

Certificate



Appendix Rev. 01 to Certificate
WF 0910012 HH dated 2009-01-14

Messrs. **de Staalmeesters B.V.**
Geijsterseweg 12
Westhaven
NL-5861 BL Wanssum
Netherlands

has been approved for the procedures as specified in the supplements for the following range of application:

Welding of Hull Structures

Range of Production/
Components: **Hull Equipment like e.g. propeller nozzles**
(Entry only in case of special
approvals)

Regulations also
considered: ---

Supervisor: **Mr. Raymund Swertz**

Certificate No.: ---

issued by: ---

issued:

Deputy Supervisor: **Mr. Bart Vercoulen**

Certificate No.: ---

issued by: ---

issued:

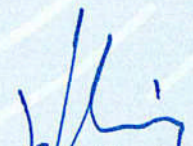
Part of the approval is our letter of approval ref. no. 089176-12/MWeg of 2012-10-23.

Hamburg, 2012-10-23

Approval is valid until: **2015-01-31**

Germanischer Lloyd


Marcus von Busch


Martin Wenning

Concerning the period of validity or the extension of approval and the duty to notify GL if the preconditions change under which approval was granted, the statements given in the Rules for Welding are to be observed. Additional requirements, if any, in the covering letter are to be observed. The respective latest edition of Germanischer Lloyd's Classification Rules is applicable. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable (see Chap. I - Ship Technology, Part 0 - Classification and Surveys). Germanischer Lloyd SE; Registered Office Hamburg, HRB 115442

Certificate



Suppl.-No.: 08
to Certificate WF 0910012 HH

WPS-No.: pwps-zw-w-15x15Pb of 2012-03-26

Messrs. **de Staalmeesters B.V.**

has been approved on the basis of the welding procedure test supervised by Germanischer Lloyd and specified in a welding procedure specification (see WPS-No.), in accordance with the "Rules for Classification and Construction II, Material and Welding Technology, Part 3 - Welding" for the following welding procedure:

Metal-arc active gas welding of dissimilar joints on fillet welds of carbon steel to stainless steel

Welding Details

Process: 135 - Metal-arc active gas welding (GMAW)
Type of weld: Fillet welds, welded in multi-run technique.
Welding equipment: As for the welding procedure test, see welding procedure specification.
Welding data: As for the welding procedure test, see welding procedure specification.
Welding consumables: Wire-gas combination: "Avesta 309L-Si / M12" (Böhler), GL-grade: "4332S", as well as similar wire-gas combinations tested and approved by GL with the relevant grade according to base materials to be welded.

Edge preparation: As for the procedure test. Weld area clean and dry, free of shop primer.

Weld build-up: Multi-layer.

Welding heat treatment: Without preheating, in any case dry out / remove moisture. Interpass temperature max. 200°C.

Welders: Welders instructed accordingly and recognized by Germanischer Lloyd with valid certificates in the respective group.

Others: Test report Schielab b.v. SL 12.4299-1, -2 to -6 dd. 2012-04-25.

Range of application

Base material(s): Austenitic stainless steel grade 316L (mat. no. 1.4404) to P355NL2 (mat. no. 1.1106) and other comparable carbon steels to stainless steels with consent of GL.

Wall thickness(es) [mm]: 7,5 - 30,0.
Throat thickness "a" \geq 5,0.

Pipe diameter [mm]: —

Positions: Fillet welds: PB.

Heat treatment condition: As welded.

Design temperature: As for base and filler metal.

Particularities, remarks: Metal-arc active gas welding with protection against wind and weather.

Parts of this approval are the a. m. certificate, the above mentioned WPS, if any, and our letter of approval with ref.-no. 089176-12/MWeg of 2012-10-23.

Hamburg, 2012-10-23

Germanischer Lloyd


Martin Wenning

Concerning the period of validity or the extension of approval and the duty to notify GL if the preconditions change under which approval was granted, the statements given in the Rules for Welding are to be observed. Additional requirements, if any, in the covering letter are to be observed. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable (see Chap. I - Ship Technology, Part 0 - Classification and Surveys). Germanischer Lloyd SE; Registered Office Hamburg, HRB 115442.

Certificate



Suppl.-No.: 09
to Certificate WF 0910012 HH

WPS-No.: pwps-zw-w-60x15Pb of 2012-03-26

Messrs. **de Staalmeesters B.V.**

has been approved on the basis of the welding procedure test supervised by Germanischer Lloyd and specified in a welding procedure specification (see WPS-No.), in accordance with the "Rules for Classification and Construction II, Material and Welding Technology, Part 3 - Welding" for the following welding procedure:

Metal-arc active gas welding of dissimilar joints on fillet welds of carbon steel to stainless steel

Welding Details

Process: 135 - Metal-arc active gas welding (GMAW)
Type of weld: Fillet welds, welded in multi-run technique.
Welding equipment: As for the welding procedure test, see welding procedure specification.
Welding data: As for the welding procedure test, see welding procedure specification.
Welding consumables: Wire-gas combination: "Avesta 309L-Si / M12" (Böhler), GL-grade: "4332S", as well as similar wire-gas combinations tested and approved by GL with the relevant grade according to base materials to be welded.

