

# CAST ALLOYS IN ALUMINIUM

---

ALUMINUM PRODUCTION THROUGH RECYCLING SINCE 1949



 **STENA**  
ALUMINIUM



# TABLE OF CONTENTS

---

THIS IS STENA ALUMINIUM AB	3
CUSTOMER-SPECIFIC ALUMINIUM ALLOYS	4
ALLOY KEYS	4
STENAL 460	5
STENAL RHEO	5
DIE CASTING ALLOYS	6-7
SAND AND CHILL CASTING ALLOYS	8-11

# THIS IS STENA ALUMINIUM AB

---

Our vision: We are the industry leader in Europe for sustainability and customer satisfaction.  
Our business idea: We are a long-term partner for aluminium foundries and their customers.  
Operational excellence enables us to provide recycling-based aluminium alloys and value-added services.

INNOVATIVE RECYCLING  
IN ÄLMHULT SINCE

# 1906

## OPERATIONS

---

Stena Aluminium is the leading producer of aluminium alloys from recycled raw materials in the Nordic countries.

We produce upwards of 300 different aluminium alloys for aluminium foundries in Northern Europe. Besides aluminium alloys, we also assist with technical matters in metallurgy, materials and processes, as well as market impact and sustainable business solutions. In co-operation with our customers we create solutions to facilitate and streamline everyday life and work, which ultimately strengthens the competitiveness for our customers and customers' customers.

In order to be a long-term sustainable business partner, we continuously reinvest in our operations. We are actively working with continuous improvements to create efficient and environmentally-friendly production and value-creating

management of both raw materials and slag waste. We are constantly striving to reduce the environmental impact of our operations.

There is a major focus on environment and safety throughout the business, and it is characterized by a positive, safe and stimulating working environment.

Stena Aluminium operates its production facility in Älmhult, where its roots go back to 1906 when Gotthard Nilsson established recycling activities in Älmhult. As the plant is located in the center of Älmhult, the company has made comprehensive investments in the local environment in order to be a "Good Neighbor".

The licensed volume for the plant amounts to 90,000 tonnes per year. Stena Aluminium has a turnover of SEK 1 billion and employs more than 100 people.

# CUSTOMER-SPECIFIC ALUMINIUM ALLOYS

Our products are customer-specific aluminium alloys produced through recycling.

Our processes are continually being developed and are subject to thorough analysis and extensive quality control checks: from the moment we receive the raw material, during the entire processing and production stage and up to the time of delivery. All of these elements form the basis for high ratings from our customers for accurate and consistent quality and high delivery precision.

All aluminium alloys should be adapted based on the requirements of the customer on the properties of the products.

Our alloys are mainly used in the automotive, electronics, engineering and furniture industries. We produce a couple of hundred different alloys with varying properties in terms of the conductivity, heat conductivity, resistance to corrosion, strength, polishability, breaking strength, yield strength, machinability, weldability and much, much more.

We can supply all alloys in the form of aluminium ingots or liquid aluminium. The ingots are stacked in bundles that are strapped together for more efficient handling.

Stena Aluminium is the only supplier in the Nordic countries that supplies liquid aluminium to industry. The deliveries are made in specially built industrial crucibles, each containing eight tonnes of aluminium, with three crucibles per truck. The temperature of the aluminium in the crucible is adapted to customer requirements and can therefore be used immediately in the customer's production. Large amounts of energy are saved by customers not needing to melt the aluminium ingots. This entails that each delivery of liquid aluminium means two tonnes less of carbon dioxide emissions.

## 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 10 Mg			
43100	4253	239		AC4A, Al-Si 10 Mg		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

This is a further development of the most common casting alloy, EN AB-46000 (Al Si9Cu3(Fe)), with high-performance properties. Stenal 460 has a tighter alloying range for favorable process effects and adjusted levels of alloying elements, which improves its properties. The alloy has a lower iron content, is alloyed with strontium and the manganese content is balanced against the iron content compared to a standard alloy. The distinguishing properties

of Stenal 460 are high strength, good fatigue properties and good plastic strain. Apart from the excellent strength properties, the alloy gives a lower process variation, which provides good opportunities for lower discard levels. The lower porosity in die castings makes it possible to heat-treat the component, which in turn makes it possible to tailor the properties to the application.

