



SAMSUNG NONFERROUS METAL

Specialized in manufacturing copper and copper alloys used to produce ships, industrial machinery, steel plant and valves.



삼성금속(주)

SAMSUNG NONFERROUS METAL CO., LTD.

SAMSUNG NONFERROUS METAL Co., Ltd





WELCOME

Samsung Nonferrous Metal Co., Ltd. will further solidify the position as a leader of the domestic copper alloy castings to compete in the global market on the basis of future development plan by excellent technology and reliable production process.

COMPANY INTRODUCTION

Samsung Nonferrous Metal Co., Ltd. was first established in 1995, and specializes in manufacturing copper and copper alloys used to produce for ships, industrial machinery, steel plants and valves. Samsung Nonferrous Metal applies the World leading technology based on the centrifugal casting / sand casting method, and therefore to produce flawless casting products. We promise to serve our client only the top quality products with timely delivery and competitive price to meet our clients' needs and satisfaction.



WELCOME

Samsung Nonferrous Metal Co., Ltd. will further solidify the position as a leader of the domestic copper alloy castings to compete in the global market on the basis of future development plan by excellent technology and reliable production process.



COMPANY INTRODUCTION

Since starting as a professional manufacturer of copper alloy castings in 1995, Samsung Nonferrous Metal Co., Ltd. has been firmly following a single path for copper alloy castings despite difficult conditions.

In spite of a lot of difficulties and trial and error for more than 20 years, Samsung Nonferrous Metal Co., Ltd. has been actively responding to build a more efficient production line and constantly improve centrifugal casting technology.

For this reason, we have also been able to equip the facility and technology to produce any products that customers demand, from small products of less than 10kg to large products of over 10 tons.

With the belief that quality is not optional but essential to us, all employees have been working extremely hard and the performance of the transaction with the customer lasting for a long time proves that we have gained faith and trust from the customers.

HISTORY

- | | |
|------|--|
| 1995 | • Established Samsung Nonferrous Metal Co., Ltd (Gimhae, Kyungnam Province) |
| 1997 | • Supplied casting product of machinery and ship part to Hyundai Heavy Industrial, Doosan Heavy Industrial, Hyundai Rotem. |
| 2000 | • Relocation and expansion of factory(Gimhae) |
| 2003 | • Acquired ISO 9001 Certification |
| 2008 | • Expansion of factories and facilities(Gimhae) |
| 2011 | • Acquired Best Quality Subcontractor Award by Hyundai Rotem Company |
| 2016 | • Acquired 2016 Small and Medium Enterprises Quality Management Awards by Korea Venture Business Association |
| 2017 | • Expansion of Factory (2nd Foundry) |

MAIN CUSTOMER



SAMSUNG NONFERROUS METAL Co., Ltd



COMPANY PROFILE

Address	• 86, Seobu-ro 1541beonan-gil, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, Korea
Homepage	• www.metalsamsung.co.kr
Tel	• +82-55-329-1067(~9)
Fax	• +82-55-329-1800
E-mail	• ssmc@metalsamsung.co.kr
Products	• Valve Body, Disk, Bush, Liner, Sleeve, Propeller Cap, Crusher Bronze, Pump Casing, others foundry



Foundry



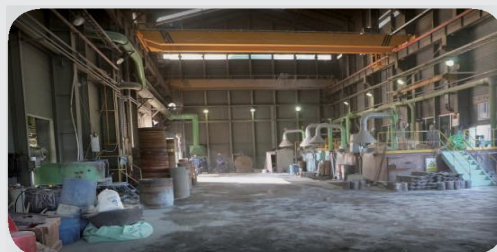
Machining Factory



Grinding & Welding



Warehouse / 2nd Foundry



1st Foundry



2nd Foundry



WHY SAMSUNG NONFERROUS METAL ?

For instance, on Earth, man had always assumed that he was more intelligent than dolphins because he had achieved so much – the wheel, New York, wars and so on – whilst all the dolphins had ever done was muck about in the water having a good time. But conversely, the dolphins had always believed that they were far more intelligent than man – for precisely the same reasons.

- We has been providing reliable products to major global enterprises for more than 20 years.

Hyundai Heavy industries, Hyundai Rotem

Doosan Heavy Industries, Hyundai WIA, Others

- Production capacity of over 40 tons / day.

Furnace 3 Ton : 4EA, 2 Ton : 2EA, 1 Ton : 2EA, 500Kg : 2EA

- One-Stop System.

