SMK

High Performance Alloys

SPECIAL METAL KOREA

Nickel Alloys

Duplex & Super Duplex

Super Austenitic Stainless Steel

ABOUT US

We dedicated to providing quality and sustainability solutions that add economic value for customers. We're all about High Performance Alloys and finding you the ideal solution. With our knowledge and experience in Smelting, Forging, Hot Work, Cold Work, Heat Treatment, Machining, and Inspection, it allow us to provide customers with tailored and one-stop services. We offer complete supply chain solutions, from turnkey packages to just in time schedules and to single stock items. One of SPECIAL METAL KOREA's focuses has been, and will continue to be, how to provide premium quality product, fastest delivery, and effective cost for our customers.

MISSION

To deliver quality products and services to our customers through world-class processes, people and facilities.

VISION

To be recognized by our customers, employees and owners to be the best performing specialty metals supplier.

VALUES

Respect
We respect our customers, employees, partners, community and shareholders. We exemplify this through a culture of honesty and integrity that stresses 'doing what is right' for all groups and individuals. Employee safety is held to the highest standard.

Leadership
We train, coach, encourage and reward to create an empowered work force that is responsible for meeting the expectations of our customers, employees, partners and shareholders.

Continuous Improvement
We are committed to an environment of continuous improvement in everything we do. We do this by understanding customer, employee and partner expectations and continuously working to innovate and improve products, services and processes.

SPECIAL METAL KOREA - Your Material Problem Solutions

SMK MARKETS

CHEMICAL PROCESSING

The chemical industry uses a wide range of corrosion-resistant alloys in equipment exposed to highly corrosive environments, high pressures and temperatures in vessels, tanks, valves, pumps, compressors, agitators, etc. Special Metal Korea operates in every area of the chemical industry and supplies . Our engineers are capable of assessing the information provided, and finding which of our alloys will perform to your needs.

MARINE ENGINEERING

Our products are used for their resistance to seawater corrosion in marine and submarine applications and Other applications include offshore platforms and in power and process plants using seawater as a coolant. Nickel-containing alloys are identified as candidate materials for parts and equipment used in seawater or sea atmospheres. SMK alloys feature excellent corrosion resistance in offshore environments. They also offer anti-galling properties, high wear resistance and anti-biofouling properties.

OIL AND GAS

Steel and Alloys for the complete value chain of oil and gas production. Our products and services can be found in every field of oil and gas production and processing from upstream processes to downstream activities You will also find our products and services in midstream technologies used in the transport of hydrocarbons. We offer customer-driven alloys to support safe, efficient, and cost effective operation of upstream, midstream and downstream facilities and equipment.

PETROCHEMICAL

Due to the large variety of reactions and products in the petrochemical industry, the requirements of base materials are numerous. The chemical industry requires specific construction materials for a variety of plants and equipment. We collaborate continuously with our customers and engineering companies to find the most appropriate alloy solution to meet the customer and market needs.

POLLUTION CONTROL

We can meet virtually all of the requirements of the pollution control market. Many SMK alloys were developed specifically to resist the types of environments found in pollution control environments. From cost effective stainless alloys, to some of the most corrosion resistant nickel based alloys available, SMK is a complete source of specialty metals solutions for the pollution control industry.

POWER GENERATION

Our power generation alloys are used in a number of power generation applications within coal fired power plants, nuclear power plants and renewable energy applications. Due to the demanding environments required for different applications, the material you choose should be of the highest quality and perform to your expectations.

PULP AND PAPER

The process of bleaching will use less or even eliminate chlorine and chlorine dioxide and will influence the type of base materials used. Low-alloy materials will be increasingly substituted with high-alloy base materials, and special materials such as Titanium, which is used in the bleaching process, will be replaced by stainless steels such as duplex, super-duplex and fully austenitic stainless steels. In tanks and structures, 304L and 316L are often replaced with lean duplex and duplex, significantly reducing costs.

SMK AVAILABE MATERIAL GRADES AND FORMS

Material Group	Material Grade	UNS No	Werkstoff No	Plate, Sheet	Forging	Bar, Rod	Smls Pipe	Filler Metal
Nickel	**Nickel 200**	N02200	2.4060	●	●	●	●	●
	Nickel 201	N02201	2.4061	●	●	●	●	●
Ni-Cu Alloy	**Alloy 400**	N04400	2.4360	●	●	●	●	●
	Alloy K-500	N05500	2.4375	-	●	●	-	-
Ni-Cr-Fe Alloy	**Alloy 600**	N06600	2.4816	●	●	●	●	●
	Alloy 601	N06601	2.4851	●	●	●	-	●
	Alloy 690	N06690	2.4642	●	●	●	-	●
	Alloy 718	N07718	2.4668	●	●	●	●	●
	Alloy 80A	N07080	2.4952	●	●	●	-	●
	Alloy X	N06002	2.4665	●	●	●	-	-
	Alloy X-750	N07750	2.4669	●	●	●	-	●
Ni-Fe-Cr Alloy	**Alloy 800**	N08800	1.4876	-	●	●	-	●
	Alloy 800H	N08810	1.4958	-	●	●	-	-
	Alloy 800HT	N08811	1.4959	●	●	●	●	-
	Alloy 825	N08825	2.4858	●	●	●	●	-
	Alloy 925	N09925	-	●	●	●	●	-
Ni-Mo Alloy	**Alloy B-2**	N10665	2.4617	●	●	●	●	●
	Alloy B-3	N10675	2.4600	-	●	●	-	-
Ni-Cr-Mo Alloy	**Alloy 625**	N06625	2.4856	●	●	●	●	●
	Alloy 686	N06686	2.4606	●	●	●	●	●
	Alloy 725	N07725	-	●	●	●	●	●
	Alloy C-276	N10276	2.4819	●	●	●	●	●
	Alloy C-22	N06022	2.4602	●	●	●	●	●
	Alloy C-4	N06455	2.4610	●	●	●	●	●
	Alloy C-2000	N06200	2.4675	●	●	●	●	●
	Alloy 30	N06030	2.4603	●	●	●	-	-
	Alloy 35	N06035	2.4643	●	●	●	-	●
Ni-Cr-Co-Mo Alloy	**Alloy 617**	N06617	2.4663	-	●	●	-	-
6% Moly Alloy / Super Austenitic	**Alloy 20**	N08020	2.4660	●	●	●	●	●
	Alloy 28	N08028	1.4563				●	●
	Alloy 31	N08031	1.4562	●	●	●	●	-
	Alloy 904L	N08904	1.4539	●	●	●	●	●
	Alloy 926	N08926	1.4529	●	●	●	●	-
	Alloy 6XN	N08367	-	●	●	●	●	-
	Alloy 254 SMO	S31254	1.4547	●	●	●	●	-
Duplex / Super Duplex	**F51, 2205**	S31803	1.4462	●	●	●	●	●
	F60, 2205	S32205	1.4462	●	●	●	●	-
	F59, 52UR+	S32520	1.4507	●	●	●	●	-
	F61, 255	S32550	1.4507	●	●	●	●	●
	DP28W	S32808	-	●	●	●	●	-
	F65, Safurex	S32906	1.4477	●	●	●	●	-
	F53, 2507	S32750	1.4410	●	●	●	●	●
	F55, Zeron 100	S32760	1.4501	●	●	●	●	●
Special Grade Austenitic Stainless Steel	**316L UG**	S31603	1.4404	●	●	●	●	●
	316 LN	S31653	1.4429	●	●	●	●	-
	310 MoLN	S31050	1.4466	●	●	●	●	-
	310 NAG	S30600	1.4361	●	●	●	●	-
	Zecor, XDS	S38815	-	●	●	●	●	-

