrosion resistance and toughness.	A	D	C	A	C	E	C	20x10 <sup>-6</sup>	16-22	130-150
		KF	170	90	2	55												

EN = European standard  
 AB = Component cast in aluminium

<sup>1)</sup>Composition in respect of Ti does not include titanium with impurities intended for grain refinement.  
<sup>2)</sup>"Other" does not include the substances for grain refinement or refining of smelt such as Na, Sr, Sb and P.  
<sup>3)</sup>The lowest Ti content is not used if grain refinement is not relevant or otherwise satisfactory.

\*according to EN 1706  
 \*\*according to Aluminium Gusslegierung VAR

Classification: A=Excellent B=Good C=Fair D=Not recommended E=Unsuitable

# STRUCTURAL ALLOYS

In addition to the European standards, you will find additional structural alloys in our product range.

## 42400

### CHEMICAL COMPOSITION

	Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Other each	Other total
EN 1676:2020	Min %	6.5	-	-	0.35	0.15	-	-	-	-	-	-	-	-
	Max %	8.5	0.20	0.03	0.75	0.45	0.05	0.05	0.03	0.05	0.05	0.15	0.05	0.15
EN 1706:2020	Min %	6.5	-	-	0.35	0.1	-	-	-	-	-	-	-	-
	Max %	8.5	0.25	0.05	0.75	0.45	0.05	0.05	0.03	0.05	0.05	0.2	0.05	0.15

Other includes the limit values for all elements not listed in the table.

### MECHANICAL PROPERTIES – DIE CASTING EN 1706:2020

Conditions	Tensile strength, $R_m$ [MPa] min.	Yield strength $R_{p0.2}$ MPa min.	Elongation $A_{25m}$ [%]	Brinell hardness $HB_{15/250}$ room temperature	Fatigue resistance MPa
F	200	100	7	60	80-110
T5	210	120	7	60	80-110

Mechanical properties obtained from samples cast separately.  
Values for tests under rotating bending conditions up to  $10^7$  cycles (Wöhler curve).

## 43500

### CHEMICAL COMPOSITION

	Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Other each	Other total
EN 1676:2020	Min %	9.0	-	-	0.4	0.15	-	-	-	-	-	-	-	-
	Max %	11.5	0.20	0.03	0.8	0.6	0.05	0.05	0.07	0.05	0.05	0.15	0.05	0.15
EN 1706:2020	Min %	9.0	-	-	0.4	0.1	-	-	-	-	-	-	-	-
	Max %	11.5	0.25	0.05	0.8	0.6	0.05	0.05	0.07	0.05	0.05	0.2	0.05	0.15

Other includes the limit values for all elements not listed in the table.

### MECHANICAL PROPERTIES – DIE CASTING EN 1706:2020

Conditions	Tensile strength, $R_m$ [MPa] min.	Yield strength $R_{p0.2}$ MPa min.	Elongation $A_{25m}$ [%]	Brinell hardness $HB_{15/250}$ room temperature	Fatigue resistance MPa
F	200	120	5	65	80-90
T5	270	150	4	80	80-90
T7	200	120	12	60	80-90

Mechanical properties obtained from samples cast separately.  
Values for tests under rotating bending conditions up to  $10^7$  cycles (Wöhler curve).

# WE GUIDE YOU ALL THE WAY

Whether you need to solve a specific problem  
or are looking for a customized comprehensive solution.

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