# CATALOGUE WELDING CONSUMABLES

www.kimtingroup.com



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### ABOUT OUR COMPANY

Formerly a company specializing in the trading and distribution of metal products and welding consumables, with long-term vision, the company's board of directors decided to build a factory to manufacture welding electrodes and welding wires with Kim Tin brand.

Over 23 years of establishment and development, Kim Tin has become a leader in welding consumables manufacturing and trading in Vietnam. Besides, Kim Tin also expands business lines, diversifying product baskets such as: metal materials, machinery and equipment, spider glue, TikTak spray paint, flooring, MDF board...

With the business philosophy "Our promise, our commitment is gold", Kim Tin pays special attention to the product quality. Therefore, the R&D team is constantly researching and improving product quality to bring more good experiences to customers. All products produced by Kim Tin meet international standards and are safe for the environment and consumer health.

### **OBJECTIVES AND STRATEGY**

- To become the No. 1 company in manufacturing, trading, and supplying welding consumables in Vietnam;
- To increase Kim Tin's market share in each industry by more than 35%;
- To move toward environmentally and community-friendly products, high-quality services to meet customer needs;
- To list member companies in Kim Tin Group on the stock exchange.



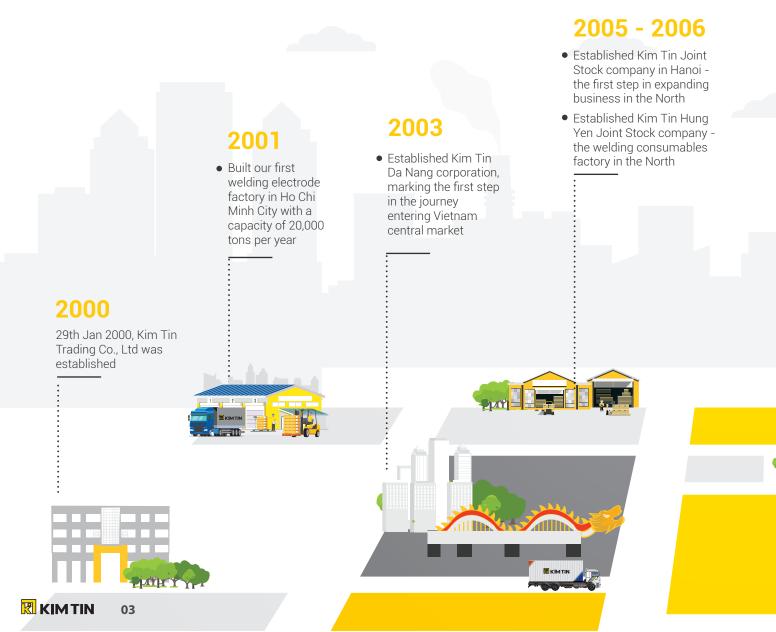
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## **ESTABLISHMENT AND DEVELOPMENT JOURNEY**

Over 23 years of establishment and development, Kim Tin has always persistently pursued the path of sustainable development, aiming to balance the interests of stakeholders. At the same time, we uphold **"our promise, our commitment is gold"** by providing the highest quality products and services.





# 2010 - 2011

- Established Kim Tin Quang
   Tri Joint Stock Company with a design capacity of 48,000 tons per year and an area of 45,000 m<sup>2</sup>
- Lauched new products: Steel nail and Drawing steel wire

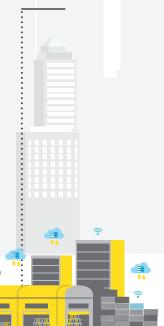
# 2015 - 2016

- Established Kim Tin Long An welding consumables factory cluster, completed the production lines of welding electrodes, welding wires, welding flux, nails, and steel tie
- Promoted the development of logistics services, established a company called nPL Logistics Joint Stock Company with more than 100 container trucks
- Expanded Kim Tin Hung Yen welding consumable factory, bringing the total capacity of Hung Yen factory to 68,000 tons/year, with an area of 70,000 m<sup>2</sup>

**June** 

## 2021 - 2022

 Became the first non-state enterprise in Vietnam to implement a comprehensive management system (SAP, S4/HANA, S&OP, MES) with a total investment of 5 million USD



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# 2008

- Tan Tao Warehouse, with an area of 15,000 m<sup>2</sup>, is put into operation, initially forming a logistic system
- Started construction of an industrial cluster of welding consumables factories in Long An province with a capacity of 120,000 m<sup>2</sup>, bringing the total capacity of the Long An factory up to 80,000 tons per year

# **Business Philosophy**

### Our promise, our commitment is gold.

With our visionary approach, Kim Tim has emerged as the prominent leader in the supporting industry in Vietnam. As a result, Kim Tin consistently prioritizes the significance of product and service quality as the guiding star that connects us with our valued customers and partners.

# Vision



Sustainable development, toward the future.

# Mission



Conquer customer's trust and satisfaction.

Maintain and promote the pride of Kim Tin Group.



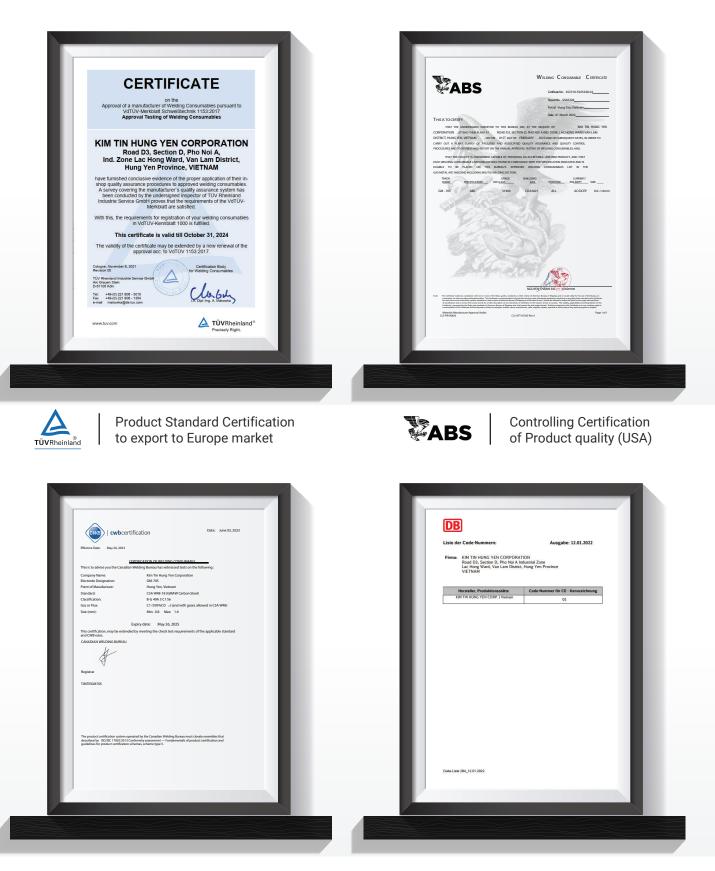
Balance the benefit of related parties.