For Other Grade and Form please contact us at s_m_korea@naver.com

SMK PRODUCT FORMS AND CAPABILITIES

PLATES, SHEETS

Hot Rolled Plate

Thickness	4.76 to 102 mm
Width	600 to 1,100 mm
Lengths	up to 3,000 mm

Cold Rolled Sheet

Thickness	0.5 to 6.4 mm
Width	600 to 1,100 mm
Lengths	up to 3,000 mm

FORGING PRODUCTS

Bar, Disc

Diameters	up to 1,000 mm
Lengths	up to 6,000 mm

Blocks

Thickness	up to 300 mm
Width	up to 800 mm
Lengths	up to 6,000 mm

Ring

Diameters	up to 1,500 mm
Thickness	up to 250 mm

Hollow

Diameters	up to 800 mm
Lengths	up to 2,000 mm

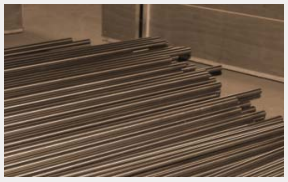
BARS, RODS

Bar

Diameters	12.7 to 356 mm
Lengths	up to 6,000 mm

Cold Drawn Rod

Diameters	13.0 to 80 mm
Lengths	up to 6,000 mm



Hot Rolled Rod

Diameters	13.0 to 102 mm
Lengths	up to 6,000 mm

Cold Drawn Hexagon

Corss Flat	13.0 to 101.6 mm
Lengths	up to 6,000 mm

WELDING PRODUCTS

Filler Metal

Diameters	1.0 to 3.2 mm
Length	1,000 mm

TURBULAR PRODUCTS

Seamless Pipes

Size	1/2" - 10"
Length	up to 6,000 mm

For Other Product Form and Specs please contact us at s_m_korea@naver.com

PROJECT EXPERIENCE

CUSTOMER	SCHMIDT + CLEMENS GROUP
VENDOR REG. NO	TCS065 - SPECIAL METAL KOREA CO., LTD.
USER	PETRONAS
PROJECT	REPLACEMENT FOR KA 17316*00 PROJECT
LOCATION	MALAYSIA
PRODUCT	ASTM B564 UNS N08810 - FLANGES ASTM B564 UNS N08810 - NOZZLES ASTM B407 UNS N08810 - PIPES ASTM B409 UNS N08810 - PLATES

CUSTOMER	SCHMIDT + CLEMENS GROUP
VENDOR REG. NO	TCS065 - SPECIAL METAL KOREA CO., LTD.
USER	GAIL INDIA LIMITED
PROJECT	STEAM CRACKER RADIANT COIL REPLACEMENT PROJECT
LOCATION	INDIA
PRODUCT	ASTM A182 UNS 31609 - FLANGES ASTM A182 UNS 30409 - FLANGES

USER	PIHC - PUPUK INDONESIA HOLDING COMPANY
VENDOR REG. NO	2000000293 - SPECIAL METAL KOREA CO., LTD.
USER	PT. PETROKIMIA GRESIK
PROJECT	PLANT MAINTENANCE PROJECT
LOCATION	INDONESIA
PRODUCT	PLATE - ASTM B582 UNS N06030 - 1,100 X 3,000 X THK 4, 5, 6 MM PLATE - ASTM B407 UNS N08811 - 1,100 X 3,000 X THK 4, 5, 6 MM PLATE - ASTM B625 UNS N08904 - 1,100 X 3,000 X THK 4, 5, 6 MM ROUND BAR - ASTM B581 UNS N06030 - OD 15 ~ 150 MM

CUSTOMER	PT. PETRO JORDAN ABADI
VENDOR REG. NO	01-SMK-312 - SPECIAL METAL KOREA CO., LTD.
USER	PT. PETRO JORDAN ABADI
PROJECT	200,000 MTPY PHOSPHORIC ACID AND BY PRODUCT PLANT PROJECT
LOCATION	INDONESIA
PRODUCT	PLATE - ASTM B582 UNS N06030 - 10 MM X 1,100 MM X 3,000 MM

CUSTOMER	PT. PETRO JORDAN ABADI
VENDOR REG. NO	01-SMK-312 - SPECIAL METAL KOREA CO., LTD.
USER	PT. PETRO JORDAN ABADI
PROJECT	SULFURIC ACID & PHOSPHORIC ACID PLANT MAINTENANCE PROJECT
LOCATION	INDONESIA
PRODUCT	PLATE - ASTM B582 UNS N06030 - 1,100 X 3,000 X THK 3, 4, 6, 8, 10 MM PLATE - ASTM B625 UNS N08031 - 1,100 X 3,000 X THK 3, 4, 6, 8, 10 MM FILLER METAL - AWS A5.14 ERNICRMO-11 - 2.5, 2.6 MM PUMP SHAFTS - ASTM A182 F61 UNS S32550 - OD 165 X 3,000 MM INSERT PIPE - UNS S38815 - OD 610 X WT 30 X L 1180 MM SMLS 90 ELBOW - UNS S38815 - OD 610 X WT 30 MM REDUCER - UNS N08904

CUSTOMER	PT. PETROKIMIA GRESIK
VENDOR REG. NO	2000000293 - SPECIAL METAL KOREA CO., LTD.
USER	PT. PETROKIMIA GRESIK
PROJECT	REVAMP OF PHOSPHORIC ACID PLANT PROJECT
LOCATION	INDONESIA
PRODUCT	PLATE - ASTM B582 UNS N06030 - 10 MM X 1,100 MM X 3,000 MM

Other customers & users

High Performance Alloys

Briefing

Since 2014, SMK continuosly supply Nickel Alloy and High Performance Alloy materials to Indonesia, especially in fertilizer industry. We registered in PIHC (Pupuk Indonesia Holding Company) vendor list (Reg No. 2000000293). PIHC is an Indonesia state own and the largest fertilizer manufacturer in Southeast Asia with total production capacity of 12.71 million tonnes per year. In assuming the function to support Indonesia national food security, PIHC and subsidiaries (PT. PETROKIMIA GRESIK, PT. PUPUK KALTIM, PT. PUPUK SRIWIDJAJA, PT. PUPUK ISKANDAR MUDA, PT. PUPUK KUJANG) operates 5 plants spread in Java, Sumatra and Kalimantan.
Our superior quality products, fast delivery and competitive price make us to be their best partner for critical material supply.

Product Supply

Nickel Alloy and High Performance Alloy Plates, Sheets, Bars, Rods, Filler Metals, Shafts, Dics, Rings, Pipes, Fittings, for critical equipments.
contact us for available material grades and specifications.

Sustainable Development

To secure national demand of fertilizers, Indonesia government keep building new plant (Sulfuric Acid, Phosphoric Acid, Ammonia, Urea). Since march 2016, we established our workshop in Surabaya Indonesia for Sctock, Machining process, and Inspection Activity. With this local base company, it make us do better and able to developing our business in other industry sector (Oil and Gas, Power Generation, Marine, Pulp and Paper industry)

SMK Product Application in phosphoric acid plant,

digester

Digester	
Type	Vertical Tank
Material	UNS N06030 Lining
Dimension (dia x h)	ID 9,240 mm x H 10,000 mm
Manufacture	at site
Digester Agitator	
Type	Double Stage Blade Agitator
Speed	29.5 Rpm
Dimension	Propeller Dia 4,625 mm
Material	CS + UNS N06030 lining
Manufacture	Milton Roy Mixing
Seal Tank Agitator	
Type	Single Stage Blade Agitator
Speed	23 Rpm
Dimension	Propeller Dia 1,740 mm
Material	CS + UNS N06030 lining
Manufacture	Milton Roy Mixing
Pump Tank Agitator	
Type	Double Stage Blade Agitator
Speed	23 Rpm
Dimension	Propeller Dia 3,000 mm
Material	CS + UNS N06030 lining
Manufacture	Milton Roy Mixing

Hydration Tank Agitator

Type	Double Stage Blade Agitator
Speed	16 Rpm
Dimension	Propeller Dia 5,400 mm
Material	CS + UNS N06030 lining
Manufacture	Milton Roy Mixing

Hemi Hydrate Slurry Pump

Type	Centrifugal Semi Open Impeller
Capacity	260 m3/h
Pressure	3.3 kg/cm2
Material	UNS N08031
Manufacture	Friatec AG

Hemi Hydrate Slurry Pump

Type	Centrifugal Semi Open Impeller
Capacity	65 m3/h
Pressure	2.5 kg/cm2
Material	UNS N08031
Manufacture	Friatec AG

hydration tank

Di- Hydrate Slurry Pump

Type	Centrifugal Semi Open Impeller
Capacity	370 m3/h
Pressure	3.9 kg/cm2
Material	UNS N08031
Manufacture	Friatec AG

Di- Hydrate Recyvle Pump

Type	Centrifugal Semi Open Impeller
Capacity	444 m3/h
Pressure	3.5 kg/cm2
Material	UNS N08031
Manufacture	Friatec AG


hemihydrate filter

Hemi Hydrate Filter

Type	Horizontal Pan Tilting Filter
Material Handled	Hemihydrate Slurry
Capacity	410 T/H
Dry Surface Area	185-187 m2
Filter Cloth AP/Material	90-100 cm3/cm2.sec./PP
Material	Pan Filter SS904L
Manufacture	Andritz Separation Inc

Di-Hydrate Filter

Type	Horizontal Pan Tilting Filter
Material Handled	Dihydrate Slurry
Capacity	494 T/H
Dry Surface Area	107 m2
Filter Cloth AP/Material	120-130 cm3/cm2.sec./PP
Material	Pan Filter SS317L
Manufacture	Andritz Separation Inc


di-hydrate filter

See attacment for Test Report Samples

High Performance Alloys

SMK MATERIAL OVERVIEW

NICKEL AND NICKEL ALLOYS

Nickel 200 (UNS N02200)
Commercially pure wroughtNickel with good mechanical properties and corrosion resistance. Used for chemical and process plant such as caustic soda and synthetic fiber production as well as for food handling.

