



Marine & Offshore

Certificate number: 64411/A0 BV

File number: ACM 135/2807/1

Product code: 2050H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

KME Special Products GmbH & Co. KG

Osnabrück - GERMANY

for the type of product

MULTICORED / BUNDLED PIPES - POLYTUBES

OSNALINE tubes and tube bundles, multitubing, multicore, OSNALINE protection

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships
 BUREAU VERITAS Rules for the Classification of Offshore Units
 BUREAU VERITAS Rules for the Classification of Naval Ships
 BUREAU VERITAS Rules for the Classification of Yachts

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 14 Apr 2026

For Bureau Veritas Marine & Offshore,

At BV HAMBURG, on 14 Apr 2021,

Adama Diene



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

OSNALINE tubes and tube bundles, multitubing, multicore, OSNALINE protection.

Tubes and tube bundles with plastic sheath. Tube material from either copper, copper-nickel or stainless steel, jacket material from either KME type OSNA2000, OSNA TPU or OSNA PE HM2. Tubes with signal wire insulated tubes and traced tube with electric heaters or steam tracing. OSNALINE protection tube with crude oil resistant and antistatic outer jacket for cargo tanks.

1.1 Dimensions and design pressure:

Tube material		Cu-DHP		CuNi10FE1Mn	
		50	100	50	100
Working temperature [°C]					
Tube size	Tubes per bundle				
6 x 0.5 mm	1 to 19	*	*	*	*
6 x 1.0 mm	1 to 19	145 bar	141 bar	*	*
6 x 1.5 mm	1 to 19	*	*	*	*
8 x 0.5 mm	1 to 19	*	*	*	*
8 x 1.0 mm	1 to 19	104 bar	101 bar	172 bar	170 bar
10 x 1.0 mm	1 to 19	81 bar	79 bar	135 bar	133 bar
10 x 1.2 mm	1 to 19	*	*	165 bar	162 bar
10 x 1.5 mm	1 to 19	*	*	212 bar	209 bar
12 x 1.0 mm	1 to 10	66 bar	65 bar	110 bar	109 bar
12 x 1.5 mm	1 to 10	104 bar	101 bar	172 bar	170 bar
12 x 2.0 mm	1	*	*	*	*
1/4" x 0.035"	1 to 19	118 bar	115 bar	*	*
1/4" x 0.049"	1 to 19	121 bar	118 bar	*	*
3/8" x 0.035"	1 to 19	*	*	*	*
3/8" x 0.040"	1 to 19	87 bar	84 bar	144 bar	141 bar
3/8" x 0.049"	1 to 19	*	*	181 bar	178 bar
3/8" x 0.062"	1 to 19	*	*	*	*
3/8" x 0.065"	1 to 19	*	*	*	*
1/2" x 0.035"	1 to 10	55 bar	54 bar	*	*
1/2" x 0.040"	1 to 10	63 bar	62 bar	105 bar	103 bar
1/2" x 0.062"	1 to 10	*	*	*	*
1/2" x 0.065"	1 to 10	*	*	*	*
3/4" x 0.049"	1	*	*	*	*

Tube material		Stainless steel 1.4571 / AISI 316Ti			Stainless steel 1.4404 / AISI 316L 1.4435 / AISI 316L			Stainless steel 1.4547 / UNS S31254		
		20	50	100	20	50	100	20	50	100
Working temperature [°C]										
Tube size	Tubes per bundle									
6 x 0.5 mm	1 to 19	189 bar	182 bar	167 bar	171 bar	164 bar	150 bar	*	*	*
6 x 1.0 mm	1 to 19	412 bar	396 bar	363 bar	373 bar	357 bar	325 bar	425 bar	410 bar	375 bar
6 x 1.5 mm	1 to 19	*	*	*	*	*	*	690 bar	670 bar	615 bar
8 x 0.5 mm	1 to 19	139 bar	134 bar	123 bar	*	*	*	*	*	*
8 x 1.0 mm	1 to 19	296 bar	285 bar	261 bar	268 bar	256 bar	234 bar	305 bar	290 bar	270 bar
10 x 1.0 mm	1 to 19	231 bar	222 bar	203 bar	209 bar	200 bar	182 bar	240 bar	230 bar	210 bar
10 x 1.2 mm	1 to 19	283 bar	272 bar	249 bar	256 bar	245 bar	223 bar	*	*	*
10 x 1.5 mm	1 to 19	364 bar	350 bar	321 bar	329 bar	316 bar	288 bar	380 bar	365 bar	335 bar
12 x 1.0 mm	1 to 10	189 bar	182 bar	167 bar	171 bar	164 bar	150 bar	195 bar	190 bar	175 bar
12 x 1.5 mm	1 to 10	296 bar	285 bar	261 bar	268 bar	256 bar	234 bar	305 bar	295 bar	270 bar
12 x 2.0 mm	1	412 bar	396 bar	363 bar	373 bar	357 bar	325 bar	425 bar	410 bar	375 bar

