A3中銅鋁業 C.S. Aluminium Corporation





Gentlemen's morality & Administration Building

I. Company Overview

Background & History

Aluminium, which is lightweight, aesthetic, anti-corrosive, and recyclable, is the richest mineral resource on earth. Aluminium has a variety of application. The aluminium industry is an important basic industry and has a far-reaching influence on the economic development of a country.

With the mission of developing the basic industry in Taiwan, CSC took over the aluminium rolling department from Taiwan Aluminium Corporation and established its aluminium production division. After a decade's production improvement and employee training, a good technological foundation for its steady annual growth in terms of the operational performance was laid.

After CSC was privatized in 1995, it established CSAC in 1996. To lay the basis for its sustainable development, CSAC embarked upon its Phase I Expansion Project right after its establishment. It brought in new equipment, greatly increased its production capacity, and upgraded the quality of its products. Upon completion in 1999, the annual production capacity of its rolled aluminium and casting products reached 122,000 metric tons. Through continuous improvement and innovation over the years, CSAC's operational constitution has been strengthened, and its operational performance has become better and better, which resulted in CSAC's "Splendor 15".

Due to the rise of emerging markets, CSAC established Ninbo Huayang Aluminium-Tech Co., Ltd. in Zhejiang in 2002 to meet the huge demand for aluminium products in China. The annual capacity of its high strength cold-rolled products reached 35,000 metric tons.

With the development of the green economy, the demand for aluminium products has increased. Thus, the Phase II Expansion Project was launched in 2011. Upon completion in 2014, its production capacity has reached 174,000 metric tons, which reaches the production scale of a medium-sized aluminium plant. CSAC will progressively fulfill the vision of becoming a corporation which pursues growth, continues to conserve energy and protect the environment, increases new values by innovation, and becomes an excellent international aluminium corporation.

Operational Concepts

CSAC has upheld the CSC Group's excellent corporate values and developed the operational concepts of "practicality, innovation, growth, and co-prosperity" for its steady development. Moreover, it fulfills its corporate responsibility to its employees, customers, shareholder, the society, and the environment.



1970s



Production capacity in 1996 was up to 61,000 tons; after Phase I Expansion Project, the total production

980s China Steel Corporation 1985 Establishment of the aluminium production division

90s **C.S. Aluminium Corporation** 1996 Establishment of CSAC 1999 Completion of the Phase I Expansion Project

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Core Values

Practicality All stakeholders are treated with integrity. Missions of the organization are carried out so that CSAC can maintain its sound development.

Innovation Continuous value innovation will be proactively sought. The creative environment will be established to encourage CSAC employees to make breakthroughs to promote CSAC's competitive advantages.

Growth Teamwork is stressed to meet the demands

of the customers and to create new values for them. Industry trends are keenly grasped to explore business opportunities.

Co-prosperity The benefits of shareholders, customers, and employees are always looked after; partnerships are established to lay a good foundation for CSAC's sustainable development.



Corporate Identity Logo

The dragon-shaped piece of artwork blends its corporate logo and art. The nine auspicious dragons in a circular pattern symbolize CSAC's sustainability in an endless cycle. CSAC is ready to embrace a bright new era with its successful business transformation.









2000s

- 2002 CSAC was granted the certificate for EU 2010 CSAC was granted the TPM Award of PED/ADW pressurized containers. Excellence by JIPM. PED/ADW pressurized containers. CSAC was granted Certification of ISO 9001 quality management systems by SGS Taiwan Limited.
- 2005 Initiation of production by Ninbo Huayang Aluminium-Tech Co., Ltd



2010

- 2012 CSAC was granted the Certification of Authorized Economic Operators by Directorate General of Customs, Ministry of Finance.
 - CSAC was granted the Green Sustainable Enterprise Award by BSI. CSAC was granted the TPM Award of
- Excellence in Consistence by JIPM. 2014 Completion of the Phase II Expansion Project



2015

- 2017 CSAC was granted the certification of AS9100D Aerospace Industry Quality Management System Standard by AFNOR.
- 2019 Completion of the RF2 Project by CSC group.
- 2020 CSAC was granted the certification of Performance Standard by Aluminium Stewardship Initiative.



II. Production Process







III. Introduction and Application of CSAC Products

Zinc-Aluminium Alloy Ingots

Aluminium alloy ingots, which come from primary ingots during the re-melting process, are made by adding specific alloys to the molten aluminium through a precisely controlled process of de-gassing, ceramic filtering, and composition analysis before being re-cast into alloy ingots.

