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CATALOG FOR COMPANY PROFILE

RINNO ALUMINUM

Our company with the high technology of
Aluminum extrusion gives customers satisfaction

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RINNO ALUMINUM

201 Gilcheonsaneop-ro,
Sangbuk-myeon, Ulju-gun,
Ulsan, Korea

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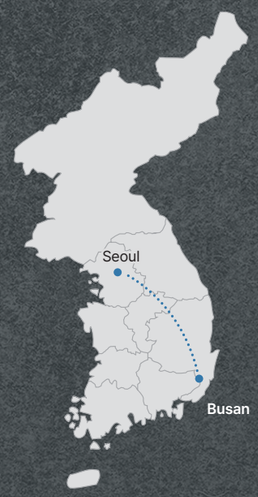
E-mail. rinno@rinno.co.kr

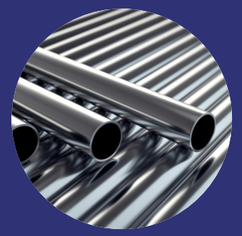


Seoul~Ulsan. About 2hour 10min (by KTX)
Ulsan~Busan. About 15min (by KTX)

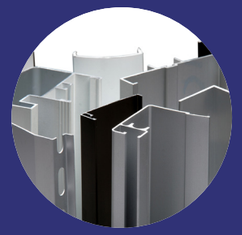
RINNO ALUMINUM

RINNO Aluminum stands at the forefront of aluminum technology, from extrusion and machining to bending and assembly.

RINNO Aluminum is about enterprising spirit and tenacious dedication to technology.



We will be a company that does our best to give you the greatest satisfaction and impression



RINNO ALUMINUM that makes a better future

Welcome to RINNO ALUMINUM

Pioneering a new age of customer success through leading aluminum extrusion and machining technology.

CEO Greeting

RINNO ALUMIUM was founded in 1988, starting business in the field of industrial furnaces. It expanded its business field into the processing and assembly of alumium window systems for Daewoo buses and others and acquired the technology and experience in the area of automotive parts, especially "rubber bush", one of the highly functional automotive parts along with the production technology in other functional aluminum automotive parts along with the production technology in other functional aluminum automotive parts.
Having the best technologies in the field of extrusion, processing, bending and assembly of aluminium materials, it has been making every effort to meet the needs of customers. I think that all these accomplishments are achieved though the support and interest of our cestomers. We will do our best to keep meeting the demands of our cestomers.

Company Overview

Rinno Aluminum Company information	**Company Name** Rinno Aluminum Co., Ltd.	**CEO** Lee Se-young	**Date of establishment** Astablished A Corporation On June 1, 2009
Address 201, Gilcheonsaneop-ro, Sangbuk-myeon, Ulju-gun, Ulsan, Republic of Korea	**Main Phone** +82-52-707-5001	**Fax** +82-52-707-5002	**Business area** EV components, Industrial Aluminum Extrusion

Strategy

01

Innovative reduction of energy using the lighter chassis through the development of the alternative material.

02

Prevention of the global warming through the reduction of the fossil fuels and usage of the energy with high efficiency for the cars, railroads, and ships.

03

Guardian of the clean environment with the development of the industrial material applying the regeneration effect and incombustibility of Aluminum.