Nickel 201 (UNS N02201)
Similar to Nickel 200 but with the carbon content controlled to prevent intergranular embrittlement at service temperatures above 600°F (315°C). Used for chemical and process plant applications.

Alloy 400 (UNS N04400)
A Ni-Cu alloy with high strength and excellent resistance to a range of media including seawater, hydrofluoric and sulfuric acids, and alkalies. Used in marine and offshore engineering, salt production and chemical and hydrocarbon processing.

Alloy K-500 （UNS N05500)
Similar to Alloy 400 but age-hardenable for improved strength and hardness. Used for pump shafts, oil well tools, doctor blades, springs, fasteners and marine propeller shafts.

Alloy 600 (UNS N06600)
A Ni-Cr-Fe alloy, with good high-temperature strength and oxidation resistance, and resistance to stress corrosion cracking and caustic corrosion. Used in chemical, petrochemical and thermal processing as well as commercial and military nuclear power generation.

Alloy 601 (UNS N06601)
is a general-purpose engineering material for applications that require resistance to heat and corrosion. It resistance to high temperature oxidation, has good resistance to aqueous corrosion, and has high mechanical strength.

Alloy 617 (UNS N06617)
A nickel-chromium-cobalt-molybdenum alloy with an exceptional combination of metallurgical stability, strength, and oxidation resistance at high temperatures. Resistance to oxidation is enhanced by an aluminum addition. The alloy also resists a wide range of corrosive aqueous environments. Used in gas turbines for combustion cans, ducting, and transition liners; for petrochemical processing; for heat-treating equipment; and in nitric acid production.

Alloy 625 (UNS N06625)
A Ni-Cr-Mo alloy with resistance to severely corrosive environments, particularly to pitting, crevice corrosion and high-temperature oxidation, and with high strength from cryogenic temperatures up to 1500°F (815°C). Used in aerospace engineering, gas turbines, chemical processing, oil and gas extraction, pollution control, and marine and nuclear engineering.

Alloy 686 (UNS N06686)
Offering optimum resistance to localized corrosion in acid chloride environments and excellent resistance to oxidizing, reducing and mixed acids. Used in a range of aggressively corrosive environments in marine, pollution control, waste processing and process industry applications.

Alloy 690 (UNS N06690)
An alloy with excellent resistance to corrosion in applications such as nuclear steam generators, coal gasification, sulfuric, nitric and nitric/hydrofluoric acid processing.

Alloy 718 (UNS N07718)
An age-hardenable alloy combining high strength up to 1300°F (700°C) with corrosion resistance and excellent weldability. Used in aerospace, gas turbines, oil and gas extraction and nuclear engineering.

Alloy 725 (UNS N07725)
is a precipitation hardened Ni-Cr-Mo Alloy, an upgrade version of The strength of alloy 725 is twice than annealed alloy 625. It has essentially the same corrosion resistance as alloy 625. Used for hangers, landing nipples, side pocket mandrels and polished bore receptacles in sour gas service, where it resists the effects of hydrogen sulfide, chlorides and carbon dioxide. also attractive for high strength fasteners in marine applications, where it resists corrosion, pitting and crevice attack in sea water.

Alloy 80A (UNS N07080)
Is a precipitation hardened Ni-Cr alloy, strengthened by additions of titanium, aluminum and carbon, developed for service at temper atures up to 815°C. Used for gas turbine components (blades, rings and discs), bolts, nuclear boiler tube supports.

Alloy 800 (UNS N08800)
An alloy with high strength and corrosion resistance used in chemical, petrochemical and food processing, in nuclear engineering, and for the heathing of electric heating elements. Applications generally at temperatures below 1200°F (650°C).

Alloy 800H (UNS N08810)
Is a Ni-Fe-Cr Alloy which has higher design stresses than Alloy 800 (ASME Code Case 1325-7) Carbon is 0.05 to 0.10%, Aluminum + Titanium is 0.30 to 1.20% also an average grain size of ASTM 5, or coarser. Have superior creep and rupture strength during extended high temperature exposure.

Alloy 800HT (UNS N08811)
Is a Ni-Fe-Cr Alloy, it has higher maximum allowable design stresses than Alloy 800H Carbon is 0.06 to 0.10%, Aluminum + Titanium is 0.85 to 1.20% It also has higher creep and stress rupture properties than Alloy 800H.

SMK MATERIAL OVERVIEW

NICKEL AND NICKEL ALLOYS

Alloy 825 (UNS N08825)
A Ni-Fe-Cr alloy with excellent resistance to sulfuric and phosphoric acids. Resistant to oxidizing and reducing acids, stress-corrosion cracking, pitting and intergranular corrosion, it is used in chemical and petrochemical processing, oil and gas extraction, pollution control, waste processing and pickling applications.

Alloy 925 (UNS N09925)
Is a Ni-Fe-Cr Alloy with additions of molybdenum, copper, titanium and aluminum. an upgrade version of Alloy 825 with higher strength obtainable by age hardening. resistance to sulfide stress cracking and stress-corrosion cracking in “sour” (H2S containing) crude oil and natural gas. used for down-hole and surface gas well compo nents including tubular products, valves, hangers, landing nipples, tool joints and packers. The alloy is also useful for fasteners, marine and pump shafting and high-strength piping systems.

Alloy B-2 (UNS N10665)
is a Ni-Mo alloy with excellent resistance to hydrochloric acid at all concentrations and temperatures. It also withstands hydrogen chloride, sulfuric, acetic and phosphoric acids. The alloy has excellent resistance to pitting, to stress-corrosion cracking and to knife line and heat-affected zone attack

Alloy B-3 (UNS N10675)
Is a Ni-Mo Alloy with excellent resistance to hydrochloric acid at all concentrations and temperatures. It also withstands sulfuric, acetic, formic and phosphoric acids, and other non-oxidizing media

Alloy C-276 (UNS N10276)
An alloy with excellent resistance to reducing and mildly oxidizing environments. Resistant to localized attack and stress-corrosion cracking. Used extensively in pollution control applications and throughout the chemical and process industries.

Alloy C-22 (UNS N06022)
A Ni-Cr-Mo alloy with corrosion resistance in a wide range of reducing and oxidizing media, and resistance to localized corrosion and stress-corrosion cracking.

Alloy C-4 (UNS N06455)
is a Ni-Cr-Mo alloy with outstanding high temperature stability, high ductility and corrosion resistance, has excellent resistance to stress corrosion cracking and to oxidizing atmospheres up to 1038°C. has exceptional resistance to wide variety of chemical process environments. include hot contaminated mineral acids, solvents, chlorine and chlorine contaminated media (organic and inorganic), dry chlorine, formic and acetic acids, acetic anhydride, and seawaterand brine solutions.

Alloy C-2000 (UNS N06200)
is a Ni-Cr-Mo alloy with addition of Copper, to provide enhanced temperature capability in sulfuric acid, hydrofluoric acid, and dilute hydrochloric acid. It has resistance to all acids (especially hydrochloric, sulfuric, hydrofluoric) over large temperature range. Also has resistance to pitting, crevice attack, and stress corrosion cracking. Used in Chemical processing, Pharmaceutical, and Flue Gas Desulfurization systems.

Alloy G-30 (UNS N06030)
is a Ni-Cr-Mo alloy which has superior corrosion resistance to commercial phosphoric, sulfuric, nitric/ hydrochloric, nitric/ hydrofluoric acids and other complex environments containing highly oxidizing acids. Used in Chemical and Petrochemical process

Alloy G-35 (UNS N06035)
is a Ni-Cr-Mo alloy with outstanding corrosion resistance to wet process phosphoric acid, other oxidizing acids, alkalis, and chloride bearing media.

Alloy X (UNS N06002)
is a Ni-Cr-Fe alloy that possesses an exceptional combination of oxidation resistance, fabric ability and high temperature strength. good ductility after prolonged exposure at temperatures of 650, 760 and 870°C for 16,000 hours. It's also has resistance to stress corrosion cracking in petrochemical applications. Widely use in gas turbine engines for combustion zone components, Heat Treating Industries and Chemical Processing.

Alloy X-750 (UNS N07750)
An age-hardenable Ni-Cr-Fe alloy with high tensile and creep-rupture properties up to 1300°F (700°C). Applications include gas turbine engineering, tooling, fasteners and springs.