Raw materials with high quality and specialized melting procedures are applied to make CSAC aluminium alloy ingots, which are widely used in producing wheels, engines, pistons, and products in related transportation industries. Moreover, aluminium alloy ingots, which gradually replace casting steel, are also considered excellent materials used in the recreational sports



Aluminium Wheel Rim



Aluminium Alloy Ingot



Hot-dip Zinc Ingot

appliance industries due to the increasing demands for light weight and environmental protection.

CSAC produces not only aluminium alloy ingots but also zinc anode sheets, hot-dip zinc ingots, and zinc alloy ingots. Zinc anode sheets and hot-dip zinc ingots are mainly used in the corrosion resistance of the steel's surface through electroplating.

Due to the fact that zinc alloy ingots possess the advantages of having a low melting point, good formability in die-casting, high hardness, and good appearance after surface treatment; they are widely used to make various hardware parts and decorative products.



Zinc Alloy Ingots



Aluminium Rod



Zinc Anode

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Aluminium Plates

Aluminium plates are produced from aluminium slabs through the processes of re-heating, hot rolling, stretch leveling, or solid solution heat treatment (aging). CSAC's high strength aluminium plates hold a good reputation for homogenous chemical composition with good mechanical properties and strict tolerances on dimensions, and are widely used for the manufacture of precision molds and in the machinery industries. Aluminium plates are gaining greater application in the transportation industry as substitute materials for weight reducing and energy saving. Beside the usages

in aviation and ship-building industries, aluminium plates are also utilized in the automobile and motorcycle industries. Furthermore, aluminium armored plates are the necessary materials for the body parts of armored vehicles. In addition, aluminium plates are selected as required materials for the optoelectronic semiconductor industry, components of electroplating facility (ex, vacuum chamber and heating plate). CSAC has been approved as a manufacturer of ship-building aluminium alloy plates by DNV and NK, and a manufacturer of pressure vessel plates by PED (EU), ADW (DE), and TUV.



Aluminium Sheets & Aluminium Coils

Aluminium sheets have wide applications in the construction industry and have replaced the traditional materials, e.g. steel, plastic, building stones, and timber, because of their light weight and the awareness for resource conservation and environmental protection. Aluminium sheets produced by CSAC are used in the construction industry to manufacture curtain walls, ultramicropore acoustic panels, ceilings, heat insulators, venetian blinds. Aluminium sheets are also used in the manufacture of electrical appliances, telecommunication equipment, condenser casings, LCD backlight panel. In addition, it can be used in

consumer goods e.g. can caps, pull tabs, bottle caps, umbrella ribs and lamp shades. Furthermore, aluminium plates are utilized in internal parts and engine hoods of automobiles, tanks of tanker trucks, and aviation containers for weight reducing.

CSAC produces aluminium sheets and coils with the most modern rolling, coating, and finishing technologies, and is thus qualified and able to supply materials with excellent quality which conform to the exact requirements and specifications for our customers.





Thinning High Strength Can Caps



Pull Tabs



Bottle Caps



Bodies of Automobiles



Main Bodies of Tanker Trucks



Aviation Container



Curtain Walls of Kaohsiung Exhibition Center



Warehouse Roofing & Siding



Ultramicropore Acoustic Panels



Umbrella Ribs



Venetian Blinds



Lamp Shades

C.S. ALUMINIUM

Aluminium Foil

Aluminium foil is manufactured by a process of foilrolling and annealing from cold-rolled coils that the thicknesses under 0.20mm with rectangular section. Due to the excellences of heat absorption and heat dissipation, aluminium coils become the major material, especially as fin-stock, for heat-exchangers in air conditioners and refrigerators. Coating treatment used to be carried out after heat exchangers had been assembled. To protect the environment, advanced aluminium factories around the world have put in a tremendous effort to develop pre-coated fin-stock. CSAC has also invested in R&D and established precoating fin-stock production lines in order to supply highly-efficient products to its customers. With its excellent shielding characteristics from electromagnetic waves, aluminium foil is widely applied as a shielding material for cables and electronic

components. On account of the characteristics of good electrical capacitance, aluminium foil is also widely utilized in specific condensers with higher electric capacity as the mediums of cathode and anode. Furthermore, it is used in colored foil packaging such as Tetra Pak containers, candy wrapping, can seals and beverage packaging owing to its light-proofness and printability.

Owing to the developments of 3C products and electric car industries, there becomes a huge demand of lithium batteries in the market. Therefore, CSAC has also invested in developing outer cases of lithium batteries and anodic current collectors. Moreover, purifying equipment and foil slitting machines are purchased to improve product quality. CSAC expects ourselves to be well prepared to develop the new market in the near future.