# QUALITY CERTIFICATIONS







Product quality certification in Europe market



# QUALITY CERTIFICATIONS





07

Certificate of Basic Competency manufactured by Vietnam Register Department



Certificate of Basic Competency Service provision of Vietnam Register Department



- 09 \_\_\_\_\_ Low carbon steel welding electrode
- 11 \_\_\_\_\_ Stainless steel welding electrode
- 11 \_\_\_\_\_ Hard-facing welding electrode
- 12 \_\_\_\_\_ TIG welding electrode

# Low carbon steel welding electrode



Low carbon steel electrode

### KT-421

Vietnamese Standard: TCVN: 3223-2000-E432R

Vietnamese technical regulation: QCVN: 21:2015/BGTVT-MW2

American Standard: AWS A5.1 E6013

Japanese Standard: JIS D4313 NK Registry: KMW2

### Packing Specification

| Net we   | ght of box(kg) | Net weight of          |
|----------|----------------|------------------------|
| ø 2.5 mm | ø 3.2 - 4.0 mm | master carton box (kg) |
| 2.5      | 5              | 20                     |

| Chemical Composition of welding metal layer (%) |         |         |          |          |  |
|---|---------|---------|----------|----------|--|
| С   | Mn      | Si      | Р        | S        |  |
| 0.2 max   | 1.2 max | 1.0 max | 0.03 max | 0.03 max |  |

|   | resistance   |  |  |  |  |
|---|--------------|--|--|--|--|
| 420 min 220 min 17 min 27               | / at 0°C (J) |  |  |  |  |
| 43011111 33011111 17111111 27           | 7 min        |  |  |  |  |
| Size and recommended current (AC or DC) |              |  |  |  |  |

| Diameter (mm)          | ø 2.5 | ø 3.2  | ø 4.0   | ø 5.0   |
|------------------------|-------|--------|---------|---------|
| Length (mm)            | 300   | 350    | 400     | 400     |
| Welding Current (Ampe) | 50-90 | 80-130 | 105-180 | 150-230 |

Low carbon steel electrode

### KT-6013

Vietnamese Standard: TCVN: 3223-2000-E432R

Vietnamese technical regulation: QCVN: 21:2015/BGTVT-MW2 American Standard: AWS A5.1 E6013

Japanese Standard: JIS D4313



| Packing Specification | n                                    |
|-----------------------|--------------------------------------|
| Net weight of box(kg) | Net weight of master carton box (kg) |
| 5                     | 20                                   |

| Chemical Composition of welding metal layer (%) |              |         |      |          |    |                                   |
|---|--------------|---------|------|----------|----|-----------------------------------|
| С   | Mn           | S       | Si   | Ρ        |    | S                                 |
| 0.2 max   | 1.2 max      | 1.0 max |      | 0.03 max |    | 0.03 max                          |
| Mechanical properties                           |              |         |      |          |    |                                   |
| Tensile<br>strength (MP                         |              |         |      |          |    | act resistance<br>acity at 0°C (J |
| 430 min   | 330 n        | nin 17  |      | 7 min    |    | 27 min                            |
| Size and recommended current (AC or DC)         |              |         |      |          |    |                                   |
| Diameter (m                                     | nm)          | ø 3.2   |      | ø 4.0    | )  | ø 5.0                             |
| Length (mm                                      | ו)           | 350     |      | 400      |    | 400                               |
| Welding Cur                                     | rrent (Ampe) | 80-     | -130 | 105-1    | 80 | 150-230                           |

# Low carbon steel welding electrode



- **GL-78 & GL-52 have base cover,** which is supplemented with a large amount of Manganese, Silicon and rare earth, to ensure the weld has extremely small impurities, high bearing strength.
- The flour content in the coating has strongly reduced hydrogen, so the GL-78 and GL-52 welds contain very low hydrogen content, ensuring resistance to hot and cold thermal cracking and high weld toughness.
- Especially in the GL-78 flux shell, a large amount of pure iron powder is added, which has improved welding performance and effectively increased labor productivity.

Low carbon steel electrode

### GL-78

KAW53H10

Vietnamese Standard: TCVN: 3223-2000-E513 Vietnamese technical regulation: QCVN: 21:2015/BGTVT-MW53 American Standard: AWS A5.1 E7018 Japanese Standard: JIS D5018 NK Registry:

KIMTIN GL78 ARE ETRE MP Daily Webrg Decrose KIMTIN GL-78 ARE ETRE MP Daily Webrg Decrose

arton box (kg)