Edge preparation: As for the procedure test. Weld area clean and dry, free of shop primer.

Weld build-up: Multi-layer.

Welding heat treatment: Preheating temperature 200°C, see relevant WPS (c.f. remarks).

Welders: Welders instructed accordingly and recognized by Germanischer Lloyd with valid certificates in the respective group.

Others: Test report Schielab b.v. SL 12.4298-2 to -4 dd. 2012-04-25.

Range of application

Base material(s): Austenitic stainless steel grade 316L (mat. no. 1.4404) to P355NL2 (mat. no. 1.1106) and other comparable carbon steels to stainless steels with consent of GL.

Wall thickness(es) [mm]: Stainless steels: 7,5 - 30,0. Carbon steels: $\geq 5,0$.
Throat thickness "a" $\geq 5,0$.

Pipe diameter [mm]: ---

Positions: Fillet welds: PB.

Heat treatment condition: As welded.

Design temperature: As for base and filler metal.

Particularities, remarks: Metal-arc active gas welding with protection against wind and weather. The temperature of preheating for welding of carbon steels to stainless steels shall be determined in relation to the plate thickness, the chemical composition of the base materials, the hydrogen content of the weld metal, the heat input during welding, temperature of the workpiece and the restraint condition. The regulations and recommendations of the manufacturers of the base materials and of the welding consumables for welding of carbon steels to stainless steels have to be observed.

Parts of this approval are the a. m. certificate, the above mentioned WPS, if any, and our letter of approval with ref.-no. 089176-12/MWeg of 2012-10-23.

Hamburg, 2012-10-23

Germanischer Lloyd

Martin Wenning

Certificate



Suppl.-No.: 10
to Certificate WF 0910012 HH

WPS-No.: pwps-w-w-15x15Pa of 2012-03-13

Messrs.

de Staalmeesters B.V.

has been approved on the basis of the welding procedure test supervised by Germanischer Lloyd and specified in a welding procedure specification (see WPS-No.), in accordance with the "Rules for Classification and Construction II, Material and Welding Technology, Part 3 - Welding" for the following welding procedure:

Metal-arc active gas welding of butt welds of stainless steel grade 316L

Welding Details

Process: 135 - Metal-arc active gas welding (GMAW)
Type of weld: Butt welds, welded in multi-run technique.
Welding equipment: As for the welding procedure test, see welding procedure specification.
Welding data: As for the welding procedure test, see welding procedure specification.
Welding consumables: Wire-gas combination: "AVESTA 316L-Si/SKR-Si / M12" (Böhler), GL-grade: "4429S", as well as similar wire-gas combinations tested and approved by GL with the relevant grade according to base materials to be welded.

Edge preparation: As for the procedure test. Weld area clean and dry, free of shop primer.

Weld build-up: Multi-layer welded from one side on ceramic backing with full penetration.
Welding heat treatment: Without preheating, in any case dry out / remove moisture. Interpass temperature max. 200°C.

Welders: Welders instructed accordingly and recognized by Germanischer Lloyd with valid certificates in the respective group.
Others: Test report Schielab b.v. SL 12.4301-1 to -6 dd. 2012-04-25.

Range of application

Base material(s): Austenitic stainless steel grade 316L (mat. no. 1.4404) and other comparable stainless steel grades with consent of GL.
Wall thickness(es) [mm]: 7,5 - 30,0.
Pipe diameter [mm]: ---
Positions: Butt welds: PA.
Heat treatment condition: As welded.

Design temperature: As for base and filler metal.
Particularities, remarks: Metal-arc active gas welding with protection against wind and weather.

Parts of this approval are the a. m. certificate, the above mentioned WPS, if any, and our letter of approval with ref.-no. 089176-12/MWeg of 2012-10-23.

Hamburg, 2012-10-23

Germanischer Lloyd

Martin Wenning

Concerning the period of validity or the extension of approval and the duty to notify GL if the preconditions change under which approval was granted, the statements given in the Rules for Welding are to be observed. Additional requirements, if any, in the covering letter are to be observed. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable (see Chap. I - Ship Technology, Part 0 - Classification and Surveys). Germanischer Lloyd SE; Registered Office Hamburg, HRB 115442.