Material Casting & Heat Treatment -> Precision Machining ->

Inspection -> Packing & Delivery

- Acquired certificate to satisfy customer demand

ISO9001, GL, BV, ABS, LR, KR (for copper alloy casting),

GL Welder's Qualification

- All kinds of copper alloy product as per ASTM, JIS, DIN, BS

Each charge inspected by Emission spectrometer

ANSWER

01

Reliable sales record

ANSWER

02

High production capacity

ANSWER

03

One-Stop System

ANSWER

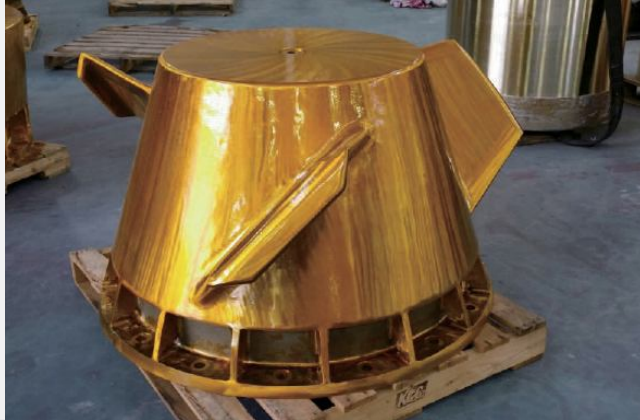
04

Certification

ANSWER

05

Various material alloy available

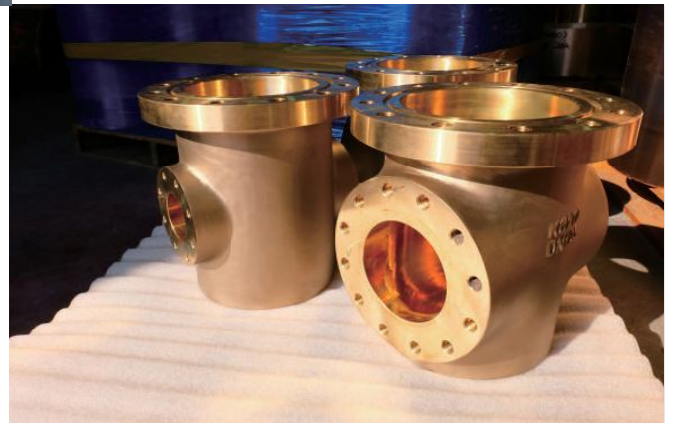


PROPELLER CAP(ECO TYPE)

eco type propeller cap developed to save energy.

PROPELLER CAP(NOMAL TYPE)

We supplying propeller cap to major shipward in Korea / overseas as the biggest propeller cap maker in Korea.



PROPELLER SHAFT SLEEVE

We can cast oversized sleeve of more than 3,000mm by centrifugal casting.

PUMP CASING

Copper and its alloys resist seawater corrosion. Equally important, they inhibit biofouling, the growth of algae, and other marine organisms. As a result, copper-alloy castings have long been used for products such as pump and marine hardware.





PRODUCT

01

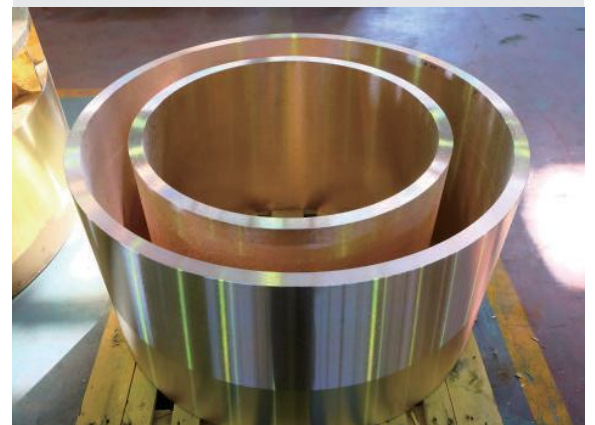
SHIPBUILDING PART

COPPER AND COPPER ALLOY CASTING PRODUCTS

Cast copper alloys have an extremely broad range of application. They are used in virtually every industrial market category, from ordinary plumbing goods to precision electronic components and state-of-the-art marine and nuclear equipment. Their favorable properties are often available in useful combinations. This is particularly valuable when a product must satisfy several requirements simultaneously.



GASKET RING FOR ENGINE



PINTLE BUSH



CRUSHER BRONZE BUSHING

We produce and deliver 25% of Crusher Bronze Bushing production in Korea



SEAT LINER



ECCENTRIC BUSH

CRUSHER BRONZE BUSHING SPECIFICATION

1. Crusher bronze bushing of metso hp, gp, jaw crusher series
2. Crusher bronze bushing of s cc900, cc1200, cc1300, cc1680, cc2100, etc
3. Crusher bronze bushing of symons: 2inch , 3inch , 4inch, 4 14inch, 5 12inch, 7inch standard & shorthead part
4. Bronze bushing of bearing of other spring cone crusher



MAIN FRAME BUSH

PRODUCT

02

CRUSHER BRONZE



VALVE & DISC



GATE VALVE

Our company casts and produces valve bodies in various sizes, ranging from small to large valves.