### Packing Specification

| <b>5 1 1 1 1 1</b>    |                        |
|-----------------------|------------------------|
| Net weight of box(kg) | Net weight of master c |
| 5                     | 20                     |

| ol : I   | · · · · ·             |               | 1 (0.)    |
|----------|-----------------------|---------------|-----------|
| Chemical | <b>Composition of</b> | welding metal | layer (%) |

| С        | Mn      | Si       | Р         | S         |
|----------|---------|----------|-----------|-----------|
| 0.15 max | 1.6 max | 0.75 max | 0.035 max | 0.035 max |

| Mechanical properties     |                       |                        |   |  |  |
|---------------------------|-----------------------|------------------------|---|--|--|
| Tensile strength<br>(MPa) | Yield stress<br>(MPa) | Elongation I<br>(%) te | mpact resistance<br>nacity at -30°C (J) |  |  |
| 490 min                   | 400 min               | 22 min                 | 27 min                                  |  |  |

| Size and recommended current (AC or DC) |         |         |         |  |  |
|---|---------|---------|---------|--|--|
| Diameter (mm)                           | ø 3.2   | ø 4.0   | ø 5.0   |  |  |
| Length (mm)                             | 350     | 400     | 400     |  |  |
| Welding Current (Ampe)                  | 105-155 | 130-200 | 200-275 |  |  |

- GL-52 can weld in all positions with a stable arc, strong pressure, weld pool, ease of peeling and cleaning slag, no slag, porosity, etc. Especially when welding with a DC power source, GL-52 gives excellent results.
- The GL-78 and GL-52 welding rods weld low-carbon and low-alloy steels with tensile strengths of 500 N/mm2.
- GL-78 and GL-52 are the best choices for welded structural strength problems and are suitable for ship structures, construction, wharves, heavy load beams, pressure tanks, etc.

Low carbon steel electrode

### GL-52

Vietnamese Standard: TCVN: 3223-2000-E513 Vietnamese technical regulation: QCVN: 21:2015/BGTVT-MW53 American Standard: AWS A5.1 E7016 Japanese Standard: JIS D5016 NK Registry: KAW53H10



| Packing Specification | on                                   |
|-----------------------|--------------------------------------|
| Net weight of box(kg) | Net weight of master carton box (kg) |
| 5                     | 20                                   |

| Chemical Composition of welding metal layer (%) |         |          |           |           |
|---|---------|----------|-----------|-----------|
| С   | Mn      | Si       | Р         | S         |
| 0.15 max  | 1.6 max | 0.75 max | 0.035 max | 0.035 max |

| Mechanical properties     |                       |                        |  |
|---------------------------|-----------------------|------------------------|--|
| Tensile strength<br>(MPa) | Yield stress<br>(MPa) | Elongation I<br>(%) te | mpact resistance<br>nacity at -30°C (J |
| 490 min                   | 400 min               | 22 min                 | 27 min                                 |

| Size and recommended current (AC or DC)        |     |     |     |  |  |
|--|-----|-----|-----|--|--|
| Diameter (mm) Ø 3.2 Ø 4.0 Ø 5.0                |     |     |     |  |  |
| Length (mm)                                    | 350 | 400 | 400 |  |  |
| Welding Current (Ampe) 100–150 140–200 180–255 |     |     |     |  |  |

#### Stainless steel welding electrode

### G-308

Vietnamese Standard: QCVN 21:2015/BGTVT-D308

American Standard: AWS A5.1 E308 Japanese Standard: JIS D308-16





Hard-facing welding electrode

### GH-600

Japanese Standard: JIS DF2B-600B



| Packin                | g Specific              | ation |                                      |           |           |           |
|-----------------------|-------------------------|-------|--------------------------------------|-----------|-----------|-----------|
| Net weight of box(kg) |                         |       | Net weight of master carton box (kg) |           |           |           |
| 1                     |                         |       | 4                                    | 20        |           |           |
|                       |                         |       |                                      |           |           |           |
| Chemic                | Chemical Composition of |       |                                      | metal lay | er (%)    |           |
| С                     | Mn                      | Si    | Cr                                   | Мо        | S         | Р         |
| 0.75                  | 1.23                    | 0.80  | 4.20                                 | 0.10      | 0.011 max | 0.023 max |

- G-308 is suitable for welding Austenitic stainless steel of all kinds, such as E304, E305, and E308, sometimes with good mechanical quality, high strength, and toughness. G-308 is also used in structures that are subject to heavy loads and have high wear resistance.
- G-308 is suitable for welding medical equipment, household appliances, chemicals, civil art structures, stainless steel tanks, steel handrails, etc.
- **G-308 has a bright,** smooth, easy to remove slag, light electricity, quiet explosion, low smoke, little splash, and a stable arc.
- **G-308 is a type of welding electrode with a high lime-titanium coating**, designed with Austenitic weld metal with low hydrogen content and supplemented with a large amount of rare alloying elements such as chromium, nickel, and rare earths to ensure the metal system E308, so it has anti-rust, acid-resistant, and very high mechanical properties.

| Packing Specificati  | on           |             |            |             |             |
|----------------------|--------------|-------------|------------|-------------|-------------|
| Net weight of bo     | Net weig     | ht of mas   | ter cart   | on box (kg) |             |
| 1                    |              |             | 1          | 2           |             |
|                      |              |             |            |             |             |
| Chemical Composit    | tion of weld | ling meta   | l layer (% | 5)          |             |
| C Mn S               | i Cr         | Ni          | Мо         | Р           | S           |
| 0.08 max 0.5-2.5 1.0 | max 18-21    | 9-11        | 0.75 max   | 0.04 m      | ax 0.03 max |
|                      |              |             |            |             |             |
| Mechanical propert   | ies          |             |            |             |             |
| Tensile strength     | Elong        | ation (%)   | Yi         | eld stre    | ss (Mpa)    |
| 550 min              | 3            | 5 min       |            | -           | -           |
|                      |              |             |            |             |             |
| Size and recommer    | nded curren  | it (AC or E | DC)        |             |             |
| Diameter (mm)        | ø 2.0        | ø 2.5       | Ø          | 3.2         | ø 4.0       |
| Length (mm)          | 300          | 300         | 3!         | 50          | 400         |
| Welding Current (A)  | 45-60        | 65-90       | 90-        | 120         | 120-150     |