## CHEMICAL COMPOSITION

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Sb	P	Ca
Min %	8,70	0,5	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, max 0.05% each. Total content of other elements, max 0.25%. The strontium level is higher in delivered ingots to allow for the burn off that takes place during remelting and holding. For finished castings, a suitable strontium level is 0.02-0.03%. For longer standstills, it may be necessary to add strontium.

## MECHANICAL PROPERTIES

	Proof stress $R_{p0.2}$ [MPa] min.	Tensile strength, $R_m$ [MPa] min.	Elongation $A_{25m}$ [%]	Brinell hardness $HB_{[5/250]}$ room temperature
ac	220 (22)	361 (25)	2,8 (0,6)	118
vc	226 (8)	352 (6)	2,6 (0,3)	123

Stated values refer to air (ac) and water cooled (vc) separately cast test bars. Standard deviation (1S) is given within brackets. The real values depend on the casting process and cast geometry. A critical parameter is the casting thickness, where a thicker casting generally has a lower strength. Correct values can only be stated after sampling the whole component.

# STENAL RHEO

An alloy developed for rheo casting with good casting properties in half-solidified condition (often around 30-40% solid phase) Moderate strength properties. The distinguishing properties are good mold filling and high thermal conductivity. The alloy is only intended to rheo casting.

Ideal for complex and thin-wall castings, but also works well for thick-wall components with moderate requirements on the mechanical properties. The alloy can be heat treated or age-hardened if casting porosity is kept low.

## CHEMICAL COMPOSITION

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Sb	P	Ca
Min %	5,5	-	2,2	-	0,15	-	-	-	-	-	-	-	-	-	-
Max %	6,5	0,6	2,7	0,3	0,3	0,15	0,55	1,2	0,35	0,25	0,20	-	-	-	-

Other elements, max 0.05% each. Total content of other elements, max 0.25%.

## MECHANICAL PROPERTIES

	Proof stress $R_{p0.2}$ [MPa] min.	Tensile strength, $R_m$ [MPa] min.	Elongation $A_{25m}$ [%]	Brinell hardness $HB_{[5/250]}$ room temperature
Mechanical properties for separately cast test bars	125	220	2	75

# DIE CASTING ALLOYS

## ALLOYS FOR DIE CASTING EN 1676

Alloy designations:

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

EN = European standard  
AB = Aluminium ingots

## CHEMICAL COMPOSITION FOR CASTING ALLOYS EN 1676 (IN WEIGHT %)

Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti <sup>1)</sup>
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)
10.5-13.5	0.45-0.9 (1.0)	0.08 (0.10)	0.55	-	-	-	0.15	-	-	0.15
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
10.5-13.5	0.45-0.90 (1.0)	0.18 (0.20)	0.55	0.40	-	-	0.30	-	-	0.15
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)
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)
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)
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)

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

## ALLOYS FOR DIE CASTING EN 1706

Alloy designations:

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

EN = European standard  
AC = Component cast in aluminium

## MECHANICAL PROPERTIES EN 1706<sup>1)</sup>

Conditions <sup>2)</sup>	Breaking strength Rm MPa <sup>3)</sup> min.	Yield strength Rp0.2 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 2.0 mm. 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.

We present here the European standards for die casting. We show the chemical requirements for composition, casting properties, heat treatment, and mechanical properties. We also provide a description of the general

properties as well as the possible areas of use. These are, of course, available in our product range, but if you wish we would be happy to help you produce the right alloy for your particular need.

**CASTING PROPERTIES**  
EN 1706

**HEAT TREATMENT**

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>	
0.05	0.15	600-550	600-650	A	A	0.5-0.8	2.65	Normally not heat treated.
0.05	0.25	580-570	600-700	A	A	0.5-0.8	2.65	Not age-hardenable.
0.05	0.15	600-550	650-700	A	A	0.5-0.8	2.65	Not age-hardenable.
0.05	0.25	600-550	600-700	A	A	0.5-0.8	2.65	Normally not heat treated.
0.05	0.25	600-490	600-650	B	B	0.5-0.8	2.75	Normally not heat treated.
0.05	0.25	580-530	650-700	A	B	0.5-0.8	2.75	Normally not heat treated.
0.05	0.25	600-490	650-700	B	B	0.5-0.8	2.75	Normally not heat treated.
0.05	0.25	580-530	600-680	A	A	0.5-0.8	2.65	Normally not heat treated.