Key Clients

GM

FORD

MAZDA

FCA

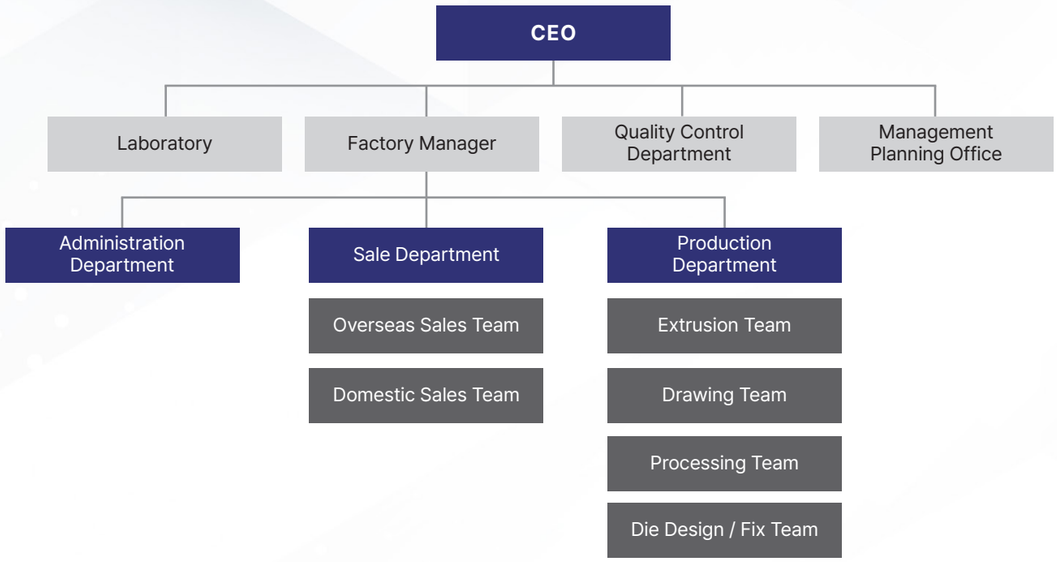
TESLA

BMW

RIVIAN

TOYOTA

Organization

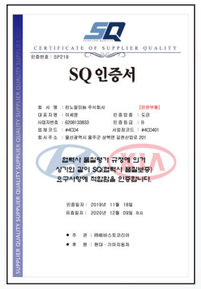


Quality Certificate

KS Certification

IATF 16949 : 2016

ISO 9001



SQ Certification

CE Certification

UL Certification

DNV

INNO-BIZ

RINNO ALUMINUM HISTORY

2022
- 07 Industrial Bank of Korea – IBK Family Award
- 04 Won Entrepreneur of the Year Award

2021
- 12 Korea International Trade Association(KITA) – Won the 10 million dollar Export Tower Award
- 12 Ulsan Metropolitan Office of Education – Plaque of Appreciation Award from Ulsan Edu-Administration
- 12 Gyeongsangbuk-do Office of Education – Gyeongsangbuk-do superintendent of education Plaque of Appreciation Award
- 10 Silla Technical High School – MOU
- 04 Ministry of SMEs and Startups – Designated as a global Strong competitive SME
- 01 Certified as a component material company

2020
- 06 Ministry of SMEs and Startups - Management Innovative SME (MAIN-BIZ)

2019
- 12 Ulsan Metropolitan City – Management Innovation & Technology Development Award
- 12 Ulsan College – Activation of Human Resource Development Plaque of Appreciation Award
- 12 Korea International Trade Association(KITA) - Won the 7 million dollar Export Tower Award

2018
- 09 Ulsan Metropolitan City – Selected as a company Excellent in Job Creation

2017
- 12 Korea International Trade Association(KITA) - Won the 3 million dollar Export Tower Award

2016
- 09 Prime Ministerial Citation for SME Innovation Competition

2015
- 09 Korea Productivity Center – Productivity SMEs Award
- 05 Ministry of Commerce Industry and Energy - Korea Electric Culture Award
- 04 Ulsan Economic Promotion Agency – Excellent Company Management Award

2014
- 12 Ministry of SMEs and Startups - Selected as an SME with outstanding employee development programs
- 06 Ulsan Technopark - Selected as a promising small and medium-sized enterprises
- 04 Ministry of SMEs and Startups – SMEs Excellent Technician Award
- 03 KS Certification (Aluminum & Aluminum Alloy Extruded Shapes)
- 03 Korea Chamber of Commerce and Industry - designated as a IP Star company

2013
- 12 Selected as a Good Company to Work For
- 12 Korea International Trade Association(KITA) – New Export Excellent Company Award
- 11 Selected as Military Service Designation Company
- 10 Korea SMEs and Startups Agency – a Supreme Company Certification
- 09 Inno-Biz Association – a Good Company to Work for Certification
- 02 Start to produce Aluminum Cable Tray

2012
- 09 Industrial Bank of Korea - Selected as a promising small and medium-sized enterprises

2011
- 12 Ministry of SMEs and Startups – Excellent Businessmen Award

2010
- 12 Korea Institute of Industrial Technology – Selected as a Partner Company
- 05 Established a corporate research institute of RINNO ALUMINUM
- 01 BAICA – Selected as Global Strategy Parts

2009
- 05 Established RINNO ALUMINUM CO., LTD.