In particular, we also produce butterfly valve body, disc, check valves, gate valve body and other accessory parts ranging to 3000mm diameter.

Samsung Nonferrous Metal Co., Ltd. produces defect-free high-quality valve body and disc based on our own know-how and supplies products without leaking and bending of valves to our customers.

PRODUCT

03

VALVE & DISC



Check Valve
25A ~ 3000A



Valve Disc
25A ~ 3000A



Ball Valve
25A ~ 1500A

SAMSUNG NONFERROUS METAL Co., Ltd



WORM WHEEL

Samsung Nonferrous Metal delivers products to domestic and foreign major enterprises directly, as a Professional Manufacturing Company of Copper Alloy Casting.

INDUSTRIAL PLANT, MACHINERY

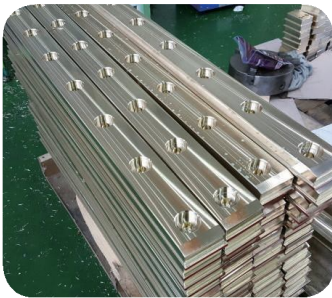
Bush & Liner serves to protect axis, housing and etc which are the main components of moving parts in various machine. The company produces high quality products with little casting defects mainly using a centrifugal casting method.



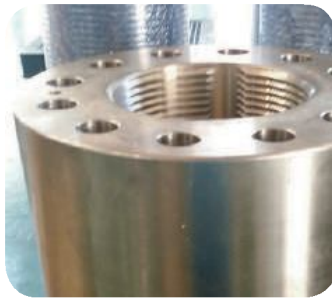
WORM GEAR



FLANGE BUSH



LINER



SCREW NUT

PRODUCT

04

INDUSTRIAL PLANT,
MACHINERY

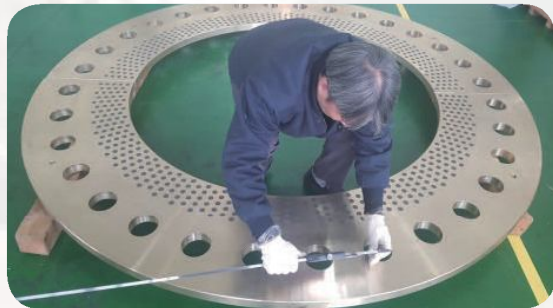


„The more difficulties one has to encounter, within and without, the more significant and higher in inspiration his life will be.“

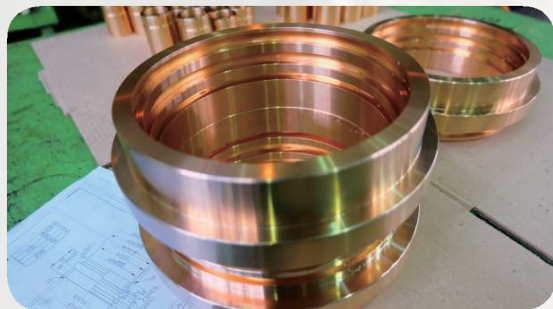
PACKING RING FOR TURBINE



BUSH



OILESS BEARING



BUSH

INDUSTRIAL PLANT, MACHINERY

Highly durable, copper can be cast into precision shapes, making copper and its alloys ideal for making gears and bearings. Due to its resistance to corrosion, copper is also used in making tanks, vessels, and pipes that are exposed to seawater. Because of its excellent heat transfer capabilities, copper is also widely used in producing heat exchange equipment and other uses in extreme environments. As copper is a good conductor of electricity, it is used in making power cables, motors, transformers, and other electrical equipment. It is also widely used in producing renewable energy production systems.

PRODUCT

05

INDUSTRIAL PLANT,
MACHINERY

WHAT IS CENTRIFUGAL CASTING?

In general, we used to get the molten metal to flow into the mold by the action of gravity when creating casting, but for the casting of complex forms or fine casting, the method does not often make molten metal reach every corner. In this case, we place the mold radially along the circumference and create flow path of the molten metal to flow into the center of the disc, and make casting while adding pressure with a centrifugal force by rotating the disc.

Centrifugal casting method has an advantage to get castings with accurate dimensions and dense structures compared to sand casting, but if there is a big difference in the specific gravity of the elements, please be careful about segregation phenomenon that heavy elements are gathered together on the outside and light elements are gathered together on the inside by the action of centrifugal force.



1. Raw Material



2. Melting



3. Component Inspection



4. Centrifugal Casting



5. Machining



6. Inspection



7. Packing / Delivery



FACILITY

01

CENTRIFUGAL CASTING

Samsung Nonferrous Metal Co., Ltd. is a professional manufacturer of high-quality copper alloy castings.