- The GH-600 high-hardness surface resurfacing electrode is made for welding on metal surfaces that have worn out through using. The surface of the part after the rehabilitating welding process has a stable texture, high hardness, and good wear resistance.
- The GH-600 welding rod has a base coating with flour as the main ingredient, so it has a low hydrogen content and small impurities. A martensitic background is added along with rare and precious alloying elements such as chromium and molybdenum to create a high-quality hard weld that is very resistant to abrasion and impact.
- GH-600 welding rod can be welded in any position with a stable arc, strong pressure, and a well-balanced weld, and it is simple to peel and clean, making it ideal for surfaces that require high aesthetic flatness.
- After welding, the weld metal surface has a hardness of more than 55 HRC; if heat treatment steps are used, the hardness can reach 65 HRC.

| Mechanical properties                   |                                   |         |  |  |
|---|-----------------------------------|---------|--|--|
| After welding                           | When burning at 600°C and cooling |         |  |  |
| 55HRC                                   | 65HRC                             |         |  |  |
|   |                                   |         |  |  |
| Size and recommended current (AC or DC) |                                   |         |  |  |
| Diameter (mm)                           | ø 3.2                             | ø 4.0   |  |  |
| Length (mm)                             | 350                               | 400     |  |  |
| Welding Current (A)                     | 100-150                           | 140-190 |  |  |
|   |                                   |         |  |  |

TIG welding rod

### **ER70S6**



| Chemical Composition of welding metal layer (%) |             |  |
|---|-------------|--|
| С   | 0.07 - 0.12 |  |
| Mn  | 1.40 - 1.85 |  |
| Si  | 0.80 - 1.15 |  |
| Р   | 0.03 max    |  |
| S   | 0.03 max    |  |

Stainless steel TIG welding electrode

### ER308L

International Standard: AWS A5.1 ER 5356





- **TIG ER70S6 welding rod has low carbon content**, high manganese and silicon content, and extremely small sulfur and phosphorus impurities, creating welds with high strength and toughness.
- **ER70S6** is made with high precision; the wire direction is even; it is covered with a layer of pure copper plating and polished, making the storage and soldering processes very stable.
- **ER70S6** is suitable for bottom welding of large thickness welded joints of medium carbon and alloy steel structures such as pressure tanks, pipelines, load bearing steel structures, civil structures, automobiles, ships, boats and so on.

| Packing Specification      |         |
|----------------------------|---------|
| Net weight of box(kg)      | 05      |
|                            |         |
| Mechanical properties      |         |
| Protective gases           | Ar pure |
| Yield stress (N/mm²)       | 420 min |
| Tensile strength (N/mm²)   | 520 min |
| Elongation (%)             | 24 min  |
| Impact toughness -29°C (J) | 60 min  |

- **TIG ER308L soldering iron has a low carbon content**, which reduces its ability to amplify carbide between particles. This increases intergranular corrosion resistance without the use of stabilizers such as columbium (niobium) or titanium.
- TIG ER308L welding rod has an average manganese content, sulfur impurities, and extremely small phosphorus to create a weld with high strength and long ductility. Especially with a high chromium and nickel content, the weld metal system has very high rust resistance, corrosion resistance, and mechanical indicators.
- ER308L is suitable for welding stainless austenitic steels such as A302, A304, A305, A308, and A308L, which need good mechanical quality, durability, and high toughness.
- **ER308L** is suitable for welding liners for critical bonding of stainless steel structures.
- **ER308L** is welded by semi-automatic technology with 100% Argon or 100% Helium shielding gas (TIG welding) to create a stable weld with little splash and a bright, smooth weld. **TIG welding rod ER308L** is suitable for welding all kinds of vessels, including chemical tanks, load-bearing structures, acid-resistant equipment, and equipment in the medical and food industries.

| Packing Specification  |          |          |          |          |
|------------------------|----------|----------|----------|----------|
| Size                   | ø 1.6 mm | ø 2.0 mm | ø 2.4 mm | ø 3.2 mm |
| Packaging (kg)         |          | 0        | ō        |          |
|                        |          |          |          |          |
| Mechanical properties  |          |          |          |          |
| Protective gases       |          |          | Ar       |          |
| Tensile strength (MPa) |          |          | 580 mir  | ۱        |

| Yield stress (MPa)   | -      |
|----------------------|--------|
| Elongation (%)       | 35 min |
| Impact toughness (J) | -      |
|                      |        |

| Chemical Composition of welding metal layer (%) |      |  |
|---|------|--|
| С   | 0.03 |  |
| Mn  | 1.75 |  |
| Si  | 0.38 |  |
| Cr  | 19.8 |  |
| Ni  | 10.1 |  |

# **ER70S-6**

EQ.

Lot No.: 189 (705 129 Date: <u>29 - 05 - 2012</u> Size: <u>20 mm</u> Weight: <u>125 kg</u>

 $\Delta$ 

Kim Tin JSC: Block 10-12, No. 9 Street, Tan Tao In Factory: Kien Thanh Industrial Park, Long Cang Ci

# GOOD QUALITY SOLID WIRE

# ER70S-6

Lot No.: 100 1205 129 Date: 29 - 05 - 2012

Size: 10 mm

Weight: 125 kg

WARNING A

1 1

PUT ON THE LID WHEN NOT TO USE CCATE BAGS ARE ENSURED IN THE BARRELS

JIS-YGW12

AWS ER705-6

Kim Tin JSC: Block 10-12, No. 9 Street. Tan Tao Industrial Park. Tan Tao Vard, Binh Ta Dehter Fetory: Kien Thanh Industrial Park. Long Commune, Can Duo Detrict, Long Achevity www.kimtingroup.com JIS-YGW12 AWS ER70S-6

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ER70S-6

13

# **Z** WELDING WIRE

- 15 \_\_\_\_\_ MIG/MAG Welding Wire
- 16 \_\_\_\_\_ Stainless steel welding wire
- 17 \_\_\_\_\_ SAW Welding Wire
- 18 \_\_\_\_\_ Welding Flux CAMEL

MIG/MAG welding wire

ER70S-6

Classification: AWS A5.18 ER 70S-6 JIS YGW12



- The advantage of the ER70S-6 welding wire according to the MIG/MAG welding method is that the welding productivity is 2.5 times higher than that of electric arc welding with protective coating, more diverse and flexible than automatic welding under the flux layer in welding position in space. During the welding process less toxic gas is generated.
  - ER70S-6 is a welding wire with low carbon content, high manganese and silicon content, and extremely small sulfur and phosphorus impurities, creating welds with high strength and toughness.
  - ER70S-6 is built with high precision, uniform wire direction, and is plated with a layer of high purity copper for preservation and a stable welding process.
- Welding wire ER70S-6 drum is mainly used in companies that manufacture car components, motorcycles, precision mechanics, etc., where welding is done by pre-programmed robot arms.