2007
- 04 Regional Intellectual Property Center – Selected as a Star Company

2006
- 08 Established a corporate research institute of SAMWOO EMC
- 04 Ministry of SMEs and Startups – INNO-BIZ Certification

2005
- 06 Industrial Bank of Korea - Selected as a promising small and medium-sized company
- 02 Obtained IATF16949 Quality Management System Certificate

2004
- 05 Start to produce RUBBER BUSH CORE

2003
- 01 Create a aluminum extrusion process and produce of extruded products

2001
- 10 Obtained ISO 9001 Quality Management System Certificate

1996
- 12 Established SAMWOO Engineering CO., LTD.

1995
- 08 Start to produce parts of DAEWOO bus (glass molding, bus window)

1988
- 01 Established SAMWOO Engineering Co.

GENERAL STATUS

01 Production line

- 7 inch aluminum extrusion (1,800Ton) production line 2 lines
- Heat treatment line : 2 lines
- Press quenching line (Conveyor system type)
- Machining line (Cutting, Chamfering, CNC, MCT, Tapping Machine, Etc)
- Automation maching & Assembly line
- Assembly and packing line
- Coating line (Powder coating / Painting process to spray powder on the product surface)
- Anodizing surface treatment line

02 Production capacity

- Production : 1,000 tons / month
- Production possibility SIZE : ϕ10mm ~ ϕ200mm
- Production length : Up to 10M as requested by customers

Over~standard products : Manufactured and supplied by our suppliers

03 Total Sales

- Export : 60%
- Domestic : 40%

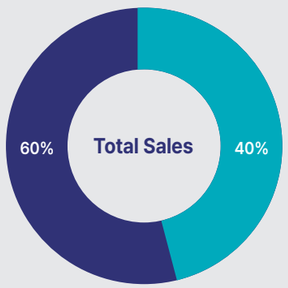
04 Sales Segments

- Automotive parts : 60%
- Industrial sector : 36%
- Solar Panel Parts : 4%

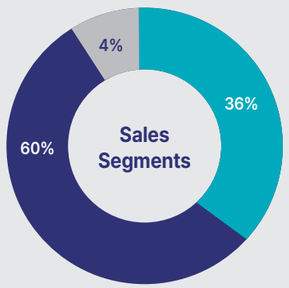
05 Overseas sales

- United States : 79%
- Japan: 20%
- Thailand: 1%

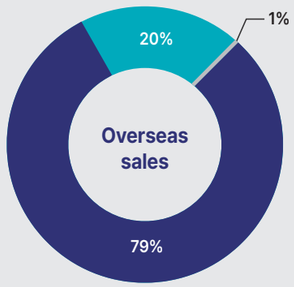
Annual Turnover



- Export : 60%
- Domestic : 40%



- Automotive parts : 60%
- Industrial sector : 36%
- Solar Panel Parts : 4%



- United States : 79%
- Japan: 20%
- Thailand: 1%

PLANT INTRODUCTION

Extrusion process (7inch , 1800 Ton , 2 Lines)

Billet

Heat the billet

Billet Cutting (HOT saw)

Extrusion(1,800 Ton / 7 inch) 2 line

Water Quenching

Cooling

Stretching

Auto Stack

Heat treatment process

Press quenching line (Conveyor system type)

PLANT INTRODUCTION

Automation Machining & Assembly line

Anodizing line

PLANT INTRODUCTION

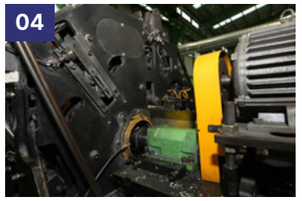
Machining Process (Cutting,Chamfering, CNC, MCT, Tapping Machine, Etc)