CAPACITY FOR CENTRIFUGAL CASTING

- HORIZONTAL TYPE
 - 1,200MM DIAMETER / 4,000MM LENGTH
- CHUCKTYPE
 - 1,500MM DIAMETER / 500MM LENGTH

MAXIMUM WEIGHT OF CENTRIFUGAL CASTING

- 10 TONS / EACH

WHAT IS SAND CASTING?

Sand casting, also known as sand molded casting, is a metal casting process characterized by using sand as the mold material. The term „sand casting“ can also refer to an object produced via the sand casting process. Sand castings are produced in specialized factories called foundries. Over 70% of all metal castings are produced via sand casting process.

Sand casting is relatively cheap and sufficiently refractory even for steel foundry use. In addition to the sand, a suitable bonding agent (usually clay) is mixed or occurs with the sand. The mixture is moistened, typically with water, but sometimes with other substances, to develop the strength and plasticity of the clay and to make the aggregate suitable for molding. The sand is typically contained in a system of frames or mold boxes known as a flask. The mold cavities and gate system are created by compacting the sand around models, or patterns, or carved directly into the sand.



1. Melting



2. Component Inspection



3. Molding Process



4. Pouring



5. Machining



6. Inspection



7. Packing / Delivery

FACILITY

02

SAND CASTING

Samsung Nonferrous Metal Co., Ltd. is a professional manufacturer of high-quality copper alloy castings.



CAPACITY FOR SAND CASTING

- ELECTRIC FURNACE 3TON X 2EA, 2TON X 2EA, 500KG X 2EA
- HOLDING FURNACE 3TON X 2EA, 1TON X 2EA

MAXIMUM WEIGHT OF SAND CASTING

- 20TONS / CHARGE
- 40TONS / DAILY



NC Boring 130T

MACHINE FACILITIES

No.	Facilities	Size	Quantity
1	NC Turning	Φ2500x1500L	1 EA
2	NC Boring	130T	1 EA
3	Turning	Φ2500x1500L	2 EA
4	Lathe	Φ950x6000L	1 EA
5	Lathe	Φ950x4000L	1 EA
6	Lathe	Φ950x3000L	1 EA
7	Lathe	Φ900x2000L	1 EA
8	Lathe	Φ750x3000L	1 EA
9	Lathe	Φ460x1000L	1 EA
10	Milling	#7	1 EA
11	Radial	Φ1600x1000L	1 EA



NC Turning M/C (Φ2500 x

SAMSUNG NONFERROUS METAL Co., Ltd



Lathe (Φ950 × 6000L, others / 6 Set)



Radial(Φ1600 x 1000L)



Lathe(Φ950 x 6000L, others / 6 set)



NC Turning M/C (Φ2500 × 1500L, others / 3 set)

0 × 1500L, others / 3 set)

SAMSUNG METAL

We are continuously investing in machinery for processing various products.

FACILITY

03

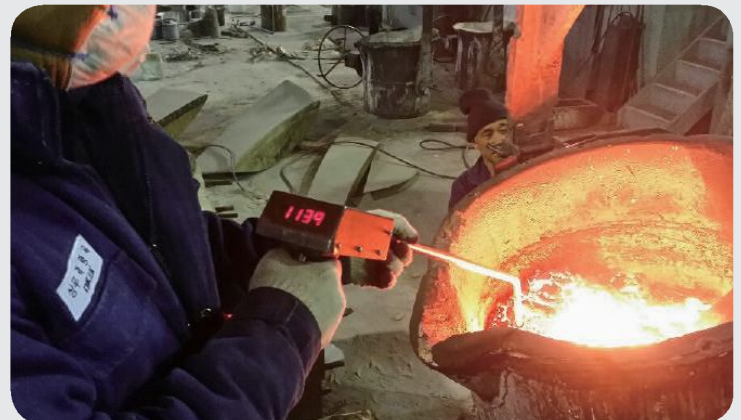
MACHINE FACILITIES

TESTING & ANALYZING FACILITIES

Quality is not an option for us. All products are shipped after a thorough inspection.
We using CAE (casting flow analysis program) for indefective products.