Certificate



Suppl.-No.: 11
to Certificate WF 0910012 HH

WPS-No.: pwps-zw-zw-15x15Pa of 2012-03-13

Messrs. **de Staalmeesters B.V.**

has been approved on the basis of the welding procedure test supervised by Germanischer Lloyd and specified in a welding procedure specification (see WPS-No.), in accordance with the "Rules for Classification and Construction II, Material and Welding Technology, Part 3 - Welding" for the following welding procedure:

Metal-arc active gas welding of butt welds on higher strength hull structural steel grade GL-D36

Welding Details

Process: 135 - Metal-arc active gas welding (GMAW)
Type of weld: Butt welds, welded in multi-run technique.
Welding equipment: As for the welding procedure test, see welding procedure specification.
Welding data: As for the welding procedure test, see welding procedure specification.
Welding consumables: Wire-gas combination: "Union SG 3-H / M21" (Böhler), GL-grade: "3YS", as well as similar wire-gas combinations tested and approved by GL with the relevant grade according to base materials to be welded.

Edge preparation: As for the procedure test. Weld area clean and dry, free of shop primer.

Weld build-up: Multi-layer welded from one side on ceramic backing with full penetration.
Welding heat treatment: Without preheating, in any case dry out / remove moisture. Interpass temperature max. 200°C.

Welders: Welders instructed accordingly and recognized by Germanischer Lloyd with valid certificates in the respective group.
Others: Test report Schielab b.v. SL 12.4302-1 to -5 dd. 2012-04-25.

Range of application

Base material(s): Normal and higher strength hull structural steels grade GL-A to GL-D and GL-A32 to GL-D36. Other similar steel grades (e.g. P355NL2) with consent of GL.
Wall thickness(es) [mm]: 7,5 - 30,0.
Pipe diameter [mm]: ---
Positions: Butt welds: PA.
Heat treatment condition: As welded.
Design temperature: As for base and filler metal.
Particularities, remarks: Metal-arc active gas welding with protection against wind and weather.

Parts of this approval are the a. m. certificate, the above mentioned WPS, if any, and our letter of approval with ref.-no. 089176-12/MWeg of 2012-10-23.

Hamburg, 2012-10-23

Germanischer Lloyd

Martin Wenning

Concerning the period of validity or the extension of approval and the duty to notify GL if the preconditions change under which approval was granted, the statements given in the Rules for Welding are to be observed. Additional requirements, if any, in the covering letter are to be observed. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable (see Chap. I - Ship Technology, Part 0 - Classification and Surveys). Germanischer Lloyd SE; Registered Office Hamburg, HRB 115442.

Certificate



Suppl.-No.: 12
to Certificate WF 0910012 HH

WPS-No.: pwps-zw-w-15x15Pa of 2012-03-26

Messrs.

de Staalmeesters B.V.

has been approved on the basis of the welding procedure test supervised by Germanischer Lloyd and specified in a welding procedure specification (see WPS-No.), in accordance with the "Rules for Classification and Construction II, Material and Welding Technology, Part 3 - Welding" for the following welding procedure:

Metal-arc active gas welding of dissimilar joints on butt welds of carbon steel to stainless steel

Welding Details

Process: 135 - Metal-arc active gas welding (GMAW)
Type of weld: Butt welds, welded in multi-run technique.
Welding equipment: As for the welding procedure test, see welding procedure specification.
Welding data: As for the welding procedure test, see welding procedure specification.
Welding consumables: Wire-gas combination: "Avesta 309L-Si / M12" (Böhler), GL-grade: "4332S", as well as similar wire-gas combinations tested and approved by GL with the relevant grade according to base materials to be welded.

Edge preparation: As for the procedure test. Weld area clean and dry, free of shop primer.

Weld build-up: Multi-layer welded from one side on ceramic backing with full penetration.
Welding heat treatment: Without preheating, in any case dry out / remove moisture. Interpass temperature max. 200°C.

Welders: Welders instructed accordingly and recognized by Germanischer Lloyd with valid certificates in the respective group.

Others: Test report Schielab b.v. SL 12.4300-2 to -6 dd. 2012-04-25.

Range of application

Base material(s): Austenitic stainless steel grade 316L (mat. no. 1.4404) to P355NL2 (mat. no. 1.1106) and other comparable carbon steels to stainless steels with consent of GL.

Wall thickness(es) [mm]: 7,5 - 30,0.

Pipe diameter [mm]: ---

Positions: Butt welds: PA.
Heat treatment condition: As welded.

Design temperature: As for base and filler metal.

Particularities, remarks: Metal-arc active gas welding with protection against wind and weather.

Parts of this approval are the a. m. certificate, the above mentioned WPS, if any, and our letter of approval with ref.-no. 089176-12/MWeg of 2012-10-23.

Hamburg, 2012-10-23

Germanischer Lloyd

Martin Wenning

Concerning the period of validity or the extension of approval and the duty to notify GL if the preconditions change under which approval was granted, the statements given in the Rules for Welding are to be observed. Additional requirements, if any, in the covering letter are to be observed. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable (see Chap. II - Ship Technology, Part 0 - Classification and Surveys). Germanischer Lloyd SE; Registered Office Hamburg, HRB 115442.