Cutting & Chamfering Process

Automatic Cutting machine
for Rubber-bush

Automatic cutting

Testing after cutting



Chamfering

Chamfering Machining

Cutting & Chamfering Machining

Product Inspection

Packing (for export)

Export

Other processes

MCT (6m)

Bending Machine

Twin-head Cutting Machine

Knurling Machine line

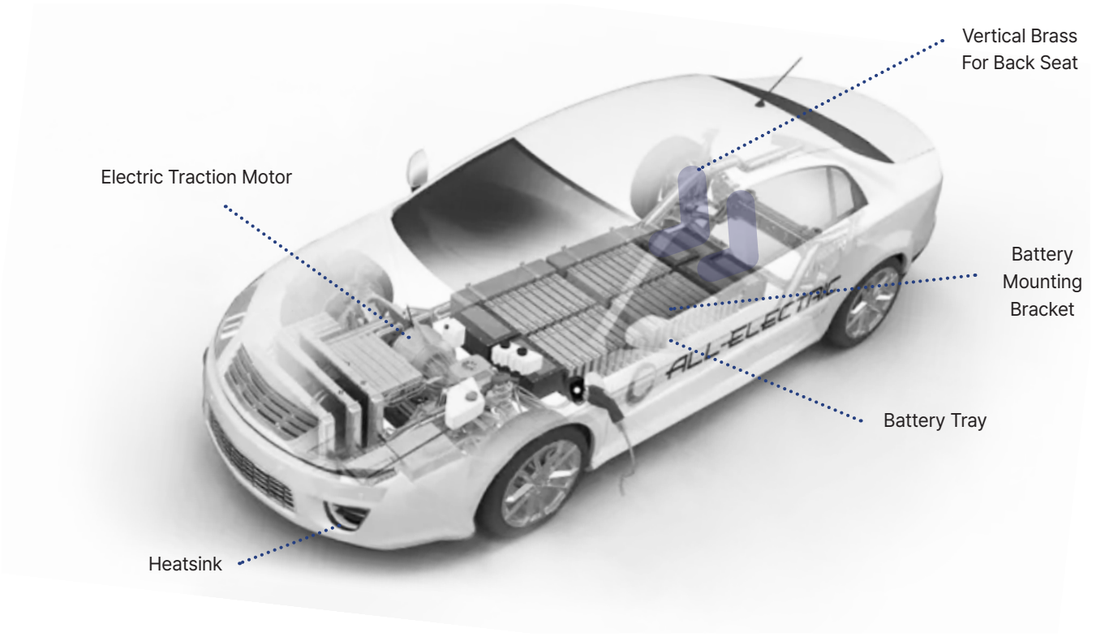
Drawing Machine

Cold Drawing Process

PRODUCT INFORMATION

- EV components
- Parts of Automobile

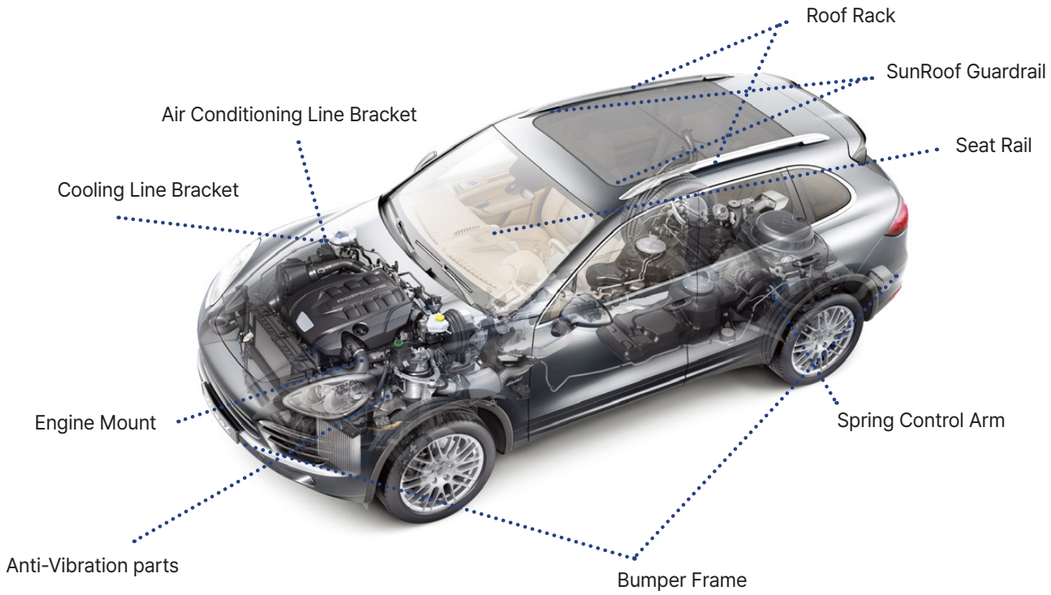
EV components



Frame

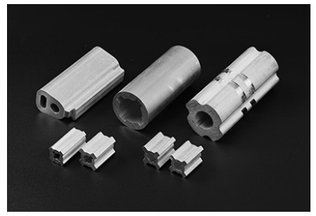
Development and mass production of high-strength, ultralight aluminum frames for EVs

Parts of Automobile



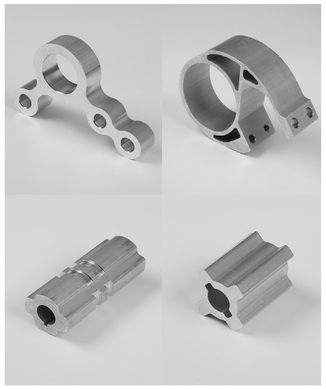
Brackets

Development and mass production of high-strength, lightweight aluminum components with outstanding wear and corrosion resistance.



Inner

Development and mass production of high-strength, lightweight aluminum components with outstanding wear and corrosion resistance.