Net weight of big box (kg)

Packing specification

Welding Current (A)

Welding potential (V)

Gas volume in liters/minute

Net weight of box(kg)



Flux cored arc welding wire

**KF-71T** 

Classification: AWS A5.20 E71T-1C





| 15                                   |                      |           |                       | 125-              | 250-38 | 50                               |         |  |  |
|--------------------------------------|----------------------|-----------|-----------------------|-------------------|--------|----------------------------------|---------|--|--|
| Chemical composition of wire (%)     |                      |           |                       |                   |        |                                  |         |  |  |
| С                                    | Mn                   |           | Si                    | S                 |        | Р                                |         |  |  |
| 0.06-0.15                            | 1.40-1.8             | 5 0       | .80-1.15              | 0.035 max         |        | 0.0                              | 25 max  |  |  |
| Mechanical composition of weld metal |                      |           |                       |                   |        |                                  |         |  |  |
| Shielding<br>Gas                     | Yield stres<br>(MPa) |           | ile strength<br>(MPa) | Elongation<br>(%) |        | Impact resistanc<br>tenacity (J) |         |  |  |
| 100% CO <sub>2</sub>                 | 400 min              | 4         | 190 min               | 22 min            |        | 27 min/-30°C                     |         |  |  |
| Size available                       | , recommei           | nded curr | rents (AC o           | or DC)            |        |                                  |         |  |  |
| Diameter (mm)                        |                      | ø 0.8     | ø 0.9                 | ø1.0              | ø 1    | .2                               | ø1.6    |  |  |
| Welding Current (A) 80-1             |                      | 80-120    | 90-130                | 100-140           | 110-   | 220                              | 180-320 |  |  |
| Welding potential (V) 20-21          |                      |           | 20-22                 | 22-24             | 23-    | 25                               | 25-28   |  |  |
| Gas volume in li                     | ters/minute          | 8-9       | 9-10                  | 10-11             | 12-    | 13                               | 16-18   |  |  |

**KF-71T is a titania type flux cored wire** for all position welding with CO<sub>2</sub>

KF-71T is suitable for welding high tensile steel with slow freezing slag system.

| Packing Specification                           |                  |         |      |         |                                   |                             |  |  |  |  |
|---|------------------|---------|------|---------|-----------------------------------|-----------------------------|--|--|--|--|
| Net weight of spool(kg)                         |                  |         |      |         |                                   |                             |  |  |  |  |
| 05-15   |                  |         |      |         |                                   |                             |  |  |  |  |
|   |                  |         |      |         |                                   |                             |  |  |  |  |
| Chemical Composition of weld metal (%)          |                  |         |      |         |                                   |                             |  |  |  |  |
| С   | Mn               | Si      |      | S       | 6                                 | Р                           |  |  |  |  |
| ≤0.12   | ≤1.75            | ≤0.9    | 90   | ≤0.     | 03                                | ≤0.03                       |  |  |  |  |
|   |                  |         |      |         |                                   |                             |  |  |  |  |
| Mechanical pro                                  | perties of all   | -weld m | etal |         |                                   |                             |  |  |  |  |
| Yield stress                                    | Tensile str      | ength   | Elo  | ngation | lm                                | pact resistance<br>tenacity |  |  |  |  |
| 70 - 95 ksi<br>(483 - 655 MPa)                  | 58 ks<br>(400 MI |         |      |         | 20 ft.lbf at 0°F<br>27J at -18°C) |                             |  |  |  |  |
|   |                  |         |      |         |                                   |                             |  |  |  |  |
| Size available, recommended currents (AC or DC) |                  |         |      |         |                                   |                             |  |  |  |  |
| Diameter (mm)                                   |                  |         | ø1.2 |         |                                   | ø 1.6                       |  |  |  |  |

110-220

23-25

12-13

180-320

25-28

16-18

### GM-308L

- GM-308L is a welding wire with low carbon content, medium manganese content, and very small sulfur and phosphorus impurities that creates welds with high strength and toughness. Especially with its high chromium and nickel content, the weld metal system has anti-rust, acid-corrosion resistance, and very high mechanical properties.
- **GM-308L** is made with high precision and even wire direction, which makes the welding process very stable.
- GM-308L is suitable for welding austenitic stainless steel (Inox) such as E304, E305, and E308. Sometimes with good mechanical properties, high strength, and toughness, G-308L is also used in structures subject to heavy loads and high wear resistance.
- GM-308L is welded by semi-automatic technology with 100% Argon shielding gas (MIG welding) to create a stable weld with little splash and a bright, smooth weld. GM-308L is suitable for welding chemical tanks, load-bearing structures, acid-resistant equipment, and medical equipment.

| Packing Specification |          |          |          |          |
|-----------------------|----------|----------|----------|----------|
| Size                  | ø 0.8 mm | ø 0.9 mm | ø 1.0 mm | ø 1.2 mm |
| Packaging (kg)        | 05-08    | 08       | 08       | 05-08    |
|                       |          |          |          |          |

|   | Chemical Composition of welding wire (%) |         |       |           |          |       |       |  |  |  |
|---|--|---------|-------|-----------|----------|-------|-------|--|--|--|
|   | С  | Mn      | Si    | Cr        | Ni       | Р     | S     |  |  |  |
|   | ≤0.03                                    | 1.0-2.5 | ≤0.65 | 19.0-21.0 | 9.0-11.0 | ≤0.03 | ≤0.03 |  |  |  |
| 2 |  |         |       |           |          |       |       |  |  |  |

| Mechanical pr    | operties                  |                       |                   |                         |
|------------------|---------------------------|-----------------------|-------------------|-------------------------|
| Protective gases | Tensile strength<br>(Mpa) | Yield stress<br>(Mpa) | Elongation<br>(%) | Impact toughness<br>(J) |
| Ar               | 510 min                   | -                     | >25 min           | -                       |