Emission Spectrometer



Digital Thermometer



Universal Testing Machine



Manual Brinell Hardness Tester



Surface Thermometer

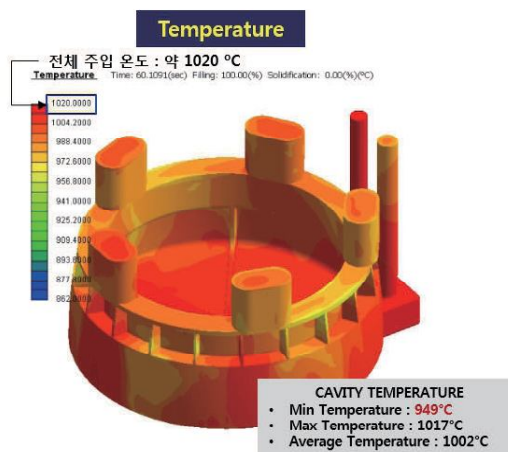
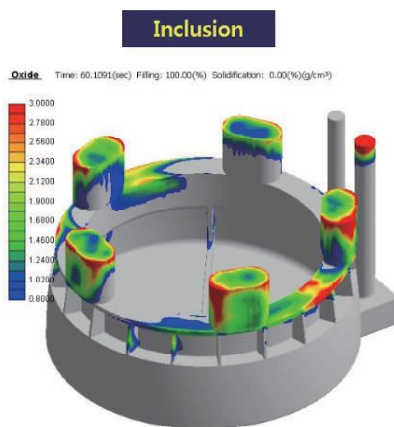


Surface Tester

SAMSUNG METAL

Quality is not an option for us.
All products are shipped after a thorough inspection.

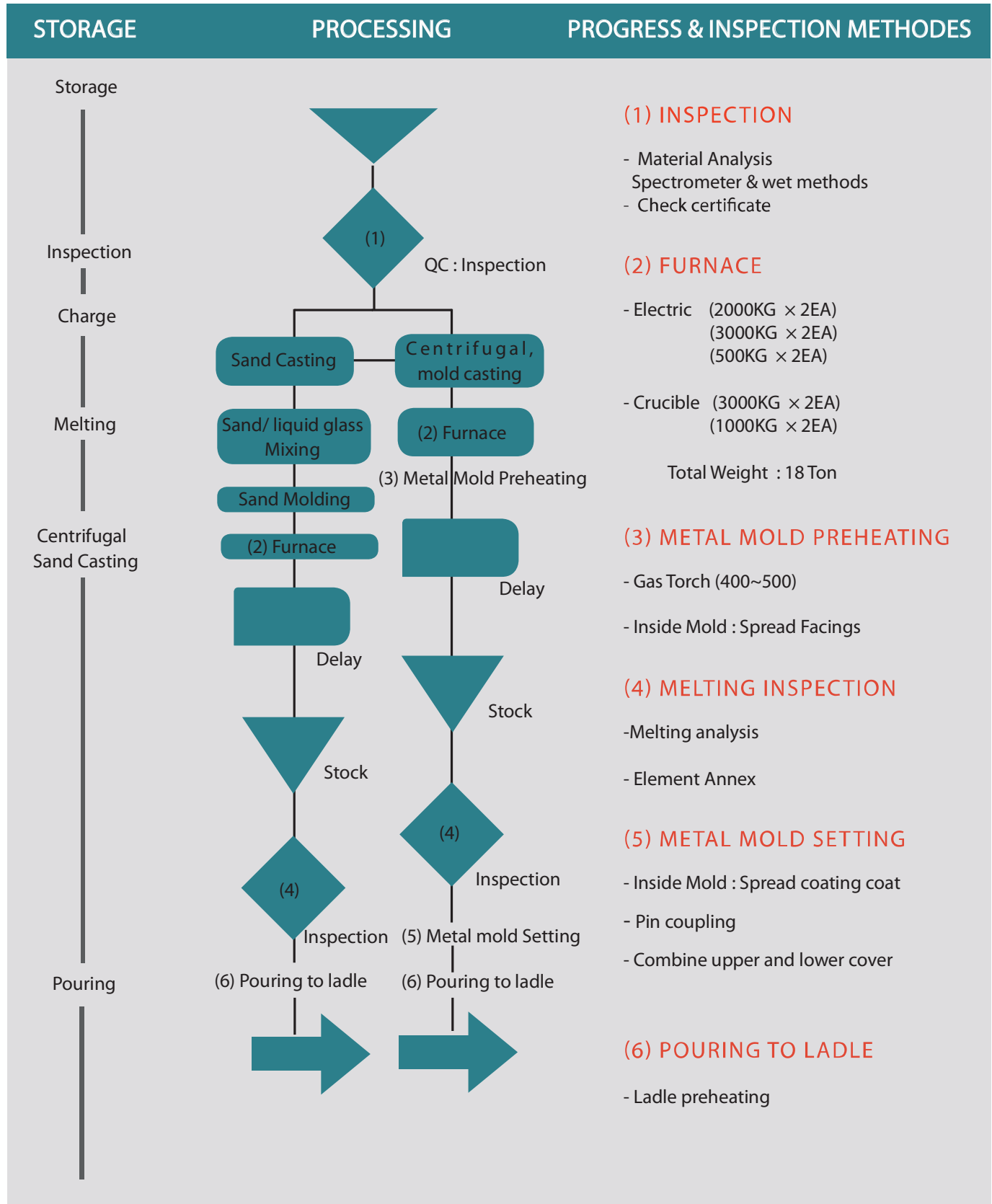
No.	Facilities	Size	Quantity
1	Emission Spectromer	15 Analysis	2 EA
2	Universal Testing Machine	50 Ton	1 EA
3	Manual Brinell Hardness Tester	300 kg	1 EA
4	Equotip Hardness Test		1 EA
5	Ultrasonic Thickness Gage	Man 40 mm	1 EA
6	Outside Micrometer	Max 1,300mm	30 EA
7	Cylinder Gauges	0~1,000mm	6 EA
8	Vernier Calipers	0~2,000mm	20 EA
9	Digital Conductivity Meter		1 EA
10	Surface Tester		1 EA
11	Coating Thickness Gauges		1 EA
12	Surface Thermometer	-500 °C to 500 °C	1 EA
13	Digital Thermometer	1,500 °C	1 EA
14	CAE (Casting Flow Analysis Program)	Anycasting	1 Set