SMK MATERIAL OVERVIEW

6% MOLY ALLOY / SUPER AUSTENITIC STAINLESS STEEL

Alloy 20 (UNS N08020)
is a Ni-Cr-Fe Alloy, it has excellent corrosion resistance in chemical environments containing sulfuric acid, and useful resistance to environments containing chlorides, nitric acid, and phosphoric acid. Applications for alloy 020 requiring resistance to aqueous corrosion are essentially the same as those for Alloy 825.

Alloy 28 (UNS N08028)
is a highly alloyed austenitic stainless steel offering resistance to a variety of corrosive media resistance to both oxidizing and reducing acids and salts. resistance to sulfuric acid. Used in the chemical and petrochemical processing industry.

Alloy 31 (UNS N08031)
is an iron-nickel-chromium-molybdenum alloy with nitrogen addition. it particularly well suited to applications in chemical and petrochemical industries, environmental engineering, and oil and gas production.

Alloy 904L (UNS N08904)
A high-alloy austenitic stainless steel characterized by very good resistance to general corrosion in sulphuric, phosphoric and acetic acid as well as very good resistance to pitting corrosion and stress corrosion cracking.

Alloy 926 (UNS N08926)
is a super-austenitic stainless steel containing 6% molybdenum and with properties enhanced by its content of nitrogen. Its especially resistant tonon-oxidizing acids such as sulfuric and phosphoric. The high molybdenum content and nitrogen provide resistance to pitting and crevice corrosion, while copper enhances resistance to sulfuric acid.

Alloy 6XN (UNS N08367)
is a super-austenitic stainless steel containing 6% molybdenum properties enhanced by its content of nitrogen. Its high content of nickel results in thermal stability and resistance to stress corrosion cracking. Used in chemical processing and marine applications and for desalination systems, flue gas Desulfurization equipment for coal-fired power plants, and reaction vessels for pharmaceutical production.

Alloy 254 SMO (UNS S31254)
Is an austenitic stainless steel designed for maximum resistance to pitting and crevice corrosion. With high levels of chromium, molybdenum, and nitrogen, Alloy 254 SMO is especially suited for high-chloride environments such as brackish water, seawater, pulp mill bleach plants, and other high chloride process streams.

DUPLEX AND SUPER DUPLEX STAINLESS STEEL

F51 (UNS S31803)
Has high tensile strength and very good relaxation resistance combined withvery good resistance to fatiguea and corrosion.

F60 (UNS S32205)
Has high tensile strength and very good relaxation resistance combined with very good resistance to fatiguea nd corrosion.

F59 (UNS S32520)
has excellent general corrosion resistance, superior to virtually all other stainless steels. It has high resistance to intergranular corrosion. And it performs well in abrasion/corrosion conditions.

F61 (UNS S32550)
Is a duplex alloy with a high strength to weight ratio with superior abrasion and cavitation resistance. Resistance to chloride SCC, as well as crevice corrosion and pitting. Good ductility with a high fatigue strength. Used in Offshore Oil & Gas, Pulp & Paper, Nuclear, Marine, Chemical Processing and Flue Gas Desulfurization. Desulfurization.

DP28W (UNS S32808)
have excellent corrosion resistance to urea-carbamete solution, has very high mechanical strength and good formability, which give more advantages in plant design.

F65 (UNS S32906)
is a highly corrosion resistant material specially developed for the Stamicarbon urea process. Suitable for the severe conditions in urea production.

F53 (UNS S32750)
A super-duplex (austenitic-ferritic) stainless steel characterized by excellent resistance to stress corrosion cracking, very high resistance to pitting andcrevice corrosion, high resistance to general corrosion and very high mechanical strength.

F55 (UNS S32760)
A super-duplex (austenitic-ferritic) stainless steel characterized by excellent resistance to stress corrosion cracking, very high resistance to pitting andcrevice corrosion, high resistance to general corrosion and very high mechanical strength.

SMK MATERIAL OVERVIEW

AUSTENITIC STAINLESS STEEL

316L UG (UNS S31603)
The UREA 316L Modified grade has been specially developed for Urea plant applications. It is a 316L modified stainless steel with extra-low silicon content and substantial higher molybdenum contents. The alloy is designed for improved corrosion resistance properties in Ureacarbonate environments.

316 LN (UNS S31653)
Is an austenitic type of steel that is a low carbon, nitrogen enhanced version of grade 316 steel. It has good resistance to general corrosion and pitting / crevice corrosion.

310 MoLn (UNS S31050)
Its has been developed primarily to cope with the severe corrosive conditions existing in the urea industry. it particularly designed for improved corrosion resistance properties in urea carbonate environments including strippers. The grade is also well designed for resistance in wet corrosive conditions due to its high contents of chromium, molybdenum and nitrogen

310L NAG (UNS 30600)
Stainless steel 310L nitric acid grade (NAG) is designed to be used in nitric acid applications. The carbon and silicon contents are well controlled in this steel to produce a more stable austenite microstructure that is free of intermetallic or carbide precipitations.

38815 (UNS S38815)
Is a high silicon stainless steel, its resistance to hot, concentrate sulfuric acid environment. It can be used for construction of all metal towers, piping, distributors, orifice plates, pump tanks, mesh pads, etc.

SMK
SPECIAL METAL KOREA

LIMITING CHEMICAL COMPOSITION, %

Ni		Ni	Cu	Fe	C	Mn	S	Si
Nickel 200	min	99,0						
UNS N02200	max		0,25	0,4	0,15	0,35	0,01	0,35
Nickel 201	min	99,0						
UNS N02201	max		0,25	0,4	0,02	0,35	0,01	0,35

Ni-Cu Alloy		Ni	Cu	Fe	C	Mn	S	Si	Al	Ti
Alloy 400	min	63,0	28,0						-	-
UNS N04400	max		34,0	2,5	0,30	2,0	0,024	0,5		
Alloy K-500	min	63,0	27,0						2,30	0,35
UNS N05500	max		33,0	2,0	0,18	2,0	0,010	0,5	3,15	0,85

Ni-Cr-Fe Alloy		Ni	Cr	Fe	C	Mn	S	Si	P	Al	Ti	Co	Mo	Nb	Cu	W	B
Alloy 600	min	72,0	14,0	6,0					-	-	-	-	-	-		-	-
UNS N06600	max		17,0	10,0	0,15	1,0	0,015	0,5							0,5		
Alloy 601	min	58,0	21,0	Rest					-	1,0	-	-	-	-		-	-
UNS N06601	max	63,0	25,0		0,10	1,0	0,015	0,5		1,7					1,0		
Alloy 690	min	58,0	27,0	7,0					-	-	-	-	-	-		-	-
UNS N06690	max		31,0	11,0	0,05	0,5	0,015	0,5							0,5		
Alloy 718	min	50,0	17,0	Rest						0,2	0,65		2,8	4,75		-	
UNS N07718	max	55,0	21,0		0,08	0,35	0,015	0,35	0,015	0,8	1,15	1,0	3,3	5,50	0,3		0,006
Alloy 80A	min	Rest	18,0						-	0,5	1,80	-	-	-	-	-	-
UNS N07080	max		21,0	3,0	0,10	1,0	0,015	1,0		1,8	2,70						
Alloy X	min	Rest	20,5	17,0	0,05							0,5	8,0			0,2	
UNS N06002	max		23,0	22,0	0,15	1,0	0,03	1,0	0,04	-	-	2,5	10,0	-	-	1,0	-
Alloy X-750	min	70,0	14,0	5,0						0,4	2,25			0,7			
UNS N07750	max		17,0	9,0	0,08	1,0	0,01	0,5	-	1,0	2,75	1,0	-	1,2	0,50	-	-

Ni-Fe-Cr Alloy		Ni	Fe	Cr	Mn	C	Cu	Si	S	Al	Ti	Al+Ti	P	Nb	Mo
Alloy 800	min	30,0	39,5	19,0						0,15	0,15	-	-	-	-
UNS N08800	max	35,0		23,0	1,5	0,10	0,75	1,0	0,015	0,60	0,60				
Alloy 800H	min	30,0	39,5	19,0		0,05				0,15	0,15	-	-	-	-
UNS N08810	max	35,0		23,0	1,5	0,10	0,75	1,0	0,015	0,60	0,60				
Alloy 800HT	min	30,0	39,5	19,0		0,05				0,15	0,15	0,85	-	-	-
UNS N08811	max	35,0		23,0	1,5	0,10	0,75	1,0	0,015	0,60	0,60	1,20			
Alloy 825	min	38,0	22,0	19,5			1,5				0,6	-	-	-	2,5
UNS N08825	max	46,0		23,5	1,0	0,05	3,0	0,5	0,03	0,2	1,2				3,5
Alloy 925	min	42,0	22,0	19,5			1,5			0,1	1,9	-			2,5
UNS N09925	max	46,0		22,5	1,0	0,03	3,0	0,5	0,03	0,5	2,4		0,03	0,50	3,5

