HYUNDAI WELDING

Rev. 04

# S - 316LT.16

SHIELDED METAL ARC WELDING CONSUMABLE
FOR WELDING OF 18% Cr-12% Ni-2% Mo STAINLESS STEEL
FOR CRYOGENIC APPLICATIONS

2020.12

HYUNDAI WELDING CO., LTD.

# S-316LT.16

## ❖ Specification

| | |
|---|---|
| ***AWS A5.4*** | E316L-16 |
| ***JIS Z 3221*** | ES316L-16 |
| ***EN ISO 3851-A*** | E 19 12 3 L R |

## ❖ Applications

Welding of Extra-low carbon of 18%Cr-12%Ni-2%Mo stainless Steels. (316L Type steel).

## ❖ Characteristics on Usage

1.The storage and distribution of various gases including liquefied natural gas(LNG) requires materials that have good mechanical properties, particularly toughness, at low temperatures.

2. S-316LT.16 is a lime-titania type electrode for cryogenic applications, low carbon 316L austenitic steel(18%Cr-12%Ni-2%Mo) with good usability.

3. It is quite efficient because its burn-off rate and deposition rate are high because comparatively high amperage can be used.

## ❖ Note on Usage

1. it is mostly effective to proceed with welding. Keeping the arc as short as possible in flat position.
2. Remove dirts such as oil and dust from the groove.
3. Dry the electrode at 350℃(662°F) for 60 minutes before use.

## ❖ Type of Current

AC or DC+

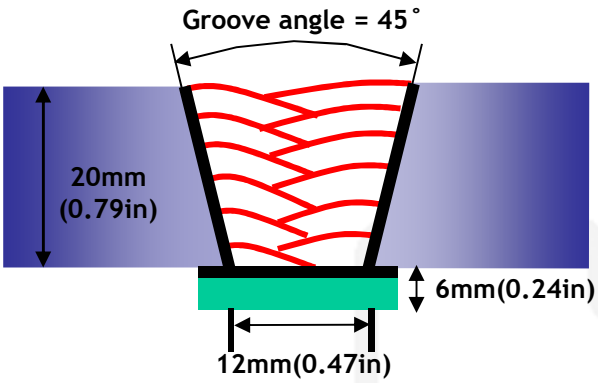
## ❖ Packing

| | |
|---|---|
| **Packet** | 2.5kg(5.5lbs) |
| **Carton** | 2.5kg(5.5lbs) X 4 : 10kg(22lbs) |

# Mechanical Properties & Chemical Composition of All Weld Metal

## ❖ Welding Conditions

Method by AWS Spec.




[ Joint Preparation & Layer Details ]

| | |
|---|---|
| Diameter | : 4.0mm(5/32in) |
| Amp./ Volt. | : 140/25 |
| Travel speed | : 13~18(Cm/min) |
| Pre-Heat | : R.T . |
| Interpass Temp. | : 150±15℃(302±59˚F) |
| Position | : Flat |
| Polarity | : AC or DC+ |

## ❖ Mechanical Properties of All weld metal

| Consumable | Tensile Test | | CVN Impact Test Joule(ft·lbs) |
|---|---|---|---|
| S-316LT.16 | TS MPa (lbs/in²) | El(%) | -196℃(-320˚F) |
| | 570(83,000) | 40.6 | 36(27) |
| AWS A5.4 E316L-XX | ≥490(71,000) | ≥ 30 | LR≥27(20) |

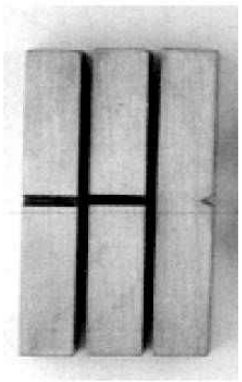
## ❖ Chemical Analysis of All weld metal(wt%)