Tube material		Stainless steel 1.4571 / AISI 316Ti			Stainless steel 1.4404 / AISI 316L 1.4435 / AISI 316L			Stainless steel 1.4547 / UNS S31254		
		20	50	100	20	50	100	20	50	100
Working temperature [°C]										
Tube size	Tubes per bundle									
1/4" x 0.035"	1 to 19	336 bar	324 bar	296 bar	304 bar	292 bar	266 bar	*	*	*
1/4" x 0.049"	1 to 19	498 bar	479 bar	438 bar	450 bar	431 bar	393 bar	510 bar	500 bar	455 bar
3/8" x 0.035"	1 to 19	214 bar	206 bar	189 bar	194 bar	182 bar	169 bar	*	*	*
3/8" x 0.040"	1 to 19	-	-	-	-	-	-	-	-	-
3/8" x 0.049"	1 to 19	311 bar	298 bar	274 bar	280 bar	269 bar	245 bar	320 bar	310 bar	285 bar
3/8" x 0.062"	1 to 19	*	*	*	368 bar	352 bar	321 bar	425 bar	405 bar	375 bar
3/8" x 0.065"	1 to 19	*	*	*	390 bar	374 bar	341 bar	445 bar	430 bar	395 bar
1/2" x 0.035"	1 to 10	157 bar	151 bar	138 bar	142 bar	136 bar	124 bar	*	*	*
1/2" x 0.040"	1 to 10	*	*	*	*	*	*	190 bar	180 bar	165 bar
1/2" x 0.062"	1 to 10	292 bar	281 bar	257 bar	265 bar	254 bar	232 bar	305 bar	295 bar	270 bar
1/2" x 0.065"	1 to 10	309 bar	297 bar	272 bar	280 bar	268 bar	244 bar	320 bar	310 bar	285 bar
3/4" x 0.049"	1	145 bar	140 bar	128 bar	131 bar	126 bar	115 bar	*	*	*

* no standard dimensions

1.2 Temperature limits for plastic jackets:

KME Type	during assembly [°C]		before and after assembly [°C]	
	min.	max.	min.	max.
OSNA 2000	- 5	+ 50	- 40	+ 80
OSNA Protection	- 20	+ 50	- 20	+ 100
OSNA PE HM2	- 15	+ 50	- 25	+ 80
OSNA TPU	- 40	+ 50	- 60	+ 120

1.3 Minimum bending radius:

Tube bundles copper	8 x dia
Tube bundles stainless steel and CuNi	10 x dia
Single tube	6 x dia

2. DOCUMENTS AND DRAWINGS:

According to following documents:

Document no.	Rev.	Designation
78M RB	9	OSNALINE Specification for tubes and tube bundles containing metal tubes
78T RB	2	OSNALINE Specification for heat insulated tubes and heat traced tube bundles

3. TEST REPORTS:

According to the following tests:

3.1 Burst pressure test:

- Test report no.: BR293882 at KME, Osnabrück / GERMANY, dd. 27.01.03, witnessed by IACS member.

3.2 Flame retardancy tests:

- Test report no.: HN 987717 at CURRENTA, Leverkusen / GERMANY, dd. 26-June-2008, witnessed by IACS member.
- Test report no.: HN 789265 at Bayer Industry Services, Leverkusen / GERMANY, dd. 26-Apr-2007, witnessed by IACS member.
- Test report no.: 07/117e at Bayer Industry Services, Leverkusen / GERMANY, dd. 13 February 2007
- Test report no.: ES 331499 at KME, Osnabrück / GERMANY, dd. 23 June 2003, witnessed by IACS member.
- Test report no.: 03/101 at Bayer Industry Services, Leverkusen / GERMANY, dd. 03 June 2003, witnessed by IACS member.

4. APPLICATION / LIMITATION:

- 4.1 Tubes and tube bundles are intended as hydraulic and pneumatic control lines.
- 4.2 On board installation and maintenance requirements have to be in accordance with the BUREAU VERITAS Rules requirements and the manufacturer's recommendations.
- 4.3 Detailed drawings of piping system for each application on board ships are to be submitted for review of compliance with the BUREAU VERITAS Rules and the applicable regulations.
- 4.4 Electrical control cables and electrical heating elements should be type approved by BUREAU VERITAS.
- 4.5 Materials are to comply with the Society's Rules and to be suitable for the used media.

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 The tube bundles are to be supplied by **KME Special Products GmbH & Co. KG** in compliance with the type and the requirements described in this certificate.
- 5.2 This type of product is within the category HBV of BUREAU VERITAS Rule Note NR320 and as such does not require a BUREAU VERITAS product certificate.
- 5.3 **KME Special Products GmbH & Co. KG** has to make the necessary arrangements to have its works recognised by BUREAU VERITAS in compliance with the requirements of NR320 for HBV products.
- 5.4 For information, **KME Special Products GmbH & Co. KG** has declared to BUREAU VERITAS the following production site:
KME Special Products GmbH & Co. KG, Osnabrück / GERMANY
- 5.5 Materials certificate as per BUREAU VERITAS Rules.
- 5.6 Each tube is to be hydraulic pressure tested according to BUREAU VERITAS Rules.

6. MARKING OF PRODUCT:

Each tube bundle should be marked with:

- Manufacturer's name or logo
- Type designation / size
- Maximum design pressure
- Maximum design temperature
- Date of manufacture

7. OTHERS:

- 7.1 It is **KME Special Products GmbH & Co. KG**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

*** END OF CERTIFICATE ***