Ni-Mo Alloy		Ni	Mo	C	Mn	P	S	Si	Fe	Cr	Co	V	Ni+Mo	Al	Nb	Cu	Ta	Ti	W	Zr
Alloy B-2	min	Rest	26,0									-	-	-	-	-	-	-	-	-
UNS N10665	max		30,0	0,02	1,0	0,04	0,03	0,1	2,0	1,0	1,0									
Alloy B-3	min	65,0	27,0						1,0	1,0			94,0							
UNS N10675	max		32,0	0,01	3,0	0,03	0,01	0,1	3,0	3,0	3,0	0,2	98,0	0,5	0,2	0,2	0,2	0,2	3,0	0,1

LIMITING CHEMICAL COMPOSITION, %

Ni-Cr-Mo Alloy		Ni	Cr	Mo	C	Mn	P	S	Si	Fe	W	Co	V	Ti	Al	Cu	Nb+Ta	B
Alloy 625	min	58,0	20,0	8,0							-		-			-	3,15	-
UNS N06625	max		23,0	10,0	0,10	0,5	0,015	0,015	0,5	5,0		1,0		0,4	0,4		4,15	
Alloy 686	min	Rest	19,0	15,0							3,0	-	-	0,02	-	-	-	-
UNS N06686	max		23,0	17,0	0,01	0,75	0,04	0,02	0,08	5,0	4,4			0,25				
Alloy 725	min	55,0	19,0	7,0						Rest	-	-	-	1,0		-	2,75	-
UNS N07725	max		22,5	9,5	0,03	0,35	0,015	0,01	0,2					1,7	0,35		4,00	
Alloy C-276	min	Rest	14,5	15,0						4,0	3,0			-	-	-	-	-
UNS N10276	max		16,5	17,0	0,01	1,0	0,04	0,03	0,08	7,0	4,5	2,5	0,35					
Alloy C-22	min	Rest	20,0	12,5						2,0	2,5			-	-	-	-	-
UNS N06022	max		22,5	14,5	0,015	0,5	0,02	0,02	0,08	6,0	3,5	2,5	0,35					
Alloy C-4	min	Rest	14,0	14,0							-		-		-	-	-	-
UNS N06455	max		18,0	17,0	0,015	1,0	0,04	0,03	0,08	3,0		2,0		0,7				
Alloy C-2000	min	Rest	22,0	15,0							-		-	-		1,3	-	-
UNS N06200	max		24,0	17,0	0,01	0,5	0,025	0,01	0,08	3,0		2,0			0,5	1,9		
Alloy 30	min	Rest	28,0	4,0						13,0	1,5		-	-	-	1,0	0,3	-
UNS N06030	max		31,5	6,0	0,03	1,5	0,04	0,02	0,8	17,0	4,0	5,0				2,4	1,5	
Alloy 35	min	Rest	32,25	7,6									-				-	-
UNS N06035	max		34,25	9,0	0,05	0,5	0,03	0,015	0,6	2,0	0,6	1,0	0,2		0,4	0,3		

Ni-Cr-Co-Mo Alloy		Ni	Cr	Co	Mo	Fe	Mn	Al	C	Cu	Si	S	Ti	B
Alloy 617	min	44,5	20,0	10,0	8,0			0,8	0,05					
UNS N06617	max		24,0	15,0	10,0	3,0	1,0	1,5	0,15	0,5	1,0	0,015	0,6	0,006

Super Austenitic		Ni	Cr	Fe	Mo	Cu	N	C	Mn	P	S	Si	Nb+Ta
Alloy 20	min	32,0	19,0	Rest	2,0	3,0	-						8xC
UNS N08020	max	38,0	21,0		3,0	4,0		0,07	2,0	0,045	0,035	1,0	1,0
Alloy 28	min	29,5	26,0	Rest	3,0	0,6	-						-
UNS N08028	max	32,5	28,0		4,0	1,4		0,03	2,5	0,03	0,03	1,0	
Alloy 31	min	30,0	26,0	Rest	3,0	1,0	0,15						-
UNS N08031	max	32,0	28,0		7,0	1,4	0,25	0,015	2,0	0,02	0,01	0,3	
Alloy 904L	min	23,0	19,0	Rest	4,0	1,0	-						-
UNS N08904	max	28,0	23,0		5,0	2,0		0,02	2,0	0,045	0,035	1,0	
Alloy 926	min	24,0	19,0	Rest	6,0	0,5	0,15						-
UNS N08926	max	26,0	21,0		7,0	1,5	0,25	0,02	2,0	0,03	0,01	0,5	
Alloy 6XN	min	23,5	20,0	Rest	6,0		0,18						-
UNS N08367	max	25,5	22,0		7,0	0,75	0,25	0,03	2,0	0,04	0,03	1,0	
Alloy 254 SMO	min	17,5	19,5	Rest	6,0	0,5	0,18						-
UNS S31254	max	18,5	20,5		6,5	1,0	0,25	0,02	1,0	0,03	0,01	0,8	

Duplex / Super Duplex		Ni	Cr	Fe	Mo	Cu	N	C	Mn	P	S	Si
F51, 2205	min	4,5	21,0	Rest	2,5	-	0,08					
UNS S31803	max	6,5	23,0		3,5		0,20	0,03	2,0	0,03	0,02	1,0
F60, 2205	min	4,5	22,0	Rest	3,0	-	0,14					
UNS S32205	max	6,5	23,0		3,5		0,20	0,03	2,0	0,03	0,02	1,0
F59, 52UR+	min	5,5	24,0	Rest	3,0	0,5	0,20					
UNS S32520	max	8,0	26,0		4,0	2,0	0,35	0,03	1,5	0,035	0,02	0,8

LIMITING CHEMICAL COMPOSITION, %

Duplex / Super Duplex		Ni	Cr	Fe	Mo	Cu	N	C	Mn	P	S	Si	W
F61, 255	min	4,5	24,0	Rest	2,9	1,5	0,10						-
UNS S32550	max	6,5	27,0		3,9	2,5	0,25	0,04	1,5	0,04	0,03	1,0	
DP28W	min	7,0	27,0	Rest	0,8	-	0,30						2,1
UNS S32808	max	8,2	27,9		1,2		0,40	0,03	1,1	0,03	0,01	0,5	2,5
F65, Safurex	min	5,8	28,0	Rest	1,5		0,30		0,8				-
UNS S32906	max	7,5	30,0		2,6	0,8	0,40	0,03	1,5	0,03	0,03	0,8	
F53, 2507	min	6,0	24,0	Rest	3,0		0,24						-
UNS S32750	max	8,0	26,0		5,0	0,5	0,32	0,03	1,2	0,035	0,02	0,8	
F55, Zeron 100	min	6,0	24,0	Rest	3,0	0,5	0,20						0,5
UNS S32760	max	8,0	26,0		4,0	1,0	0,30	0,03	1,0	0,03	0,01	1,0	1,0

Austenitic S/S		Ni	Cr	Fe	Mo	Cu	N	C	Mn	P	S	Si	Al
316L UG	min	10,0	16,0	Rest	2,0	-							-
UNS S31603	max	14,0	18,0		3,0		0,10	0,03	2,0	0,045	0,03	0,75	
316 LN	min	10,0	16,0	Rest	2,0	-	0,10						-
UNS S31653	max	14,0	18,0		3,0		0,16	0,03	2,0	0,045	0,03	0,75	
310 MoLN	min	20,5	24,0	Rest	1,6	-	0,09						-
UNS S31050	max	23,5	26,0		2,6		0,15	0,02	2,0	0,03	0,01	0,5	
310 NAG	min	14,0	17,0	Rest			-					3,7	-
UNS S30600	max	15,5	18,5		0,2	0,5		0,018	2,0	0,02	0,02	4,3	
Zecor, XDS	min	13,0	13,0	Rest	0,75	0,75	-					5,5	
UNS S38815	max	17,0	15,0		1,50	1,50		0,03	2,0	0,04	0,02	6,5	0,3