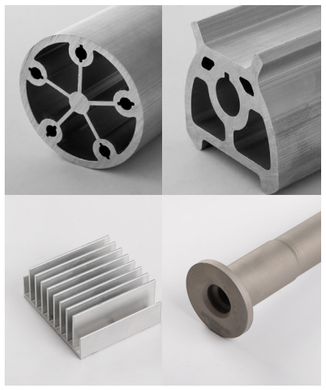


Built-in part of automobiles

Development and mass production of high performance automotive aluminum RUBBER BUSH components

Motor parts and other componens

Development and mass-production of high-strength, ultralight aluminum frame for EVs

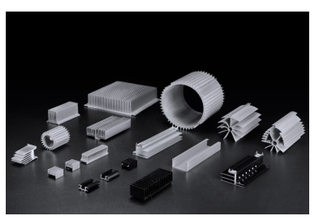


PRODUCT INFORMATION

PRODUCT INFORMATION

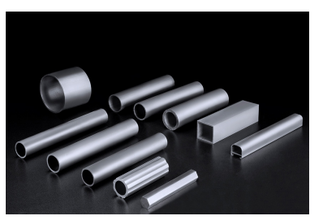
Profile of Electronic Product

- Frames for electric motor
- Heat sink for home appliances, garden plant
- Heat Sink Parts for electronic product



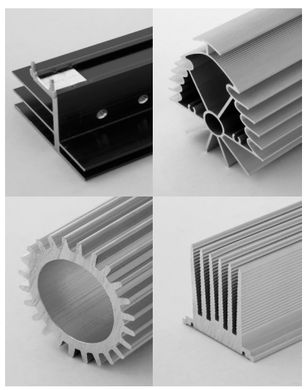
Heat Sinks

Industry-leading technology in extrusion, machining, bending and assembly of aluminum materials



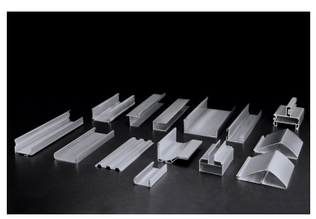
Pipe

Industry-leading technology in extrusion, machining, bending and assembly of aluminum materials



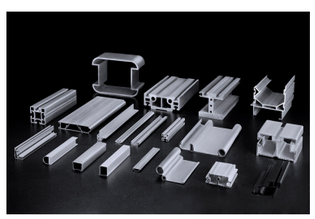
Parts for Ship Build and Industrial material

