DNV·GL

Certificate No:
TAE000003F

TYPE APPROVAL CERTIFICATE

This is to certify:

That the High Voltage Cable

with type designation(s)
SECPEBS 100%/133%, TECPEBS 100%/133%, SECPSBS 100%/133%, TECPEBS 100%/133%, SECPSBS 100%/133%, TECPEBS 100%/133%, TECPEBSVFD 133%, TECPEBSVFD 133%

Issued to
AmerCable Inc.
Houston, United States

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
IEEE 1580 (2010)

Application :

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

Type	Voltage (kV)	Temp. class (°C)
SECPEBS 100%/133%, TECPEBS 100%/133%	5 kV	90
SECPSBS 100%/133%, TECPEBS 100%/133%	8 kV	90
SECPSBS 100%/133%, TECPEBS 100%/133%	15 kV	90
TECPEBSVFD 133%	8 kV	90
TECPEBSVFD 133%	15 kV	90

This Certificate is valid until **2019-06-28**.

Issued at **Høvik** on **2015-06-29**

for **DNV GL**

DNV GL local station: **Houston**

Approval Engineer: **Georgy Abramenko**

Marit Laumann
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-005495-1**
Certificate No: **TAE000003F**

Product description

SECPEBS 100%/133% 5 kV, TECPEBS 100%/133% 5 kV, SECPEBS 100%/133% 8 kV, TECPEBS 100%/133% 8kV, SECPEBS 100%/133% 15 kV, TECPEBS 100%/133% 15 kV, TECPEBSVFD 133% 8 kV, TECPEBSVFD 133% 15 kV.

Construction:	
Conductor:	Rope bunched compressed tinned copper
Conductor, ground (VFD cables only)	Unilay tinned copper with polyester separator and insulated with XLPO
Insulation:	EPR
Shielding:	Semi-conducting tape helically applied and lapped, composite braid of tin-coated copper wires and nylon yarn
Inner sheath:	CPE
Shielding (VFD cables):	Braided tinned copper wires and poly/aluminum tape
Armor:	Braid of bronze wires
Sheath:	CPE

Number of cores x conductor cross-section	
SQMM	AWG
SECPEBS 5 kV	
1 x 7.6	8
1 x 12.5	6
1 x 21	4
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444
1 x 273	535
1 x 326	646
1 x 394	777
1 x 562	1111
TECPEBS 5 kV	
3 x 7.6	8
3 x 12.5	6
3 x 21	4
3 x 34	2
3 x 43	1
3 x 54	1/0
3 x 70	2/0
3 x 86	3/0
3 x 109	4/0
3 x 132	262
3 x 159	313
3 x 189	373
3 x 227	444
3 x 273	535

Number of cores x conductor cross-section	
SQMM	AWG
3 x 326	646
3 x 394	777
SECPEBS 100% 8 kV	
1 x 12.5	6
1 x 21	4
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444
1 x 273	535
1 x 326	646
1 x 394	777
1 x 562	1111
SECPEBS 133% 8 kV	
1 x 12.5	6
1 x 21	4
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444

Number of cores x conductor cross-section	
SQMM	AWG
1 x 273	535
1 x 326	646
1 x 394	777
1 x 562	1111
TECPEBS 100% 8 kV	
1 x 12.5	6
1 x 21	4
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444
1 x 273	535
1 x 326	646
1 x 394	777
TECPEBS 133% 8 kV	
1 x 12.5	6
1 x 21	4
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373

Number of cores x conductor cross-section	
SQMM	AWG
1 x 227	444
1 x 273	535
1 x 326	646
TECPEBSVFD 133% 8 kV	
1 x 12.5	6
1 x 21	4
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444
1 x 273	535
SECPEBS 100% 15 kV	
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444

Number of cores x conductor cross-section	
SQMM	AWG
1 x 273	535
1 x 326	646
1 x 394	777
1 x 562	1111
SECPEBS 133% 15 kV	
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444
1 x 273	535
1 x 326	646
1 x 394	777
1 x 562	1111
TECPEBS 100% 15 kV	
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313

Number of cores x conductor cross-section	
SQMM	AWG
1 x 189	373
1 x 227	444
1 x 273	535
TECPEBS 133% 15 kV	
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444
1 x 273	535
TECPEBSVFD 133% 15 kV	
1 x 34	2
1 x 43	1
1 x 54	1/0
1 x 70	2/0
1 x 86	3/0
1 x 109	4/0
1 x 132	262
1 x 159	313
1 x 189	373
1 x 227	444

Type Approval documentation

Tests carried out

Type tests according to IEEE1580-2010.

Marking of product

AMERCABLE - SECPEBS 5 kV or TECPEBS 5 kV or SECPEBS 100% 8 kV or SECPEBS 133% 8 kV or TECPEBS 100% 8 kV or TECPEBS 133% 8 kV or TECPEBSVFD 133% 8 kV or SECPEBS 100% 15 kV or SECPEBS 133% 15 kV or TECPEBS 100% 15 kV or TECPEBS 133% 15 kV or TECPEBSVFD 133% 15 kV- Size – Lot no.

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE