



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

21-2140400-PDA
01-Aug-2021
31-Jul-2026
Houston SED Structures -
Commercial

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

HILTI AKTIENGESELLSCHAFT

located at

FELDKIRCHERSTR. 100, 9494 SCHAAN, Liechtenstein

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Fastening System
Model: S-BT screw-in stainless steel multi-purpose threaded fasteners: S-BT-MR M10, S-BT-MR MT M10, S-BT-MR W10, S-BT-MR M8, S-BT-MR MT M8
S-BT screw-in carbon steel multi-purpose threaded...
Endorsements:
Tier: 3 - Type Approved, unit certification not required

This Product Design Assessment (PDA) Certificate remains valid until 31/Jul/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Suresh K Pisini

Suresh Kumar Pisini, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

HILTI AKTIENGESELLSCHAFT

FELDKIRCHERSTR. 100

9494 SCHAAN

Liechtenstein

Telephone: +4232343825

Fax:

Email: lorfeco@hilti.com

Web: www.hilti.com

Tier: 3 - Type Approved, unit certification not required

Product: Fastening System

Model: S-BT screw-in stainless steel multi-purpose threaded fasteners: S-BT-MR M10, S-BT-MR MT M10, S-BT-MR W10, S-BT-MR M8, S-BT-MR MT M8
S-BT screw-in carbon steel multi-purpose threaded fasteners: S-BT-MF M10, S-BT-MF MT M10, S-BT-MF W10, S-BT-MF M8, S-BT-MF MT M8
S-BT screw-in stainless steel threaded fasteners for electrical purposes: S-BT-ER M10, S-BT-ER W10, S-BT-ER M8, S-BT-ER M10 HC, S-BT-ER W10 HC
S-BT screw-in carbon steel threaded fasteners for electrical purposes: S-BT-EF M10, S-BT-EF W10, S-BT-EF M8, S-BT-EF M10 HC, S-BT-EF W10 HC
S-BT screw-in stainless steel threaded fasteners for gratings: S-BT-GR M8 or S-BT-GR NG M8 (in association with Composite Fasteners X-FCM-R, X-FCM-M, X-FCM-R NG, X-FCM-M NG)
S-BT screw-in carbon steel threaded fasteners for gratings: S-BT-GF M8 or S-BT-GF NG M8 (in association with Composite Fasteners X-FCM-M, X-FCM-M NG)

Endorsements:

Intended Service:

For fastening of fastened materials to base materials of carbon steel or aluminum in the Ship and Shipbuilding environment and in Offshore Structures.

Description:

1. In the S-BT fasteners, the threaded stud is set into a small pre-drilled pilot hole and the drill entry point is then completely sealed by the stud washer during setting. This doesn't require any rework of the protective surface coating because there is no through penetration of the base material.
2. For the S-BT System there is also the possibility to set the stud into a drill through hole in thin base material. In this case a rework of the protective surface on the backside is potentially needed.
3. Dimensions and material specifications of S-BT fasteners: refer to the Data Sheets ("Hilti S-BT screw-in threaded studs –Specification binder", "Hilti Product Data Sheet –S-BT screw-in stainless steel and carbon steel threaded studs", "Hilti Product Data Sheet –X-FCM Grating Fastening System", "Hilti Product Data Sheet –X-FCM NG Grating Fastening System", "Hilti Product Data Sheet –S-BT-ER / -EF")
4. The fasteners are to be installed and inspected using installation procedures and tools recommended by the manufacturer as in the Data Sheet:
 - a) Drilling tool: SF BT 18-A, SF BT 22-A or SBT 4-A22;
 - b) Drill bits: TS-BT 4.3-74 S, TS-BT 5.5-74 S, TS-BT 5.5-110 S, TS-BT 5.5-74 AL.
5. Base material thickness t_{II} and type of bore hole:
 - a) Pilot hole, base material steel: $t_{II} \geq 6 \text{ mm [0.24"]}$;
 - b) Pilot hole, base material aluminum: $t_{II} \geq 6 \text{ mm [0.24"]}$;
 - c) Drill through hole, base material steel: $6 \text{ mm [0.24"]} > t_{II} \geq 3 \text{ mm [0.12"]}$;
 - d) Drill through hole, base material aluminum: $6 \text{ mm [0.24"]} > t_{II} \geq 5 \text{ mm [0.20"]}$.
6. Composite fasteners are either made from stainless steel (X-FCM-R, X-FCM-R NG) or from duplex coated carbon steel (X-FCM-M, X-FCM-M NG).