America Standard: AWS A5.9 ER 308L





Submerged arc welding wire - SAW

### EH14

Vietnamese Standard: TCVN: 3223-2000 Vietnamese technical regulation: QCVN: 21:2015/BGTVT, PART 6-AW3 NK Registry: NK KAW3TM International Standard: AWS A5.17 F6A2 EH14 KAW2/W3 EH14



- EH14 is suitable for single and multi-layer welding of miniature LPG tanks, spirals pipes, ships, agricultural implements, machinery, boilers, bridge and structural steel.
- **EH14 is intensive to rust,** scales, primers, oils, and dirts on the surface to be welded. Resistance to porosity and slag detachability are excellent.

| Packing Specification                        |                            |                                   | Chemical Con        | nposition of w | elding wire ( | (%)     |         |           |
|--|----------------------------|-----------------------------------|---------------------|----------------|---------------|---------|---------|-----------|
| Net weight of spool (kg)                     | Net weight of big box (kg) |                                   | С                   | Mn             | Si            | Ş       | 5       | Р         |
| 15-20-25-150-300-350                         | 250-300-3                  | 350-400                           | 0.10-0.20 1.70-2.20 |                | 0.10 max      | 0.025   | 5 max ( | ).025 max |
| Mechanical properties                        |                            |                                   | Size and reco       | mmended cur    | rent (AC or [ | )C)     |         |           |
| Grade Tensile Yield<br>strength (N/mm²) (N/n |                            | Impact resistance<br>tenacity (J) | Diameter(mm)        |                | ø 2.4         | ø 3.2   | ø 4.0   | ø 5.0     |
| EH14-CM122                                   | (,0)                       |                                   | Welding Current     | (A)            | 350-400       | 420-460 | 480-520 | 550-610   |
| (F7A4) 380 min 510                           | min 22 min                 | 50 min/-40°C                      | Welding Arc Volt    | age (V)        | 27-29         | 28-30   | 28-30   | 28-30     |

SAW welding wire

**EM-12K** 

Classification: AWS A5.17 EM12K



| Packing Specification    |                            |
|--------------------------|----------------------------|
| Net weight of spool (kg) | Net weight of big box (kg) |
| 15-20-25-150-300-350     | 250-300-350-400            |

| Chemical composition of wire (%) |           |           |          |          |  |  |  |  |  |  |
|----------------------------------|-----------|-----------|----------|----------|--|--|--|--|--|--|
| С                                | Mn        | Si        | S        | Р        |  |  |  |  |  |  |
| 0.05-0.15                        | 0.80-1.25 | 0.10-0.35 | 0.03 max | 0.03 max |  |  |  |  |  |  |

- The basic advantage of automatic and semi-automatic welding under the flux layer of EM-12K & EL12 welding wire is to ensure the quality of the weld, which has uniformity, high productivity, and the ability to save welding wire.
- The EM-12K & EL12 allows the use of high welding amperage, high heat source usefulness, and fully automated or fully automated operations that cause maintain the arc move the wire to the full length of the weld.
- EM-12K & EL12 is a welding wire with low carbon content, medium manganese and silicon content, and extremely small sulfur and phosphorus impurities, creating welds with high strength and toughness.
- EM-12K & EL12 is built with high precision, even wire direction, and is plated with a layer of high purity copper for preservation and stable soldering.

#### Mechanical composition of weld metal Elongation (%) Technical Tensile strength Yield stress Impact resistance standard (MPa) (MPa) tenacity (J) EM12K-CM 143 483 min 27 min/-18°C 400 min 22 min (F7A0) EM12K-CM 185 483 min 400 min 22 min (F7AZ) EM12K-CM501T 483 min 400 min 22 min (F7AZ)

| Size available, recommended currents (AC or DC) |         |         |         |         |         |         |  |  |  |  |
|---|---------|---------|---------|---------|---------|---------|--|--|--|--|
| Diameter (mm)                                   | ø1.6    | ø 2.0   | ø 2.4   | ø 3.2   | ø 4.0   | ø 5.0   |  |  |  |  |
| Welding Current (A)                             | 200-350 | 300-350 | 350-400 | 420-460 | 480-520 | 550-650 |  |  |  |  |
| Welding Arc Voltage (V)                         | 24-26   | 26-28   | 27-29   | 28-30   | 28-30   | 30-35   |  |  |  |  |

### SAW welding wire

EL-12

Classification: AWS A5.17 EL12



| Packing Spe                          | cification                |                       |                            |                                   |  |  |  |  |  |
|--------------------------------------|---------------------------|-----------------------|----------------------------|-----------------------------------|--|--|--|--|--|
| Net we                               | eight of spool(kg)        |                       | Net weight of big box (kg) |                                   |  |  |  |  |  |
| 15-20-                               | 25-150-300-350            |                       | 250-300-3                  | 350-400                           |  |  |  |  |  |
|                                      |                           |                       |                            |                                   |  |  |  |  |  |
| Chemical co                          | mposition of wi           | re (%)                |                            |                                   |  |  |  |  |  |
| С                                    | Mn                        | Si                    | S                          | Р                                 |  |  |  |  |  |
| 0.04-0.14                            | 0.25-0.60                 | 0.10 max              | 0.03 max                   | 0.03 max                          |  |  |  |  |  |
| Mechanical composition of weld metal |                           |                       |                            |                                   |  |  |  |  |  |
| Technical<br>standard                | Tensile strength<br>(MPa) | Yield stress<br>(MPa) | Elongation<br>(%)          | Impact resistance<br>tenacity (J) |  |  |  |  |  |

| standard              | (MPa)   | (MPa)   | (%)    | tenacity (J) |
|-----------------------|---------|---------|--------|--------------|
| EL12-CM 143<br>(F6A0) | 414 min | 330 min | 22 min | 27 min/-18°C |
| EL12-CM 185<br>(F6AZ) | 414 min | 330 min | 22 min | -            |
| EL12-CM501T<br>(F6AZ) | 414 min | 330 min | 22 min | -            |

| Size and recommended current (AC or DC) |         |         |         |         |         |         |  |  |  |  |
|---|---------|---------|---------|---------|---------|---------|--|--|--|--|
| Diameter (mm)                           | ø1.6    | ø 2.0   | ø 2.4   | ø 3.2   | ø 4.0   | ø 5.0   |  |  |  |  |
| Welding Current (A)                     | 200-300 | 300-350 | 350-400 | 420-460 | 480-520 | 550-650 |  |  |  |  |
| Welding Arc Voltage (V)                 | 24-26   | 26-28   | 27-29   | 28-30   | 28-30   | 30-35   |  |  |  |  |

