

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Adhesive Joint

with type designation(s)
Adhesive-Bonded Fastener

Issued to

Click Bond, Inc.
Carson City NV, USA

is found to comply with

GL Rules for Classification and Construction VI - Additional Rules and Guidelines Part 7 - Guidelines for the Performance of Type Approvals Chapter 8 - Test Requirements for Components and Systems of Mechanical Engineering and Offshore Technology
DIN 2304-1 Adhesive bonding technology – Quality requirements for adhesive bonding processes – Part 1: Adhesive bonding process chain

Application :

Bonding of fastener with safety class S3 (low safety requirements) and S4 (without safety requirements) according to DIN 2304-1.
For higher safety classes further tests might be required.

Issued at **Hamburg** on **2018-02-12**

for **DNV GL**

This Certificate is valid until **2023-02-11**.

DNV GL local station: **Hamburg Materials & Welding**

Approval Engineer: **Guido Michalek**

Thorsten Lohmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Bonded fastener with a fixed (due to installation fixtures) bondline thickness.

Approved variants

Part	Type
CS125 / CS200	Studs
CS922 / CB9522	Studs
CN125 / CN200	Standoffs
CM905 / CB9205	Mounts
CM988 / CB9788	Mounts
CM989 / CB9789	Mounts
CM459 / CB4595 (Size 1A to 8)	Mounts
CM920 / CM951 / CB9120 / CB9151	Mounts

Approved adhesive

CB420 (acrylic adhesive)

Approved surface treatment

According to Click Bond Process Specification CBPS-244 Rev.4

Approved surface

DNV GL Shipbuilding steel or equivalent

Tests carried out

1. Tensile test with bonded fastener at 23/50 according to Click Bond test instruction
2. Shear test with bonded fastener at 23/50 according to Click Bond test instruction
3. Tensile Lap Shear Test according to ISO 4587 at 23/50 and after
 - Salt spray test according to ISO 9227 for 1000h
 - Alternating climate test (4h at 80°C / 95% >> -40°C in 4h >> 4h at -40°C >> 80°C / 95% in 2h) for 1000h

Type Examination documentation

- Qualification Test Report ETR 15-004 and supplement
- Qualification Test Report ETR 17-002 and supplement
- Technical and Material Safety Data Sheet of CB420 (acrylic adhesive)
- Quality assurance documentation of the adhesive and fastener

Limitation

Design load	Tension	Shear	Tension	Shear	Unit
Application Temperature	23		80		°C
Type					
CS125 CN125	90	151	32	54	kg
CS200 CN200	128	322	46	116	
CM988 CB9788	128	— ¹⁾	46	— ¹⁾	
CS922 CB9522	374	606	134	217	
CM905 CB9205	41	— ¹⁾	15	— ¹⁾	
CM920 CB9120	17	N/A	6	N/A	
CM951 CB9151	17	N/A	6	N/A	
CM989 CB9789	439	121	158	44	
CM459 1A CB4595 1A	243	190	87	68	
CM459 2 CB4595 2	266	190	95	68	
CM459 3 CB4595 3	280	179	100	64	
CM459 4 CB4595 4	319	217	114	78	
CM459 5 CB4595 5	345	155	124	56	
CM459 6 CB4595 6	357	169	128	61	
CM459 7 CB4595 7	406	173	146	62	
CM459 8 CB4595 8	370	226	133	81	

1) Approved only for Tensile Loads

Remarks

Classification of safety classes according to DIN 2304-1

Safety class	Definition of safety classes
S1	High level Failure of the bond <ul style="list-style-type: none">- will directly or indirectly lead to an inevitable hazard to life or limb- will result in a failure of the function, the effect of which will most likely lead to an inevitable to life or limb
S2	Medium level Failure of the bond <ul style="list-style-type: none">- can lead to a hazard to life or limb- will result in a failure of the function, the effect of which will probably involve personal injury or result in major environmental damage- will result in a failure of the function, the effect of which will most likely involve major damage to property
S3	Low level Failure to the bond <ul style="list-style-type: none">- will result in a failure of the function, the effect of which will probably not involve personal injury or result in major environmental damage- will result in a failure of the function, the effect of which will affect comfort or performance at the most- will result in a failure of the function, the effect of which will probably not involve major damage to property
S4	No safety requirement Failure to the bond <ul style="list-style-type: none">- will result in a failure of the function, the effect of which will not, under foreseeable circumstances, involve personal injury or result in environmental damage- will result in a failure of the function, the effect of which will only affect comfort or performance- will result in a failure of the function, the effect of which will not involve major damage to property

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Examination is complied with and that no alterations are made to the product design or choice of materials. Periodical Assessment has to be performed in accordance with Class Programme CP-0338.

END OF CERTIFICATE