Table 1: Types and Marks of Aluminium Die-casting Alloy Ingot

Туре		Mark	Reference			
Alloy	Purity		Alloy System	Corresponding Casting Material from JIS H5202		
-1	1	AD1.1	AL Si			
I	2	AD1.2	AI-SI	ADCT		
0	1	AD3.1				
3	2	AD3.2	AI-SI-INIG	ADC3		
F	1	AD5.1	01 M.C.			
Э	2	AD5.2	AI-Mg	ADC5		
0	1	AD6.1				
б	2	AD6.2	AI-Mg	ADC6		
10	1	AD10.1				
10	2	AD10.2	AI-SI-Gu	ADC TU		
10Z	1	AD10Z.1	Al-Si-Cu	ADC10Z		
10	2	AD12.1		10010		
12	1	AD12.2	Al-Si-Cu	ADC12		
12Z	2	AD12Z.1	Al-Si-Cu	ADC12Z		
	1	AD14.1				
14	2	AD14.2	AI-SI-Cu	ADC14		

Table 2: Types and Marks of Aluminium Casting Alloy Ingot

Туре		Mark	Reference		
Alloy	Purity		Alloy System	Corresponding Casting Material from JIS H5202	
1A	1	AC1A.1	Al-Cu	AC1A	
	2	AC1A.2			
1B	1	AC1B.1	Al-Cu	AC1B	
	2	AC1B.2			
2A	1	AC2A.1	Al-Cu-Si	AC2A	
	2				
2B	1	AC2B.1	Al-Cu-Si	AC2B	
	2	AC26.2			
ЗA	2	AC3A 2	Al-Si	AC3A	
	1	AC3A.2			
4A	2	AC4A.2	Al-Si-Mg	AC4A	
	1	AC4B.1			
4B	2	AC4B.2	Al-Si-Cu	AC4B	
	1	AC4C.1			
4C	2	AC4C.2	AI-SI-Mg	AC4C	
4011	1	AC4CH.1			
40H	2	AC4CH.2	AI-SI-Mg	AC4CH	
40	1	AC4D.1			
4D	2	AC4D.2	AI-SI-Cu-Ivig	AC4D	
54	1	AC5A.1	AL-Si-Ma	AC5A	
0/1	2	AC5A.2		100/1	
7A	1	AC7A.1	Al-Ma	AC7A	
17.	2	AC7A.2	,		
7B	1	AC7B.1	Al-Ma	AC7B	
	2	AC7B.2			
8A	1	AC8A.1	Al-Si-Cu-Ni-Mg	AC8A	
	2	AC8A.2	Ũ		
8B	2	AC8B.1	Al-Si-Cu-Mg	AC8B	
	1	AC8B.2			
8C			Al-Si-Cu-Mg	AC8C	
	2				
9A	2		Al-Si-Cu-Ni-Mg	AC9A	
	2	ACOR 1			
9B	2	AC9B 2	Al-Si-Cu-Ni-Mg	AC9B	





