

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electrode**with trade name
TS 308L

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	VL 308L
Current	AC/DC(+)
Approved diameter	2.6 mm - 5.0 mm
Positions	All
Remarks	-

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GLThis Certificate is valid until **2020-12-31**.Issued at **Høvik** on **2016-01-01**DNV GL local station: **Shanghai**Approval Engineer: **Maxim Bobrov**for **DNV GL**Digitally Signed By: Gran, Terje
Location: DNV GL Høvik, Norway
Signing Date: 28.01.2016, on behalf of**Hanne Anita Hjerpetjønn**
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Electrode**with trade name
TS-316LManufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	VL 316L
Current	AC/DC(+)
Approved diameter	2.6mm - 5.0mm
Positions	All, except vertical downwards
Remarks	

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2019-02-19**for **DNV GL**This Certificate is valid until **2023-12-31**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TFW - 2209 / C1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	*
Current	DC(+)
Approved diameter	1.2 mm
Positions	All, except vertical downwards
Remarks	*) UNS S31803 (1.4462)

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2019-02-19**for **DNV GL**This Certificate is valid until **2024-02-18**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TFW-316L / C1

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, China

is found to comply with

DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	VL 316 L
Current	DC(+)
Approved diameter	1.2 mm - 1.6 mm
Positions	Flat, overhead and vertical upwards
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-07**for **DNV GL**This Certificate is valid until **2022-08-06**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TWE-81K2 / C1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	V Y46MS(H5)
Current	DC(+)
Approved diameter	1.2 mm
Positions	All, except vertical downwards
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-07**for **DNV GL**This Certificate is valid until **2022-08-06**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Electrode**with trade name
TL-508Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	3 YH10
Current	AC/DC(+)
Approved diameter	3.2 mm - 5.0 mm
Positions	All, except vertical downwards
Remarks	

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-07**for **DNV GL**This Certificate is valid until **2022-08-06**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TFW-309L / C1

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, China

is found to comply with

DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	VL 309 L
Current	DC(+)
Approved diameter	1.2 - 1.6 mm
Positions	Flat, overhead and vertical upwards
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-07**for **DNV GL**This Certificate is valid until **2022-08-06**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Flux combination**with trade name
TSW-12KHG / TF-210Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	V Y40TM(H5)
Current	DC(+)
Approved diameter	2.4 mm - 5.0 mm
Positions	Flat
Remarks	Also for tandem welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-10-18**for **DNV GL**This Certificate is valid until **2022-08-17**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TWE-711 / C1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	III YMS(H5)
Current	DC(+)
Approved diameter	1.0 mm - 1.6 mm
Positions	All, including vertical downwards
Remarks	

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-18**for **DNV GL**This Certificate is valid until **2022-08-17**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TFW-308L / C1

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, China

is found to comply with

DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	VL 308 L
Current	DC(+)
Approved diameter	1.2 mm - 1.6 mm
Positions	Flat, overhead and Vertical upwards
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-07**for **DNV GL**This Certificate is valid until **2022-08-06**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TWE-711Ni / C1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables
DNV GL rules for classification – Ships

with this approval

Grade	IV YMS(H10)
Current	DC(+)
Approved diameter	1.2 mm - 1.6 mm
Positions	All, except vertical downwards
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2017-08-07**for **DNV GL**This Certificate is valid until **2022-08-06**.DNV GL local station: **Shanghai**Approval Engineer: **Dietmar Liebich**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Electrode**with trade name
TN-28 (KS)

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, China

is found to comply with

DNV GL rules for classification – Ships**DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables**

with this approval

Grade	5Y46H5
Current	AC/(DC+)
Approved diameter	3,2 mm - 4,0 mm
Positions	All, except vertical downwards
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2019-05-17**for **DNV GL**This Certificate is valid until **2024-05-16**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Flux combination**with trade name
TSW-E31(2x) / TF-250Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	V Y46M(H5)
Current	DC(+), AC
Approved diameter	3.2 mm - 5.0 mm
Positions	Flat
Remarks	Welding with two wires

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-08-02**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Flux combination**with trade name
TSW-E31 / TF-250Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	V Y46M(H5)
Current	DC(+)
Approved diameter	3.2 mm - 5.0 mm
Positions	Flat
Remarks	

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-08-02**.
DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TM-70C / C1

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, China

is found to comply with

DNV GL rules for classification – Ships**DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables**

with this approval

Grade	III YMS(H10)
Current	DC(+)
Approved diameter	1.2 mm - 1.6 mm
Positions	Flat and horizontal
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-06-30**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Gas combination**with trade name
TIG-50 / I1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	III YM
Current	DC(-)
Approved diameter	1.2 mm - 3.2 mm
Positions	All, except vertical downwards
Remarks	For TIG. Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-06-30**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Gas combination**with trade name
TGS-316L / I1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	VL 316L
Current	DC(-)
Approved diameter	1.2 mm - 3.2 mm
Positions	All, except vertical downwards
Remarks	For TIG

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-06-30**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Electrode**with trade name
TS-309LManufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	VL 309L
Current	AC/DC(+)
Approved diameter	2.6 mm - 5.0 mm
Positions	All, except vertical downwards
Remarks	

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-06-30**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
TWE-81K2C / C1Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	V Y40MS(H5)
Current	DC(+)
Approved diameter	1.2 mm
Positions	All, except vertical downwards
Remarks	Also for fillet welding

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.Issued at **Hamburg** on **2018-08-03**for **DNV GL**This Certificate is valid until **2023-06-30**.DNV GL local station: **Shanghai**Approval Engineer: **Ludger Hachmöller****Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.



TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flux Cored Wire/Gas combination

with trade name
FabCO 309LT1 / M21

Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, China

is found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	VL 309 L
Current	DC +
Approved diameter	1,2mm
Positions	All except vertical down
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-07-20**.

Issued at **Hamburg** on **2016-07-21**

DNV GL local station: **Shanghai**

Approval Engineer: **Hans-Joachim Vogt**



for DNV GL

Digitally Signed By: Roehr, Stefan
Location: DNV GL Hamburg, Germany
Signing Date: 2016-07-21 , on behalf of

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
FabCO 308LT1 / M21Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	VL 308 L
Current	DC +
Approved diameter	1,2mm
Positions	All except vertical down
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.This Certificate is valid until **2021-07-20**.Issued at **Hamburg** on **2016-07-21**DNV GL local station: **Shanghai**Approval Engineer: **Hans-Joachim Vogt****for DNV GL**Digitally Signed By: Roehr, Stefan
Location: DNV GL Hamburg, Germany
Signing Date: 2016-07-21 , on behalf of**Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Gas combination**with trade name
TWE-711H / CO2Manufacturer
Tien Tai Electrode (Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	IV YS (H5)
Current	DC+
Approved diameter	1,2 - 1,6mm
Positions	All except vertical down
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.This Certificate is valid until **2021-05-30**.Issued at **Hamburg** on **2016-05-31**DNV GL local station: **Shanghai CMC**Approval Engineer: **Dietmar Liebich**for **DNV GL**

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Gas combination**with trade name
TWE-712 / CO2

Manufacturer

Tien Tai Electrode (Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	III YS (H10)
Current	DC+
Approved diameter	1,0 - 1,6mm
Positions	All except vertical down
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.This Certificate is valid until **2021-05-30**.Issued at **Hamburg** on **2016-05-31**DNV GL local station: **Shanghai CMC**Approval Engineer: **Dietmar Liebich**for **DNV GL**Digitally Signed By: Wildhagen, Christian
Location: DNV GL Hamburg, Germany
Signing Date: 2016-07-15, on behalf of**Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Wire/Gas combination**with trade name
TM-56 / CO2Manufacturer
Tien Tai Electrode (Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	III YS
Current	DC+
Approved diameter	0,8 - 1,6mm
Positions	All except vertical down
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.This Certificate is valid until **2021-05-30**.Issued at **Hamburg** on **2016-05-31**DNV GL local station: **Shanghai CMC**Approval Engineer: **Dietmar Liebich**for **DNV GL**Digitally Signed By: Wildhagen, Christian
Location: DNV GL Hamburg, Germany
Signing Date: 2016-07-15, on behalf of**Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flux Cored Wire/Gas combination**with trade name
FabCO 316LT1 / M21Manufacturer
Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN JIANGSU, Chinais found to comply with
DNV GL rules for classification – Ships

with this approval

Grade	VL 316 L
Current	DC +
Approved diameter	1,2mm
Positions	All except vertical down.
Remarks	---

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.This Certificate is valid until **2021-07-20**.Issued at **Hamburg** on **2016-07-21**DNV GL local station: **Shanghai**Approval Engineer: **Hans-Joachim Vogt****for DNV GL**Digitally Signed By: Roehr, Stefan
Location: DNV GL Hamburg, Germany
Signing Date: 2016-07-21 , on behalf of**Thorsten Lohmann**
Head of Section

Any significant change in design or construction may render this Certificate invalid.

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flux Cored Wire/Gas combination

with trade name
TFW-309MoL / C1

Manufacturer

Tien Tai Electrode(Kunshan) Co.Ltd.
KUNSHAN, JIANGSU, China

is found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0069 – Type approval – Welding consumables

with this approval

Grade	VL 309 MoL
Current	DC(+)
Approved diameter	1.2 mm
Positions	All, except vertical downwards
Remarks	

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2020-03-09**

This Certificate is valid until **2025-03-08**.
DNV GL local station: **Shanghai**

Approval Engineer: **Ludger Hachmöller**



for **DNV GL**

Digitally Signed By: Wildhagen, Christian
Location: DNV GL Hamburg, Germany
Signing Date: 2020-03-09, on behalf of

Thorsten Lohmann
Head of Section

Any significant change in design or construction may render this Certificate invalid.