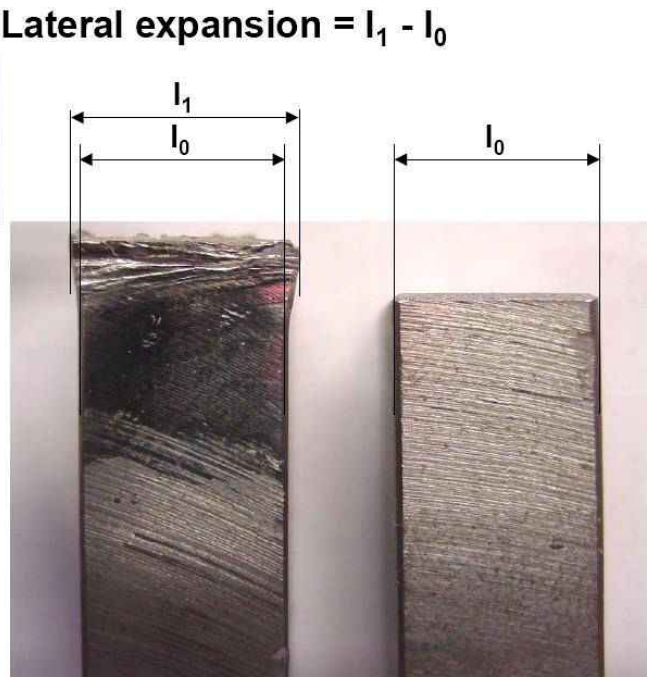
| Consumable | Chemical Composition (%) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | P | S | Ni | Cr | Mo | Cu |
| S-316LT.16 | 0.035 | 0.55 | 1.59 | 0.021 | 0.016 | 13.5 | 18.5 | 2.5 | 0.02 |
| AWS A5.4 E316L-XX | ≤0.04 | ≤1.0 | 0.5~ 2.5 | ≤0.04 | ≤0.03 | 11.0~ 14.0 | 17.0~ 20.0 | 2.0~ 3.0 | ≤0.75 |

# Mechanical Properties & Chemical Composition of All Weld Metal

## ❖ Lateral expansion

| Consumable | Lateral expansion, mm(in),-196℃(-320°F) | | | | | |
|---|---|---|---|---|---|---|
| | X1 | X2 | X3 | X4 | X5 | Avg. |
| S-316LT.16 | 0.44(0.017) | 0.85(0.033) | 0.59(0.023) | 0.58(0.023) | 0.55(0.022) | 0.60(0.024) |
| ASME B31-3 | ≥0.38(0.015) | | | | | |



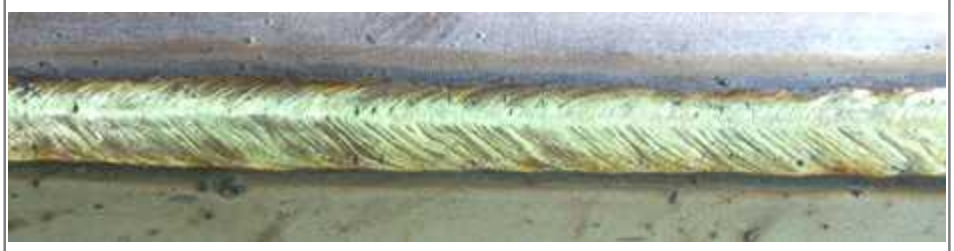


# Mechanical Properties & Chemical Composition of All Weld Metal

## ❖ δ – Ferrite No.

| Consumable | Diagram | | | FERITSCOPE MP-30 * (FISCHER) |
|---|---|---|---|---|
| | Schaeffler | Delong | WRC(1992) | |
| S-316LT.16 | 1.3 | 1.9 | 1.3 | 0.5~1.0 |

## ❖ Bead Appearance

| Flat(1G, PA) , Base : STS 304L(6T) |
|---|
|  |
| AC, 140A/25V |
|  |
| DC+, 145A/25V |