# **PACKAGING OPTIONS**

### WELDING ELECTRODE





20 \_\_\_\_\_ Welding flux23 \_\_\_\_\_ Steel nails - Steel wire

**R** KIM TIN 19 Welding flux CAMEL

CM-143 Standard: AWS A5.17



| Packing Specification                 |  |  |
|---------------------------------------|--|--|
| Net weight (kg)                       |  |  |
| 25                                    |  |  |
|                                       |  |  |
| Classification according to AWS A5.17 |  |  |
|                                       |  |  |

| EL12  | F6A0 |
|-------|------|
| EM12K | F7A0 |
|       |      |

- Camel CM-143 submerged arc welding flux is produced according to OERLIKON's technology on modern equipment lines that provide a stable quality product.
- CM-143 is a fluorine- Calcium Silicate sintering flux. In the welding process, in addition to covering and protecting the weld, this welding flux also adds an appropriate amount of silicon and manganese to improve the mechanical properties of the weld.
- Welding flux CM-143 when welding produces less slag, reducing consumption.
- It can be welded in DC or AC current, which allows for high speed welding, good weld appearance, a stable arc, and flaky slag.
- Welding flux CM-143 is heated and dried at a temperature of over 850°C, thus thoroughly reducing the water molecular to ensure that the weld does not have porosity. Also, because the amount of residual hydrogen in the weld is low, making the weld flexible.

Chemical composition of fluxes SiO<sub>2</sub> + TiO<sub>2</sub>, CaO + MgO, Al<sub>2</sub>O<sub>3</sub> + MnO, CaF<sub>2</sub>,...

Grain size (Mesh): 10-40



Net weight (kg) 25

**Classification according to AWS A5.17** 

F6AZ

F7AZ

- Camel CM-185 submerged arc welding flux is produced according to OERLIKON's technology on modern equipment lines that provide a stable quality product.
- CM-185 is a Aluminate Rutile sintering flux. In the welding process, in addition to covering and protecting the weld, this welding flux also adds an appropriate amount of silicon and manganese to improve the mechanical properties of the weld.
- Welding flux CM-185 when welding produces less slag, reducing consumption. It can be welded in DC or AC current, which allows for high speed welding, good weld appearance, a stable arc, and flaky slag.
- Welding flux CM-185 is heated and dried at a temperature of over 850°C, thus thoroughly reducing the water molecular to ensure that the weld does not have porosity. Also, because the amount of residual hydrogen in the weld is low, making the weld flexible.

### **Chemical composition of fluxes**

 $SiO_2 + TiO_2$ ,  $Al_2O_3 + MnO$ ,  $CaF_2$ ,...

Grain size (Mesh): 10-40

#### **Recommendations**

Wire

EL12

EM12K

- Store in clean dry place.
- Keep the bag sealed when not in use.
- Before welding operation, if moisture contamination is suspected from either improper storage condition or due to condensation, the flux must be redried as a 300°C to 350°C for 2 hours.

| Welding flux C/<br>CM-501T<br>Standard:<br>AWS A5.17<br>Packing Spec | CAMEU<br>SUBMERGED FLUXES<br>Wight 2589:<br>CM.501 | <ul> <li>Camel CN<br/>OERLIKOI<br/>stable qua</li> <li>CM-501T<br/>in additio<br/>adds an a<br/>mechanic</li> <li>Welding<br/>consump<br/>high speed</li> <li>Welding *<br/>850°C, th<br/>weld doe<br/>hydrogen</li> </ul> |
|--|--|--|
|  | -  | • <u> </u>   |
| EL12   | F6AZ   | Chemical c   |
| EM12K  | F7AZ   | SiO <sub>2</sub> + TiO <sub>2</sub> , A  |

- **Camel CM-501T submerged arc welding flux** is produced according to OERLIKON's technology on modern equipment lines that provide a stable quality product.
- CM-501T is a Aluminate Rutile sintering flux. In the welding process, in addition to covering and protecting the weld, this welding flux also adds an appropriate amount of silicon and manganese to improve the mechanical properties of the weld.
- Welding flux CM-501T when welding produces less slag, reducing consumption. It can be welded in DC or AC current, which allows for high speed welding, good weld appearance, a stable arc, and flaky slag.
- Welding flux CM-501T is heated and dried at a temperature of over 850°C, thus thoroughly reducing the water molecular to ensure that the weld does not have porosity. Also, because the amount of residual hydrogen in the weld is low, making the weld flexible.

| Chemical composition of fluxes   |
|--|
| SiO <sub>2</sub> + TiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> + MnO, CaF <sub>2</sub> |
| Grain size (Mesh): 10-40   |





- **Gemini GF50** submerged arc welding flux is produced according to OERLIKON's technology on modern equipment lines that provide a stable quality product.
- **Welding flux GF50** when welding produces less slag, reducing consumption.
- Welding flux Gemeni GF50 is heated and dried at a temperature of over 850°C, thus thoroughly reducing the water molecular to ensure that the weld does not have porosity. Also, because the amount of residual hydrogen in the weld is low, making the weld flexible.
- Applications: thin plate single pass, applications without clean base material, high speed welding, particularly those applications that require a very nice bead appearance.

**Chemical composition of fluxes** 

Al<sub>2</sub>O<sub>3</sub> + TiO<sub>2</sub>,...