TYPICAL MECHANICAL PROPERTIES

	UNS No	W.Nr.	Tensile Strength Mpa, min	Yield Strength Mpa, min	Elongation %, min
Ni					
Nickel 200	N02200	2.4060	380	105	40
Nickel 201	N02201	2.4061	380	105	40
Ni-Cu Alloy					
Alloy 400	N04400	2.4360	483	172	35
Alloy K-500	N05500	2.4375	965	690	20
Ni-Cr-Fe Alloy					
Alloy 600	N06600	2.4816	552	241	30
Alloy 601	N06601	2.4851	550	205	30
Alloy 690	N06690	2.4642	586	241	30
Alloy 718	N07718	2.4668	1275	1034	12
Alloy 80A	N07080	2.4952			
Alloy X	N06002	2.4665	660	240	35
Alloy X-750 type 1	N07750	2.4669	965	620	8
Alloy X-750 type 2			1170	790	18
Alloy X-750 type 3			1103	689	20
Ni-Fe-Cr Alloy					
Alloy 800	N08800	1.4876	517	207	30
Alloy 800H	N08810	1.4958	448	172	30
Alloy 800HT	N08811	1.4959	448	172	30
Alloy 825	N08825	2.4858	586	241	30
Alloy 925	N09925	-	965	724	18
Alloy 925 - 110k			965	758-965	18
Ni-Mo Alloy					
Alloy B-2	N10665	2.4617	750	350	45
Alloy B-3	N10675	2.4600	750	350	45
Ni-Cr-Mo Alloy					
Alloy 625 Gr.1	N06625	2.4856	827	414	30
Alloy 625 Gr.2			758	345	25
Alloy 686	N06686	2.4606	690	310	45
Alloy 725	N07725	-	1034	827	20
Alloy 725 - 120k			1034	827-1034	20
Alloy C-276	N10276	2.4819	690	283	40
Alloy C-22	N06022	2.4602	690	310	45
Alloy C-4	N06455	2.4610	690	276	40
Alloy C-2000	N06200	2.4675	690	283	45
Alloy 30	N06030	2.4603	586	241	30
Alloy 35	N06035	2.4643	586	241	30
Ni-Cr-Co-Mo Alloy					
Alloy 617	N06617	2.4663	655	241	35
Super Austenitic					
Alloy 20	N08020	2.4660	551	241	30
Alloy 28	N08028	1.4563	500	214	40
Alloy 31	N08031	1.4562	648	276	40
Alloy 904L	N08904	1.4539	490	215	35
Alloy 926	N08926	1.4529	650	295	35
Alloy 6XN	N08367	-	650	276	40
Alloy 254 SMO	S31254	1.4547	690	310	35

TYPICAL MECHANICAL PROPERTIES

	UNS No	W.Nr.	Tensile Strength Mpa, min	Yield Strength Mpa, min	Elongation %, min
Duplex / Super Duplex					
F51, 2205	S31803	1.4462	795	550	15
F60, 2205	S32205	1.4462	655	450	25
F59, 52UR+	S32520	1.4507	770	550	25
F61, 255	S32550	1.4507	760	550	15
DP28W	S32808	-	700	500	15
F65, Safurex	S32906	1.4477	800	650	25
F53, 2507	S32750	1.4410	795	550	15
F55, Zeron 100	S32760	1.4501	795	550	25
Austenitic S/S					
316L UG	S31603	1.4404	485	170	40
316 LN	S31653	1.4429	515	205	40
310 MoLN	S31050	1.4466	540	240	40
310 NAG	S30600	1.4361	580	270	25
Zecor, XDS	S38815	-	540	255	30

QUALITY ASSURANCE

Test Item	Test Method	
Chemical Analysis	ASTM E 39	Test Methods for Chemical Analysis of Ni
Chemical Analysis	ASTM E 1473	Test Methods for Chemical Analysis of Ni, Co, and High-Temperature Alloys
Chemical Analysis	ASTM E 76	Test Methods for Chemical Analysis of Ni-Cu Alloys
Chemical Analysis	ASTM E 38	Test Methods for Chemical Analysis of Ni-Cr and Ni-Cr-Fe Alloys
Tensile	ASTM E 8	Test Methods for Tension Testing of Metallic Materials
Tensile	ASTM A 370	Test Methods and Definitions for Mechanical Testingof Steel Products
Hardnes	ASTM E 18	Test Methods for Rockwell Hardnessof Metallic Materials
PMI Examination	ASTM E 1476	Standard Guide for Metals Identification, Grade Verification, and Sorting
NDE Ultrasonic	ASTM A 388	Standard Practice for Ultrasonic Examination of Steel Forgings
NDE Liquid Penetrant	ASTM E 165	Test Method for Liquid Penetrant Examination
Dimensional	SMK-TM-D1	Test Method for Dimension
Roughness	SMK-TM-R1	Test Method for Surface Roughess
Impact	ASTM E 23	Test Methods for Notched Bar Impact Testing of Metallic Materials
Low Temperature Impact	ASTM E 23	Test Methods for Notched Bar Impact Testing of Metallic Materials
Creep and Stress Rupture	ASTM E 139	Test Methods for Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
Hydrogen Induced Cracking	NACE TM-0284	Test Method Evaluation of Pipeline and Pressure Vessel Steels for Resistance to Hydrogen-Induced Cracking
Inter Granular Corrosion	ASTM A 262	Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
Sulfide Stress Corrosion Cracking	NACE TM-0177	Test Method Laboratory Testing of Metals for Resistance to Sulfide Stress Cracking and Stress Corrosion Cracking in H2S Environments
Pitting and Crevice Corrosion	ASTM G48	Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution
Macro Etching	ASTM E 340	Standard Practice for Macroetching Metals and Alloys
Grain Size	ASTM E 112	Test Methods for Determining Average Grain Size

MAJOR SPECIFICATIONS

	UNS No	W.Nr.	Plate, Sheet	Forging	Bar, Rod	Smls Pipe	Filler Metal
Ni							
Nickel 200	N02200	2.4060	ASTM B 162	ASTM B 564	ASTM B 160	ASTM B 161	AWS A5.14 ERNi-1
Nickel 201	N02201	2.4061	ASTM B 162	ASTM B 564	ASTM B 160	ASTM B 161	AWS A5.14 ERNi-1
Ni-Cu Alloy							
Alloy 400	N04400	2.4360	ASTM B 127	ASTM B 564	ASTM B 164	ASTM B 165	AWS A5.14 ERNiCu-7
Alloy K-500	N05500	2.4375	-	ASTM B 865	ASTM B 865	-	
Ni-Cr-Fe Alloy							
Alloy 600	N06600	2.4816	ASTM B 168	ASTM B 564	ASTM B 166	ASTM B 167	AWS A5.14 ERNiCr-3
Alloy 601	N06601	2.4851	ASTM B 168	ASTM B 166	ASTM B 166	-	AWS A5.14 ERNiCrFe-11
Alloy 690	N06690	2.4642	ASTM B 168	ASTM B 564	ASTM B 166	-	-
Alloy 718	N07718	2.4668	ASTM B 670	ASTM B 637	ASTM B 637	-	AWS A5.14 ERNiFeCr-2
Alloy 80A	N07080	2.4952	-	ASTM B 637	ASTM B 637	-	-
Alloy X	N06002	2.4665	ASTM B 435	AMS 5754	ASTM B 572	-	AWS A5.14 ERNiCrMo-2
Alloy X-750	N07750	2.4669	-	ASTM B 637	ASTM B 637	-	-
Ni-Fe-Cr Alloy							
Alloy 800	N08800	1.4876	ASTM B 409	ASTM B 564	ASTM B 408	ASTM B 407	-
Alloy 800H	N08810	1.4958	ASTM B 409	ASTM B 564	ASTM B 408	ASTM B 407	-
Alloy 800HT	N08811	1.4959	ASTM B 409	ASTM B 564	ASTM B 408	ASTM B 407	-
Alloy 825	N08825	2.4858	ASTM B 424	ASTM B 564	ASTM B 425	ASTM B 423	AWS A5.14 ERNiFeCr-1
Alloy 925	N09925	-	-	ASTM B 637	ASTM B 637	-	-
Ni-Mo Alloy							
Alloy B-2	N10665	2.4617	ASTM B 333	ASTM B 564	ASTM B 335	ASTM B 622	AWS A5.14 ERNiMo-7
Alloy B-3	N10675	2.4600	ASTM B 333	ASTM B 564	ASTM B 335	ASTM B 622	AWS A5.14 ERNiMo-10
Ni-Cr-Mo Alloy							
Alloy 625	N06625	2.4856	ASTM B 443	ASTM B 564	ASTM B 446	ASTM B 444	AWS A5.14 ERNiCrMo-3
Alloy 686	N06686	2.4606	ASTM B 575	ASTM B 564	ASTM B 574	-	AWS A5.14 ERNiCrMo-14
Alloy 725	N07725	-	-	ASTM B 637	ASTM B 637	-	AWS A5.14 ERNiCrMo-15
Alloy C-276	N10276	2.4819	ASTM B 575	ASTM B 564	ASTM B 574	ASTM B 622	AWS A5.14 ERNiCrMo-4
Alloy C-22	N06022	2.4602	ASTM B 575	ASTM B 564	ASTM B 574	ASTM B 622	AWS A5.14 ERNiCrMo-10
Alloy C-4	N06455	2.4610	ASTM B 575	ASTM B 574	ASTM B 574	ASTM B 622	AWS A5.14 ERNiCrMo-7
Alloy C-2000	N06200	2.4675	ASTM B 575	ASTM B 564	ASTM B 574	ASTM B 622	AWS A5.14 ERNiCrMo-17
Alloy 30	N06030	2.4603	ASTM B 582	ASTM B 462	ASTM B 581	ASTM B 622	AWS A5.14 ERNiCrMo-11
Alloy 35	N06035	2.4643	ASTM B 575	ASTM B 564	ASTM B 574	-	-
Ni-Cr-Co-Mo Alloy							
Alloy 617	N06617	2.4663	ASTM B 168	ASTM B 564	ASTM B 166	-	AWS A5.14 ERNiCrCoMo-1
Super Austenitic							
Alloy 20	N08020	2.4660	ASTM B 463	ASTM B 462	ASTM B 473	ASTM B 729	AWS A5.9 ER320
Alloy 28	N08028	1.4563	ASTM B 709	-	-	ASTM B 688	AWS A5.9 ER383
Alloy 31	N08031	1.4562	ASTM B 625	ASTM B 564	ASTM B 581	ASTM B 622	-
Alloy 904L	N08904	1.4539	ASTM B 625	ASTM A 182	ASTM B 649	ASTM B 677	AWS A5.9 ER385
Alloy 926	N08926	1.4529	ASTM B 625	ASTM B 649	ASTM B 649	ASTM B 677	-
Alloy 6XN	N08367	-	ASTM B 688	ASTM B 564	ASTM B 691	ASTM B 673	-
Alloy 254 SMO	S31254	1.4547	ASTM A 240	ASTM A 182	ASTM B 649	ASTM A 312	-