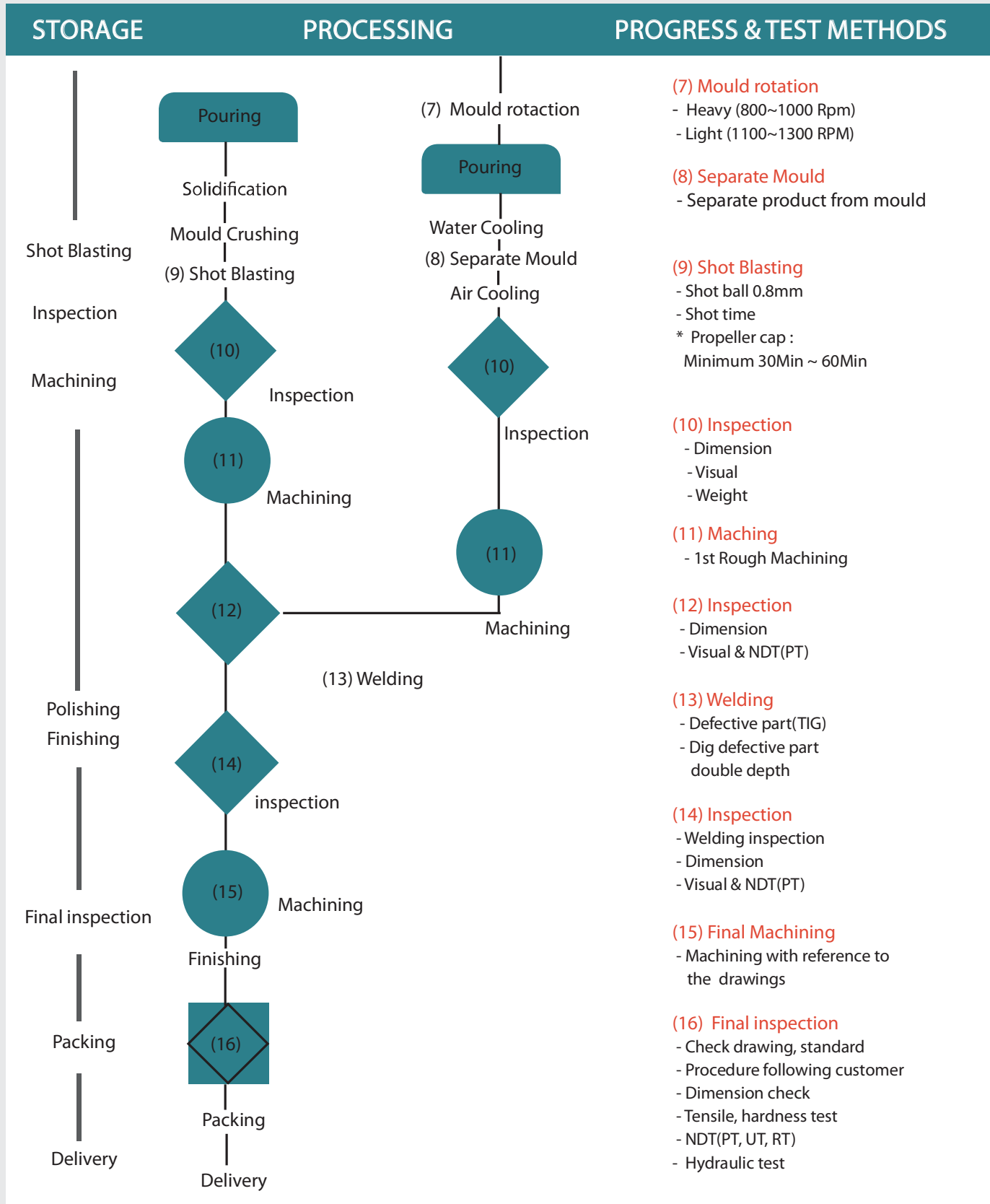


FACILITY 04

TESTING & ANALYZING
FACILITIES

INSPECTION PROCESS





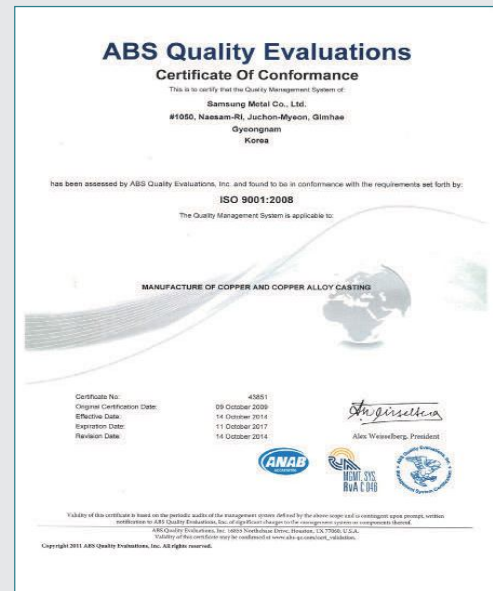


Quality Management System

QUALITY MANAGEMENT SYSTEM

We are paying constant attention to quality in order to obtain all standards and certification required for the products.

Therefore we have been approved as a manufacturer by world famous classifications "ABS, BV, GL, KR, LR" and all products produced by stable quality management system.



ABS ISO 9001

CERTIFICATE 01

SAMSUNG NONFERROUS METAL

Classification

Approval of Material Manufacturers
Zulassung von Werkstoffherstellern

GL

This is to certify that the works of **SAMSUNG NONFERROUS METAL CO., LTD. KYUNGNAM KOREA** has been subjected to an approval test in accordance with the Society's Rules with satisfactory results and is approved for the manufacture of the following products:

Cast Copper Alloys
in accordance with the **GL-Rules for Metallic Materials, Chapter 3, Section 2.8**

This approval is granted provided that all products intended to be used for the construction of ships or installations classed with Classification Level category II in every respect with the Society's Rules and Requirements.

Certificate of approval No. **02 1339 HH 4**
Date of approval **2018-01-31**

Part of the approval is our letter of approval ref. no. **021916-14** of 2016-03-13.

Germanischer Lloyd

GL

Certificate No: **MEXU/2218/009776**

SAM SUNG NONFERROUS METAL CO. LTD.
Angil He, Becheon 1481 Inn
Juchon-myong
Gimhae-si
Gyeongnam
Korea

has been approved as a manufacturer in accordance with the requirements of Lloyd's Register for -

Copper Alloy Castings for Valves, Liners, Bushes and Fitings

This approval is subject to compliance with the Rules for the Manufacture, Testing and Certification of Materials. The full details of the processes and grades to which this approval applies are given in the Appendix of this Certificate.