<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

**POSSIBLE USES**

**MECHANICAL AND PHYSICAL PROPERTIES**

	Pressure sealing* th	Strength	Machin- ability	Weld ability <sup>4)</sup>	Corrosion resistance	Deco- rative anodiza- tion	Polish- ability	Linear expansion coefficient 20-100° C	Electrical conduc- tivity MS/m	Thermal conduc- tivity w/m K
For complicated, thin-wall, pressure-tight castings subject to fatigue loading, with high strength and good corrosion resistance.	C	B	B	C	C	E	B/C	21x10 <sup>-6</sup>	16-21	130-150
For complicated, thin-wall, pressure-tight castings subject to fatigue loading, with good corrosion resistance. Especially for difficult, thin-wall castings with good elongation.	C	B	C	D	C	E	D	20x10 <sup>-6</sup>	16-22	130-160
For castings with requirements for toughness and corrosion resistance.	C	C	C	D	C	E	D	21x10 <sup>-6</sup>	16-22	130-150
For complicated, thin-wall, pressure-tight castings subject to fatigue loading, with high strength and relatively good corrosion resistance.	C	B	C	D	C	E	D	20x10 <sup>-6</sup>	16-22	130-160
For all-round use. Even for complicated thin-wall castings. Especially for die castings with high stresses.	C	B	B	F	D	E	C	21x10 <sup>-6</sup>	13-17	110-120
For all-round use. Especially for thin-wall castings.	C	B	C	F	D	E	C	20x10 <sup>-6</sup>	14-18	120-130
For all-round use. Even for complicated thin-wall castings. Especially for die castings with high stresses.	B	B	B	F	D	E	C	21x10 <sup>-6</sup>	13-17	110-120
For complicated, thin-wall, pressure-tight castings subject to fatigue loading.	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.

# SAND AND CHILL CASTING ALLOYS

ALLOYS FOR SAND AND CHILL CASTING EN 1676

CHEMICAL COMPOSITION FOR CASTING ALLOYS EN 1676 (IN WEIGHT %)

Alloy designations according to:

Numeric	Chemical formula
EN AB-42000	Al Si7Mg
EN AB-43000	Al Si10Mg(a)
EN AB-43100	Al Si10Mg(b)
EN AB-43200	Al Si10Mg(Cu)
EN AB-44100	Al Si12(b)
EN AB-44200	Al Si12(a)
EN AB-44400	Al Si9
EN AB-46200	Al Si8Cu3
EN AB-46400	Al Si9Cu1 Mg
EN AB-47000	Al Si12(Cu)

Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti <sup>1)</sup>
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>2)</sup> (0.25)
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
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
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)
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)
10.5-13.5	0.40 (0.55)	0.03 (0.05)	0.35	-	-	-	0.10	-	-	0.15
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
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)
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)
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)

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.



Here we present the European standards for sand and chill casting. We show the chemical requirements for composition, casting properties, heat treatment, and mechanical properties. We also provide a description of the general properties as well

as the possible areas of use. These are, of course, available in our product range, but if you wish we would be happy to help you produce the right alloy for your particular need.

#### CASTING PROPERTIES

#### HEAT TREATMENT <sup>5)</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. <sup>4)</sup>	Density** approx. value kg/dm <sup>3</sup>	
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.
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.
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.
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.
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.
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.
0.05	0.15	600-500	680-750	A	A	K:0.8-1	2.75	Not age-hardenable.
0.05	0.25	600-500	680-750	B	B	S:1-1.1 K:0.9-1	2.65	Not normally age hardened.
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.
0.05	0.25	580-530	680-750	A	A	S:1-1.2 K:0.8-1	2.65	Not age-hardenable.