Grain size (Mesh): 10-40

#### **Recommendations**

- Store in clean dry place.
- Keep the bag sealed when not in use.
- Before welding operation, if moisture contamination is suspected from either improper storage condition or due to condensation, the flux must be redried as a 300°C to 350°C for 2 hours.

| Packing Specification       over 850°C, thus thoroughly reducing the water molecular to ensuthat the weld does not have porosity. Also, because the amount residual hydrogen in the weld is low, making the weld flexible.         Packing Specification       Applications: structural steel, high grade steel pipe, LPG tank, offshowind tower,         Wire       Classification according to AWS A5.17         EH14       F7A6         Chemical composition of fluxes | Welding flux (<br>CM101<br>Standard:<br>AWS A5.17 | CENTION<br>CONTOC<br>THUGC HAN HO QUANC CHIM<br>SUMMERCED ARC (SATURIZATION<br>SUMMERCED ARC (SATURIZATION | <ul> <li>Gemini CM101 submerged arc welding flux is produced according to OERLIKON's technology on modern equipment lines that provide a stable quality product.</li> <li>Welding flux CM101 when welding produces less slag, reducing consumption.</li> <li>Welding flux Gemeni CM101 is heated and dried at a temperature of</li> </ul> |
|---|---|--|---|
| Net weight (kg)       Applications: structural steel, high grade steel pipe, LPG tank, offshowind tower,         Wire       Classification according to AWS A5.17         EH14       F7A6       Chemical composition of fluxes  |   | King Ling grant start weight 2544g   | over $850^{\circ}$ C, thus thoroughly reducing the water molecular to ensure that the weld does not have porosity. Also, because the amount of  |
| Wire     Classification according to AWS A5.17       EH14     F7A6       Chemical composition of fluxes   | Packing Sp  | ecification  |   |
| EH14 F7A6 Chemical composition of fluxes  |   |  |   |
| Chemical composition of huxes   | Wire  | Classification according to AWS A5.17  |   |
|   | EH14  | F7A6   | Chemical composition of fluxes  |
| $EM12K \qquad F7A(P)4 \qquad CaO + MgO + CaF_2 + MnO, SiO_2, CaF_2,$  | EM12K   | F7A(P)4  | $CaO + MgO + CaF_2 + MnO, SiO_2, CaF_2,$  |





- Gemini CM501 Pro submerged arc welding flux is produced according to OERLIKON's technology on modern equipment lines that provide a stable quality product.
- Gemeni CM501 Pro is a Aluminate Rutile sintering flux. In the welding process, in addition to covering and protecting the weld, this welding flux also adds an appropriate amount of silicon and manganese to improve the mechanical properties of the weld.
- Welding flux CM501 Pro when welding produces less slag, reducing consumption.
- Welding flux CM501 Pro is heated and dried at a temperature of over 850°C, thus thoroughly reducing the water molecular to ensure that the weld does not have porosity. Also, because the amount of residual hydrogen in the weld is low, making the weld flexible.
- Applications: structural steel, high grade steel pipe, bridge, vessel,...

### **Chemical composition of fluxes**

 $SiO_2 + TiO_2$ , CaO + MgO, Al<sub>2</sub>O<sub>3</sub> + MnO, CaF<sub>2</sub>...

Grain size (Mesh): 10-40

#### **Recommendations**

- Store in clean dry place.
- Keep the bag sealed when not in use.
- Before welding operation, if moisture contamination is suspected from either improper storage condition or due to condensation, the flux must be redried as a 300°C to 350°C for 2 hours.

### Steel nails

### NIKKO



China Standard: YB/T 5002 - 93 America Standard: SAE F1667 - 00 Used for wood, pallet, leather shoes,...

Used by low carbon steel with smooth surface, no rust, no defects. Head of nails is round, beveled, not tapered. Head of nails is sharp.

| Specification |      |                  |                |             |             |
|---------------|------|------------------|----------------|-------------|-------------|
| No.           | Code | Length<br>(L) mm | Dia.<br>(d) mm | Pcs/kg      | TS<br>(Mpa) |
| 1             | N20  | 20±0.75          | 1.6±0.05       | 3,520-3,626 | ≥826        |
| 2             | N25  | 25±0.75          | 1.8±0.05       | 1,940-1,980 | ≥826        |
| 3             | N30  | 30±1.0           | 2.0±0.05       | 1,300-1,340 | ≥826        |
| 4             | N40  | 40±1.0           | 2.3±0.05       | 768-808     | ≥826        |
| 5             | N50  | 50±1.0           | 2.8±0.05       | 390-433     | ≥826        |
| 6             | N60  | 60±1.2           | 3.1±0.05       | 285-321     | ≥826        |
| 7             | N70  | 70±1.2           | 3.4±0.05       | 200-220     | ≥826        |
| 8             | N80  | 80±1.2           | 3.9±0.05       | 125-150     | ≥745        |
| 9             | N100 | 100±1.2          | 4.5±0.05       | 70-80       | ≥745        |
| 10            | N120 | 120±1.5          | 5.0±0.05       | 50-60       | ≥745        |

Drawing steel wire

**NIKKO** 



- Used to tie steel: Flat steel, twisted steel.
- The thickness of the thin oxidelayer is firmly attached to the steel wire.

| Packing Specification |              |                 |                  |  |
|-----------------------|--------------|-----------------|------------------|--|
| Size                  | Dia.<br>(mm) | Net weight (kg) | Coils' dimension |  |
| ø 1.0                 | 1.0±0.05     | 50              | 300 x 500 x 100  |  |



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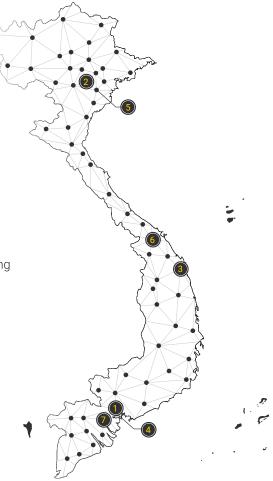
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