Rating:

1. Refer to the Data Sheets in the attachment ("Hilti S-BT screw-in threaded studs –Specification binder", "Hilti

HILTI AKTIENGESELLSCHAFT

FELDKIRCHERSTR. 100

9494 SCHAAN

Liechtenstein

Telephone: +4232343825

Fax:

Email: lorfeco@hilti.com

Web: www.hilti.com

Tier: 3 - Type Approved, unit certification not required

Product Data Sheet –S-BT screw-in stainless steel and carbon steel threaded studs”, “Hilti Product Data Sheet –X-FCM Grating Fastening System”, “Hilti Product Data Sheet –X-FCM NG Grating Fastening System”, “Hilti Product Data Sheet –S-BT-ER / -EF”) for the recommended maximum loading in tension, shear, moment and torque, in association with the recommended loads specified therein.

2. Refer to the Data Sheets for the application requirements to the followings:

- a) Base material thickness and type of bore hole;
- b) Thickness of fastened material;
- c) Edge distance ≥ 6 mm [0.24"]; Spacing ≥ 18 mm [0.71"];
- d) Corrosion information.

3. Service Temperature: -40 to +100 degree (Celsius)

Service Restriction:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

1) The base material is limited to steel grade with the following properties:

- a) For Steel as base material, Maximum ultimate tensile strength of steel $f_u = 630$ MPa [91 ksi] & Minimum ultimate tensile strength of steel $f_u \geq 340$ MPa [49 ksi];
- b) For Aluminum as base material, Minimum ultimate tensile strength of aluminum $f_u \geq 270$ MPa [39 ksi];
- c) Minimum thickness of base material tII: refer to the Data Sheet;
- d) Maximum thickness of base material tII: no limits.

2) In general, type approved S-BT fasteners are NOT to be used for the following:

- a) Shell plating (i.e. bottom plating, side plating, main deck plating);
- b) Tank Boundaries
- c) Weathertight boundaries where through penetration of the base materials is required;
- d) Fire rated boundaries other than A0;
- e) Structural members which require fatigue design;
- f) Members with significant thermal stresses;
- g) Highly stressed structural members

3) On Watertight bulkheads or decks (decks other than main deck or strength deck), the installation shall be to a doubler plate, with no through penetration, welded onto the bulkhead/deck plating.

4) Hilti fasteners often may be used for the listed applications by following the Manufacturer's recommendations and guidance. The attending Surveyor and Owner are to be consulted and agree with the use of the fasteners;

5) Hilti fasteners may also be used for additional applications other than those listed above. Some applications may require an engineering review in advance.

6) Structural members that are sensitive to stress patterns or variations and in areas where notch toughness is of paramount importance, the curve class S-BT (as per specification binder) applies for fatigue design for base materials of thickness ≥ 4 mm and yield strength ranging from 235 MPa to 355 MPa at an edge distance ≥ 15 mm.

For more Service Restrictions please see the "Appendix - Service Restrictions" attached to the ABS approval letter in Task # T2140400

Comments:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. ABS approvals are general based on the product test reports furnished by recognized institutions and laboratories which may reflect specific local conditions. If any application is in a jurisdiction where the fasteners are subject to the

HILTI AKTIENGESELLSCHAFT

FELDKIRCHERSTR. 100

9494 SCHAAN

Liechtenstein

Telephone: +4232343825

Fax:

Email: lorfeco@hilti.com

Web: www.hilti.com

Tier: 3 - Type Approved, unit certification not required

approval process or specific guidelines are to be followed, the approved technical data or design guidelines take precedence over technical data presented herein. The arrangement and details of each vessel-specific installation are to be reviewed to ABS Rules as applicable.

Notes/Drawing/Documentation:

Drawing No. 5179696/08/620401, Threaded stud S-BT R, Revision: 08, Pages: 3

Drawing No. 5181496/10/654341, Threaded stud S-BT F, Revision: 10, Pages: 5

For more documents please see the "Appendix - Notes, Drawings, and Documentations" attached to the ABS approval letter in Task # T2140400

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 31/Jul/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance.

Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:

2021 ABS Rules for Conditions of Classification, 1-1-4/7.7, 1-1-A3, 1-1-A4

2021 ABS Rules for Conditions of Classification – Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following

2021 ABS Rules for Building and Classing Mobile Offshore Units 3-2-2/9, 4-3-3/5.9

ABS Guide for Fatigue Assessment of Offshore Structures - 2020

National:

NA

International:

Please see the "Appendix - International Standards" attached to the ABS approval letter in Task # T2140400

Government:

NA

EUMED:

NA

OTHERS:

Manufacturer's Standards