<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

# SAND AND CHILL CASTING ALLOYS CONT.

## ALLOYS FOR SAND AND CHILL CASTING

Alloy designation according to:

Numeric ISO

EN AC-42000 ISO Al Si7Mg

EN AC-43000 ISO Al Si10Mg(a)

EN AC-43100 ISO Al Si10Mg(b)

EN AC-43200 ISO Al Si10Mg(Cu)

EN AC-44100 ISO Al Si12(b)

EN AC-44200 ISO Al Si12(a)

EN AC-44440 ISO Al Si9

EN AC-46200 ISO Al Si8Cu3

EN AC-46400 ISO Al Si9Cu1 Mg

EN AC-47000 ISO Al Si12(Cu)

## MECHANICAL PROPERTIES FOR SEPARATELY CAST TEST BARS EN 1706

Conditions<sup>1)</sup> Breaking strength Rm MPa<sup>2)</sup> min. Yield strength Rp0.2 MPa<sup>2)</sup> min. Elongation A50 % min. Brinell hardness HBS min.

Conditions <sup>1)</sup>	Breaking strength Rm MPa <sup>2)</sup> min.	Yield strength Rp0.2 MPa <sup>2)</sup> min.	Elongation A50 % min.	Brinell hardness HBS min.
SF	140	80	2	50
ST6	220	180	1	75
KF	170	90	2.5	55
KT6	260	220	1	90
KT64	240	200	2	80
SF	150	80	2	50
ST6	220	180	1	75
KF	180	90	2.5	55
KT6	260	220	1	90
KT64	240	200	2	80
SF	150	80	2	50
ST6	220	180	1	75
KF	180	90	2.5	55
KT6	260	220	1	90
KT64	240	200	2	80
SF	160	80	1	50
ST6	220	180	1	75
KF	180	90	1	55
KT6	240	200	1	80
SF	150	70	4	50
KF	170	80	5	55
SF	150	70	5	50
KF	170	80	6	55
SF	170	80	4	50
KF	180	90	5	55
SF	150	90	1	60
KF	170	100	1	75
SF	135	90	1	60
KF	170	100	1	75
KT6	275	235	1.5	105
SF	150	80	1	50
KF	170	90	2	55

## GENERAL DESCRIPTION OF PROPERTIES

Eutectic alloy with good casting properties. Good machinability, good weldability, and high chemical resistance.

Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.

Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.

Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability and excellent weldability.

Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.

Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability, excellent weldability, and high chemical resistance.

Near-eutectic alloy with excellent casting properties and good resistance to hot tearing. Good machinability, excellent weldability and high chemical resistance.

Very good castability, universal alloy. Slight tendency to sinking and forming internal porosity. Good machinability and good weldability.

Very good castability, universal alloy. Slight tendency to sinking and forming internal porosity. Good machinability and good weldability.

Eutectic alloy with excellent casting properties, excellent fluidity and high resistance to hot tearing. Good machinability, excellent weldability.

EN = European standard  
AB = Component cast in aluminium  
Anm: Värden inom parantes är sammansättning på gjutet gods (EN AC) då de skiljer sig från tackor.

<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.

POSSIBLE USES

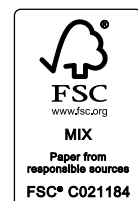
MECHANICAL AND PHYSICAL PROPERTIES

	Pressure-tightness*	Strength	Machinability	Weldability**	Corrosion resistance	Decorative anodization	Polishability	Linear expansion coefficient 20-200 °C	Electrical conductivity MS/m	Thermal conductivity W/m <sup>2</sup> K
For complicated, pressure-tight castings subject to fatigue loading. Good corrosion resistance and high strength after heat treatment.	B	B	B/C	B	B/C	D	C	22x10 <sup>-6</sup>	19-25	150-170
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
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
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
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
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
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
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
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
For complicated, thin-wall, pressure-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

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

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

Multi Art Silk is FSC-certified and bears the EU Ecolabel. Multi Art Silk is on the Nordic Council of Ministers' list of inspected paper and can be used in Swan-marked printed matter. Produced by the Stena Metall Group. Photographer: Lars Ardarve.



Stena Aluminium AB  
Gotthards gata 5  
SE-343 21 Älmhult, Sweden  
Phone +46 10 445 95 00  
Fax +46 476 124 04  
info@stenaaluminium.com  
www.stenaaluminium.com

You'll be recycling this  
brochure once you're  
finished with it, right?  
Each tonne of recycled  
paper saves 14 trees!



 **STENA**  
ALUMINIUM