MAJOR SPECIFICATIONS

	UNS No	W.Nr.	Plate, Sheet	Forging	Bar, Rod	Smls Pipe	Filler Metal
Duplex / Super Duplex							
F51, 2205	S31803	1.4462	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	AWS A5.9 ER2209
F60, 2205	S32205	1.4462	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	-
F59, 52UR+	S32520	1.4507	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	-
F61, 255	S32550	1.4507	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	AWS A5.9 ER2553
DP28W	S32808	-	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	-
F65, Safurex	S32906	1.4477	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	-
F53, 2507	S32750	1.4410	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	AWS A5.9 ER2594
F55, Zeron 100	S32760	1.4501	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 790	AWS A5.9 ER2594
Austenitic S/S							
316L UG	S31603	1.4404	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 312	AWS A5.9 ER316L
316 LN	S31653	1.4429	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 312	-
310 MoLN	S31050	1.4466	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 312	-
310 NAG	S30600	1.4361	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 312	-
Zecor, XDS	S38815	-	ASTM A 240	ASTM A 182	ASTM A 276	ASTM A 312	-

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TEST REPORT

5, Myeongji ocean city 9-ro, Gangseo-gu, Busan, 618-814 Rep. of KOREA TEL 82-51-464-0771 FAX 82-51-462-2115

Report No : TAP-019335
Client : Hyejin.Hwang
SPECIAL METAL KOREA CO., LTD.
9, Madimi-ro 15beon-gil, Seongsan-gu, Changwon-si, Gyeongsangnam-do, Korea

Receipt Date : Jun.24.2015
Test Completion Date : Jul.07.2015

Sample : Metallic Specimen(ASTM B582 UNS N06030, Heat No.: K43-D245)

TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Tensile Strength	N/㎟	-	713	ASTM E8/E8M-13a
Yield Strength	N/㎟	-	366	ASTM E8/E8M-13a
Elongation	%	-	55	ASTM E8/E8M-13a
Hardness	-	-	90 HRB	ASTM E18-14a
Ferric Sulfate-Sulfuric Acid Test (corroison rate)	millimeters per month	-	0.01	ASTM A262-14(Practice B)
Ni	%	-	46.1	ASTM A751-14
Fe	%	-	14.6	ASTM A751-14
Mn	%	-	0.73	ASTM A751-14(ICP)
C	%	-	0.03	ASTM A751-14
Si	%	-	0.42	ASTM A751-14(ICP)
S	%	-	0.005	ASTM A751-14
Cr	%	-	28.8	ASTM A751-14
Nb	%	-	0.31	ASTM A751-14(ICP)
Ta	%	-	0.01	ASTM A751-14(ICP)
Mo	%	-	4.97	ASTM A751-14(ICP)
P	%	-	0.013	ASTM A751-14(ICP)

- Next Page -

Jeong Hyeong-geun
Prepared by Jeong Hyeong-geun
E-mail: jhg@ktr.or.kr

Kim Bok-ki
Reviewed by Kim Bok-ki
Technical Manager
Tel: 1577-0091(ARS ①→④)

Jul.07.2015

Korea Testing & Research Institute

President Choi Hyeongki

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Sample : Metallic Specimen(ASTM B582 UNS N06030, Heat No.: K43-D245)

TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Cu	%	-	1.68	ASTM A751-14(ICP)
Co	%	-	0.69	ASTM A751-14(ICP)
W	%	-	1.53	ASTM A751-14(ICP)

- Tensile specimen - Type : Rectangular
- Tensile specimen - Width : 12.5 mm
- Tensile specimen - Gauge length : 50 mm

* USAGE : SUBMITTED PURPOSE FOR

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Jeong Hyeong-geun
Prepared by Jeong Hyeong-geun
E-mail: jhg@ktr.or.kr

Kim Bok-ki
Reviewed by Kim Bok-ki
Technical Manager
Tel: 1577-0091(ARS ①→④)

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TEST REPORT

우 618-814 부산광역시 강서구 명지오션시티9로 5 (명지동) TEL (051)464-0771 FAX (051)462-2115

성적서번호 : TAP-019335
대 표 자 : 황혜진
업 체 명 : (주)스페셜메탈코리아
주 소 : 경상남도 창원시 성산구 마디미로15번길 9 810(상남동, 청솔아트빌)
시 료 명 : 금속시험편(ASTM B582 UNS N06030, Heat No.: K43-D245)

접 수 일 자 : 2015년 06월 24일
시험완료일자 : 2015년 07월 07일

시 험 결 과

시험항목	단위	시료구분	결과치	시험방법
인장강도	N/㎟	-	713	ASTM E8/E8M-13a
항복강도	N/㎟	-	366	ASTM E8/E8M-13a
연신율	%	-	55	ASTM E8/E8M-13a
경도	-	-	90 HRB	ASTM E18-14a
Ferric Sulfate-Sulfuric Acid Test (corroison rate)	millimeters per month	-	0.01	ASTM A262-14(Practice B)
Ni	%	-	46.1	ASTM A751-14
Fe	%	-	14.6	ASTM A751-14
Mn	%	-	0.73	ASTM A751-14(ICP)
C	%	-	0.03	ASTM A751-14
Si	%	-	0.42	ASTM A751-14(ICP)
S	%	-	0.005	ASTM A751-14
Cr	%	-	28.8	ASTM A751-14
Nb	%	-	0.31	ASTM A751-14(ICP)
Ta	%	-	0.01	ASTM A751-14(ICP)
Mo	%	-	4.97	ASTM A751-14(ICP)
P	%	-	0.013	ASTM A751-14(ICP)
Cu	%	-	1.68	ASTM A751-14(ICP)
Co	%	-	0.69	ASTM A751-14(ICP)

- 다음 페이지 -

Jeong Hyeong-geun
작성자 : 정형근
E-mail: jhg@ktr.or.kr

Kim Bok-ki
기술책임자 : 김복기
Tel : 1577-0091(ARS ①→④)

2015년 07월 07일

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성적서번호 : TAP-019335
대 표 자 : 황혜진
업 체 명 : (주)스페셜메탈코리아
주 소 : 경상남도 창원시 성산구 마디미로15번길 9 810(상남동, 청솔아트빌)
시 료 명 : 금속시험편(ASTM B582 UNS N06030, Heat No.: K43-D245)

접 수 일 자 : 2015년 06월 24일
시험완료일자 : 2015년 07월 07일

시 험 결 과

시험항목	단위	시료구분	결과치	시험방법
W	%	-	1.53	ASTM A751-14(ICP)

- Tensile specimen - Type : Rectangular
- Tensile specimen - Width : 12.5 mm
- Tensile specimen - Gauge length : 50 mm