Table 3: Typical Characteristics and Applications of Aluminium Plate and Sheet

Allov	Product Forms	Characteristics	Applications
1070	Plates Sheets/Coils Circle Sheets		Reflecting Plates Lighting Fixtures
1050	Plates, Sheets/Coils, Circle Sheets	Low Strength; Excellent Formability, Weldability, and Corrosion Resistance	Ornaments, Chemical Containers, Electrical Conductors, etc.
1100 1200	Plates, Sheets/Coils, Circle Sheets Plates, Sheets/Coils, Circle Sheets	Moderately Low Strength; Excellent Formability, Weldability, and Corrosion Resistance	General Use in Construction Materials, and Containers
	Plates Sheets/Coils		
2014	Clad Plates	High Strength, Heat-treatable Alloys with 6003 as Cladding Materials to Improve Corrosion Resistance	Aerospace and Structural Use
2017	Plates, Sheets/Coils	Heat-treatable Alloys with High Strength, and Good Machinability	Aerospace and Structural Use
2219	Plates, Sheets/Coils	High Strength, Heat Resistance and Good Weldability	Aerospace Use
2024	Plates	Higher Strength than that of 2017, Good Machinability; Corrosion Resistance with 1230 as	Aerospace and Structural Use
	Clad Plates	Cladding Materials	
3003	Plates, Sheets/Coils, Circle Sheets	Higher Strength than that of 1100. Good Formability	General Use in Construction Materials,
3023	Plates, Sheets/Coils, Circle Sheets	Weldability, and Corrosion Resistance	Marines, Heat Dissipation, and Containers
3004	Plates, Sheets/Coils, Circle Sheets	Higher Strength than that of 3003. Good Formability.	Beverage Cans, Roofing Sheet,
3104	Plates, Sheets/Coils, Circle Sheets	and Corrosion Resistance	Lampholders
3005	Plates, Sheets/Coils, Circle Sheets	Higher Strength than that of 3003 and Good Corrosion Resistance.	Construction Materials, and Colored Sheets
3105	Sheets/Coils	Strength than that of 3003, Good Formability, and Corrosion Resistance	Construction Materials, Colored Sheets, and Bottle Caps
5005	Plates, Sheets/Coils, Circle Sheets	Similar Strength to that of 3003, Good Weldability, and Corrosion Resistance	Construction Materials, and Vehicle Materials
5052	Plates, Sheets/Coils, Circle Sheets	Standard Alloys of Mid Strength, Good corrosion Resistance, Formability, and Weldability	Marines, Vehicles, Construction Materials, and Can Caps
5154	Plates, Sheets/Coils, Circle Sheets	Strength between that of 5052 and 5083, Good Corrosion Resistance, Formability, and Weldability	Marines, Vehicles, and Pressure Vessels
5454	Plates, Sheets/Coils, Circle Sheets	Higher Strength than that of 5052, Good Corrosion Resistance, Formability, and Weldability	Wheels
5082	Plates, Sheets/Coils	Similar Strength to that of 5083, Good Corrosion Resistance, and Formability	Can Caps
0102			
5083	Plates, Sheets/Coils, Circle Sheets	The Strongest Non-heat-treatable Alloys, Good Corrosion Resistance, and Weldability	Marines, Vehicles, and Pressure Vessels
5086	Plates, Sheets/Coils, Circle Sheets	Higher Strength than that of 5154; Welding Structural Materials with Good Corrosion Resistance	Marines, Vehicles, and Disks for Hard Drives
5383	Plates, Sheets/Coils	Higher Strength than that of 5083; Good Corrosion Resistance, and Weldability	Marines and Vehicles,
5754	Plates, Sheets/Coils	Medium Strength; Good Corrosion Resistance, Weldability, and Formability	Vehicles, Molding, and Can Caps
6016	Sheets/Coils	Medium Strength; Good Corrosion Resistance, and Formability	Vehicles or other Transportation Materials
6061	Plates, Sheets/Coils, Circle Sheets	Good Corrosion Resistance; Structural Materials with Rivet Joints	Marines, Vehicle, and Mechanical Structures
6063	Sheets/Coils	Medium Strength; Good Weldability, and Impact Resistance	Construction or other Transportation Materials
6111	Sheets/Coils	Higher Strength than that of 6016; Good Formability	Aluminium Sheets for Vehicles or other Transportation Materials
7075	Plates	The Strengest Aluminium Allove and Oled Dista-	Acrosson and Skiboarda Llas
1015	Clad Plates	The Strongest Aluminium Alloys and Clad Plates	Aerospace and Skidoards USe
8011	Sheets/Coils	Higher Strength, Good Formability, and Low Earing Ratio	Bottle Caps
8079	Foil/Coils	Higher Strength than that of 1XXX; Higher Contents of Iron and Silicon; Good Elongation	General Use in Packaging, and External Packaging of Lithium Batteries



Practicality Innovation Growth Co-prosperity

IV. Certificates



ISO 9001 Quality Management Systems Certificate



Bureau Veritas (BV) Aluminium Alloys Certificate



IATF16949 Automotive Quality Management System Certificate



Class NK Marine Use Aluminium Sheet Certificate



ISO/ICE 17025 Testing Laboratories Certificate



CR Classification Society Aluminium Alloys Certificate

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American Bureau of Shipping (ABS) Aluminium Alloys Certificate

			DNV-GL
APPROVAL O	FMANUF	ACTURES	Carolinate No.
CERTIFICATE	a contraction of the		
This is to certify: that C.S. Aluminium Cor Kaohslung, Tahsan	poration		
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DNV Marine Use Aluminium Alloys Certificate



AIDC S-200 QMS Certificate



Korea Register of Shipping (KR) Aluminium Alloys Certificate



Lloyd's Register (LR) Aluminium Alloys Certificate



BSMI CNS Mark Certificate

ALUMINUM



Performance Standard by Aluminium Stewardship Initiative Certificate



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Auspicious blessing & Sustainable operation & Endless development



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