- Frames for Window, Door, Blind, Pullman Bed
- Ladder, Grating
- Aluminum Cable Tray



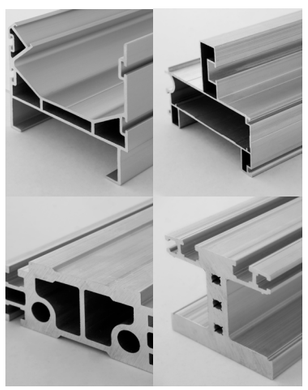
Structure

Industry-leading technology in extrusion, machining, bending and assembly of aluminum materials



Etc

Industry-leading technology in extrusion, machining, bending and assembly of aluminum materials



Aluminum Solar System

Characteristics and Advantage from Aluminum Solar system

01 Decrease of Construction weight

- It is 1/3 lighter than steel
- Slim and Concise

02 Corrosive

- There is no rust or corrosion.

03 Quality

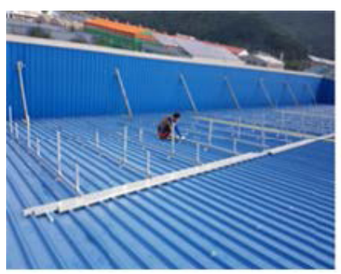
- Quailty Guaranteed for 10 years

04 Shorten period of Construction

- The weight of the construction makes it easy to work with a single person.
- It has the 100% self assembly structure and it makes shorten construction period.

05 Durability of Construction

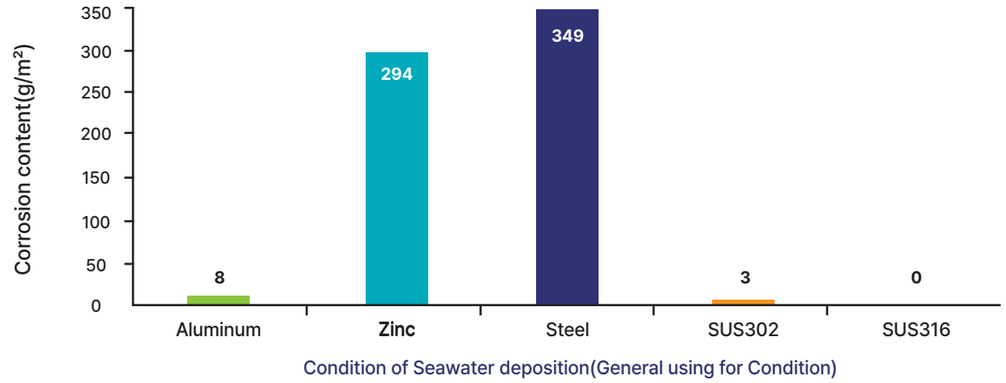
- Aluminum construction bear last more than 50 years.