Lloyd's Register is to be notified of any change that may affect the validity of this Certificate.

This Certificate is issued to the above manufacturer and is valid until the date given below.

Clive Arnold
Senior Metallurgical Specialist to Lloyd's Register IMRA
A member of the Lloyd's Register group

Valid Until : **13 July 2019**
Date of Issue : **14 July 2016**

LR

ABS

**CERTIFICATE OF
FOUNDRY
FACILITY AND PROCESS APPROVAL**

This is to certify that a representative of ABS did, at the request of **SAMSUNG NONFERROUS METAL CO., LTD.** 1050, NAESAM-RI, KYUNGNAM, Korea, Republic of attend the facilities as indicated in the ABS Busan Port port office survey report number 3109601 dated 21 June 2016 in order to carry out a survey of the facilities and associated quality procedures. The facility is considered capable of manufacturing

Bronze Casting components for marine applications

In accordance with the ABS Approval letter (Reference T1645432), ABS Rules, designated standards and ABS approved drawings. This approval is valid till 20 June 2021 subject to adherence to relevant ABS Rules, Survey requirements and annual endorsement by an ABS representative.

Marcus Cristand
Chief Metallurgist, ABS
ISSUE DATE: 21 June 2016
EXPIRY DATE: 20 June 2021

ABS

ABS

Page 1/2

Certificate number: **SMS.W.0.20096.0.0**

**RECOGNITION FOR
BV MODE II SCHEME**

SAMSUNG METAL CO., LTD.
Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)

Summary of the range of the recognition which is detailed in the subsequent page(s):
Copper alloy castings for valves, liners, bushes, flanges & sleeves

This certificate is valid until **21 Mar 2019**

Bureau Veritas

BV

KR

**APPROVAL CERTIFICATE FOR
MANUFACTURING PROCESS**

Certificate No. : **CWNI5402-CU001** Initial Approval : 11th November, 2009.