* 용 도 : 제출용

비 고 : 1. 이 성적서는 의뢰자가 제시한 시료 및 시료명으로 시험한 결과로써 전체 제품에 대한 품질을 보증하지 않으며, 성적서의 진위확인은 홈페이지(www.ktr.or.kr) 또는 QR code로 확인 가능합니다.
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Jeong Hyeong-geun
작성자 : 정형근
E-mail: jhg@ktr.or.kr

Kim Bok-ki
기술책임자 : 김복기
Tel : 1577-0091(ARS ①→④)

2015년 07월 07일

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TEST REPORT

5, Myeongji ocean city 9-ro, Gangseo-gu, Busan, 618-814 Rep. of KOREA TEL 82-51-464-0771 FAX 82-51-462-2115

Report No : TAP-019334
Client : Hyejin.Hwang
SPECIAL METAL KOREA CO., LTD.
9, Madimi-ro 15beon-gil, Seongsan-gu, Changwon-si, Gyeongsangnam-do, Korea

Receipt Date : Jun.24.2015
Test Completion Date : Jul.07.2015

Sample : Metallic Specimen(ASTM B625 UNS N08031, Heat No.: K58-D209)

TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Tensile Strength	N/㎟	-	767	ASTM E8/E8M-13a
Yield Strength	N/㎟	-	428	ASTM E8/E8M-13a
Elongation	%	-	48	ASTM E8/E8M-13a
Hardness	-	-	92 HRB	ASTM E18-14a
Ferric Sulfate-Sulfuric Acid Test (corroison rate)	millimeters per month	-	0.01	ASTM A262-14(Practice B)
Ni	%	-	30.20	ASTM A751-14
Mn	%	-	0.87	ASTM A751-14(ICP)
C	%	-	0.015	ASTM A751-14
Si	%	-	0.29	ASTM A751-14(ICP)
S	%	-	0.005	ASTM A751-14
Cr	%	-	26.12	ASTM A751-14
Mo	%	-	6.38	ASTM A751-14(ICP)
P	%	-	0.012	ASTM A751-14(ICP)
Cu	%	-	1.09	ASTM A751-14(ICP)
N	%	-	0.20	ASTM E1019-11

- Next Page -

Jeong Hyeong-geun
Prepared by Jeong Hyeong-geun
E-mail: jhg@ktr.or.kr

Kim Bok-ki
Reviewed by Kim Bok-ki
Technical Manager
Tel: 1577-0091(ARS ①→④)

Jul.07.2015

Korea Testing & Research Institute

President Choi Hyeongki

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TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD

- Tensile specimen - Type : Rectangular
- Tensile specimen - Width : 12.5 mm
- Tensile specimen - Gauge length : 50 mm

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Jeong Hyeong-geun
Prepared by Jeong Hyeong-geun
E-mail: jhg@ktr.or.kr

Kim Bok-ki
Reviewed by Kim Bok-ki
Technical Manager
Tel: 1577-0091(ARS ①→④)

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주 소 : 경상남도 창원시 성산구 마디미로15번길 9 810(상남동, 청솔아트빌)

접 수 일 자 : 2015년 06월 24일
시험완료일자 : 2015년 07월 07일

시 료 명 : 금속시험편(ASTM B625 UNS N08031, Heat No.: K58-D209)

시 험 결 과

시험항목	단위	시료구분	결과치	시험방법
인장강도	N/㎟	-	767	ASTM E8/E8M-13a
항복강도	N/㎟	-	428	ASTM E8/E8M-13a
연신율	%	-	48	ASTM E8/E8M-13a
경도	-	-	92 HRB	ASTM E18-14a
Ferric Sulfate-Sulfuric Acid Test (corroison rate)	millimeters per month	-	0.01	ASTM A262-14(Practice B)
Ni	%	-	30.20	ASTM A751-14
Mn	%	-	0.87	ASTM A751-14(ICP)
C	%	-	0.015	ASTM A751-14
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Mo	%	-	6.38	ASTM A751-14(ICP)
P	%	-	0.012	ASTM A751-14(ICP)
Cu	%	-	1.09	ASTM A751-14(ICP)
N	%	-	0.20	ASTM E1019-11

- Tensile specimen - Type : Rectangular
- Tensile specimen - Width : 12.5 mm
- Tensile specimen - Gauge length : 50 mm

* 용 도 : 제출용

- 다음 페이지 -

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E-mail: jhg@ktr.or.kr

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접 수 일 자 : 2015년 06월 24일
시험완료일자 : 2015년 07월 07일

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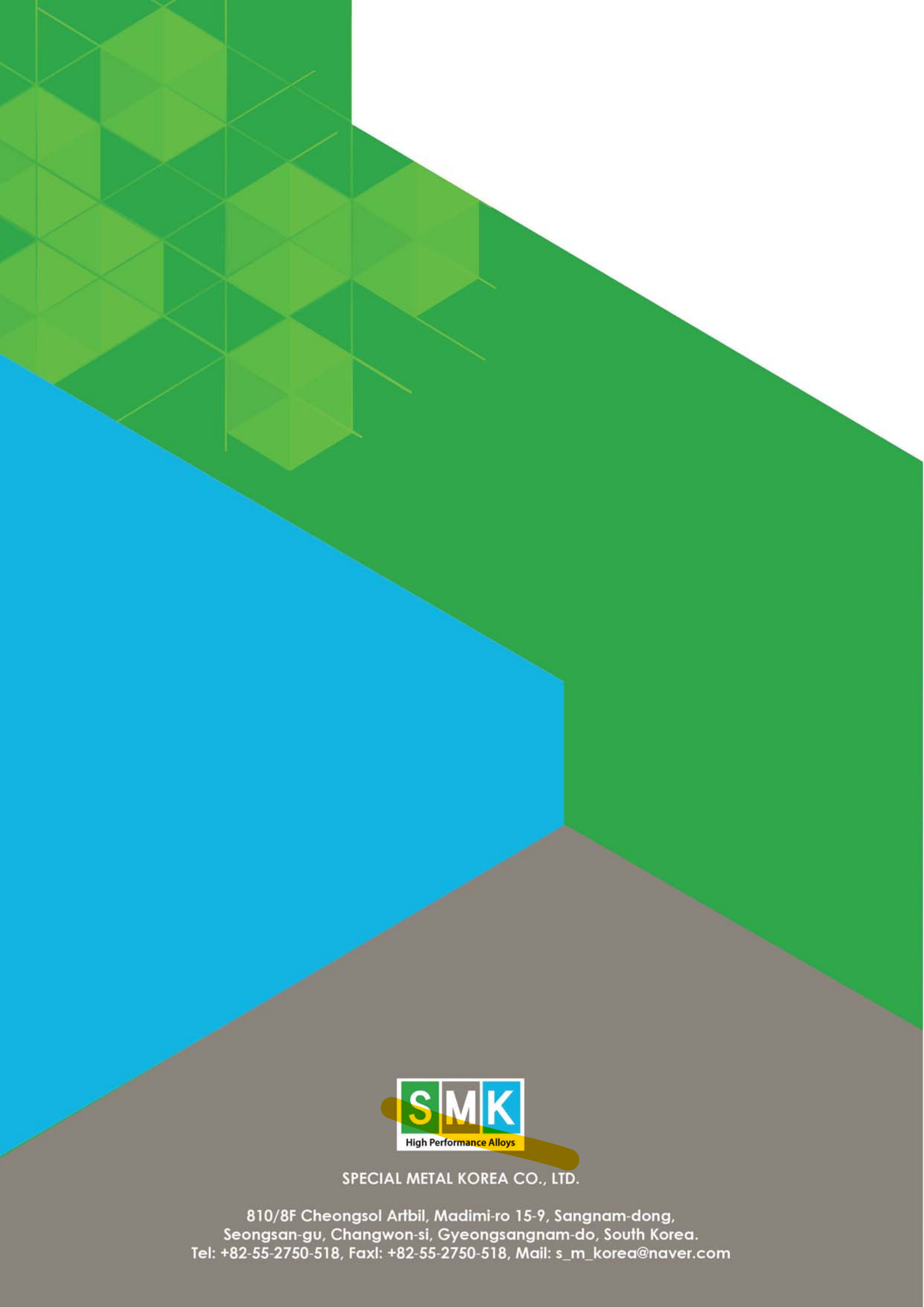

SPECIAL METAL KOREA CO., LTD.

810/8F Cheongsol Artbil, Madimi-ro 15-9, Sangnam-dong,
Seongsan-gu, Changwon-si, Gyeongsangnam-do, South Korea.
Tel: +82-55-2750-518, Faxl: +82-55-2750-518, Mail: s_m_korea@naver.com