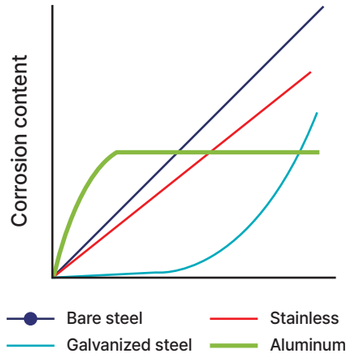
Aluminum Solar System

Comparison for Corrosivity

Exposure test result for 16 years



Corrosion amount hourly comparison



1. Bare steel

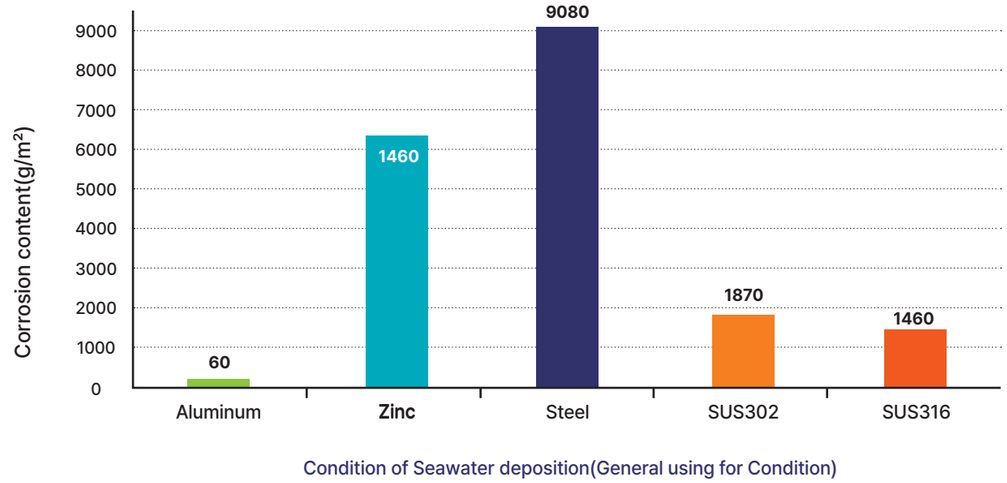
Corrosion continues to grow over time.

2. Galvanized steel

The Corrosion progress is low for a period time, but it is rapid from a certain point in time.

3. Aluminum construction

Corrosion will not proceed by creating an Al2O3 oxide layer on the initial surface.



Chemical Composition

Bezeichnung der Legierung		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Bemerkungen	Andere Beimengungen[a]		Alu-minium min.
Numerisch	Chemische Symbole													Einzeln	Ins-gesamt[b]	
EN AW-6005A	EN AW-Al SiMg(A)	0.50 -0.9	0.35	0.30	0.50	0.40 -0.7	0.30	-	0.20	0.10	-	-	0.12-0.50 Mn+Cr	0.05	0.15	Rest
EN AW-6061	EN AW-Al Mg1SiCu	0.40 -0.8	0.7	0.15 -0.40	0.15	0.8 -1.2	0.04 -0.35	-	0.25	0.15	-	-	-	0.05	0.15	Rest
EN AW-6063	EN AW-Al Mg0,7Si	0.20 -0.6	0.35	0.10	0.10	0.45 -0.9	0.10	-	0.10	0.10	-	-	-	0.05	0.15	Rest
EN AW-6082	EN AW-Al Si1MgMn	0.7 -1.3	0.50	0.10	0.40 -1.0	0.6 -1.2	0.25	-	0.20	0.10	-	-	-	0.05	0.15	Rest
EN AW-6110A	EN AW-Al Mg0,9Si0,9MnCu	0.7 -1.1	0.50	0.30 -0.8	0.30 -0.9	0.7 -1.1	0.05 -0.25	-	0.20	-	-	-	0.20 Ti+Zr	0.05	0.15	Rest

Mechanical Properties

Alloy EN	Temper	Wall thickness t mm	R_m MPa		$R_{p0.2}$ MPa		A % min.	A_{50mm} % min.	Hardness Typical value HBW
			min.	max.	min.	max.			
6005A	T6[c]	≤ 5	270	-	225	-	8	6	90
		5 < t ≤ 10	260	-	215	-	8	6	85
6061	O, H111	≤ 25	-	150	-	110	16	14	30
	T4[c]	≤ 25	180	-	110	-	15	13	65
	T6[c]	≤5	260	-	240	-	8	6	95
		5 < t≤25	260	-	240	-	10	8	95
6063	O, H111	≤ 25	-	110	-	-	18	16	25
	T4[c]	≤ 10	130	-	65	-	14	12	50
		10 < t ≤ 25	120	-	65	-	12	10	50
	T5[c]	≤ 25	175	-	130	-	8	6	65
	T6[c]	≤ 25	215	-	170	-	10	8	75
	T66[c]	≤ 25	245	-	200	-	10	8	80
6082	O, H111	≤ 25	-	160	-	110	14	12	35
	T4[c]	≤ 25	205	-	110	-	14	12	70
	T6[c]	≤ 5	290	-	250	-	8	6	95
		5 ≤ t ≤ 25	310	-	260	-	10	8	95
6110	T4[c]	≤ 25	320	-	220	-	16	14	85
	T6[c]	≤ 25	380	-	360	-	10	8	120

MEMO