Product : **Copper and Copper Alloy Castings**

Manufacturer : **Samsung Metal Co., Ltd.**
1541, Seobu-ro, Juchon-myong, Gimhae-si, Gyeongnam, Korea

Product Description : **Copper and Copper Alloy Castings**

- Grade : **CAC sec. to KS D 8204 & JIS H 5120 or equivalent grade**
- Cast in method : **Centrifugal casting and Sand casting**
- Casting weight : **Max. 2500 kg**
- Main products : **Bush, Liner, sleeves etc.**

Approval Condition : **Individual Product Certification is required.**

THIS IS TO CERTIFY that the manufacturing process for the above mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and/or of the recognized standards as follows and entered in the "List of Approved Manufacturer and Type Approved Equipment".

Pt. 2, Ch. 1, Art. 101 of the Rules for Classification, Steel Ships.

This Certificate is valid until **10th November, 2019**.
Issued at **Changwon, Korea** on **10th November, 2014**.

KOREAN REGISTER OF SHIPPING
General Manager of Changwon Branch Office

KR

DNV GL

**WELDER'S QUALIFICATION
TEST CERTIFICATE**

Designation: **ISO 9806-3 141 P BW W35 130.0 PA ss mb** Photo (if required)

Welder name: **Lim, Jin-Ho**

Employer: **Samsung Nonferrous Metal Co., Ltd.**

Date of birth: **1989-01-22** Place of birth: **Busan**

Identification: **990122-1109218** Method of ID: **ID card**

Code/Testing site: **ISO 9806-3**

WPS reference: **SMC-002**

Test date	Results	Range of applications	Reference
2016-02-23	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2
2016-03-01	4/1	1/1	ISO, Pt. Section 6.2

Only for Repair Welding

The chosen method of the extension of qualification in accordance with ISO 9806-3

Issued at **Hamburg** on **2016-08-25** Date of welding: **2016-07-01**

This Certificate is valid until **2018-06-30** for **DNV GL**

DNV GL local station: **Stafan Gimhae/Jonae** This document has been digitally signed and will therefore not have handwritten signatures.

Approval Engineer: **Enno Brück** **Thorsten Laubmann**
Head of Section

Thorsten Laubmann
Head of Section

General Manager of Changwon Branch Office

GL WELDER'S QUALIFICATION

Patent & Others



APPLICATION FOR COPPER ALLOY

Related Material	General Alloy Description	Typical Applications
ASTM B 271, B148 Grade C86300, SAE 430B; HBSC4	Magnesium Bronze	Gears, cams, stripper nuts, slippers, high temperature and mining equipment.
ASTM B 271 Grade C95300 and C95300HT; ASTM B148 Grade C95300, ALBC	A low Iron Heat Treatable Aluminum Bronze.	Gears, cams, stripper nuts, slippers, high temperature and mining equipment.
ASTM B271 Grades C95400 and C95400HT, ASTM B148 Grade C95400, AMS 4870C, ALBC2	A Heat Treatable Aluminum Bronze.	Spur and low-speed heavily loaded worm gears and bushings for crusher and wear applications; adjusting nuts, pump, and landing gear parts.
ASTM B 271 Grade C95500; ASTM B 148 Grade C95500, AMS 4880	A Heat Treatable Nickel Aluminum Bronze.	Bushing and bearing applications in extreme pressure and corrosive environments, lock, dam, bridge, and surge hinge and pintle bushings and bearings.
ASTM B 271 Grade C95800; ASTM B 148 Grade C95800, ALBC3	A Heat Treatable Nickel Aluminum Bronze.	Propeller, hub, and other parts for marine applications; bushings and bearings for lock, dam, and bridge applications, and valve and pump components.
ASTM B 271 and ASTM B 427 Grade C90800; C90700, PBC2	A Tin Bronze, Copper-Tin.	Worm wheels or gears, bearings for heavy loads and relatively low speed. Good corrosion resistance.
ASTM B 271 and ASTM B 427 Grade C93700; C93800; LBC3	High leaded Tin Bronze	General service material for moderate pressures and high speeds; general-purpose wearing material for rob bushings, freight and streetcar bearings,
ASTM B 271 and ASTM B 427 Grade C83600; BC6	Red brass	Bearing, sleeve, impeller, flange, gear, valve, bush for general machinery

MATERIAL

01

SAMSUNG NONFERROUS METAL



삼성금속(주)

SAMSUNG NONFERROUS METAL CO., LTD.

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Gimhae-si, Gyeongsangnam-do, (50877)Korea

Tel : +82-55-329-1067(~9) / Fax +82-55-329-1800

E-Mail : ssmc@metalsamsung.co.kr

Web-site : <http://www.metalsamsung.co.kr>