

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**with type designation(s)
EC110, EC210

Issued to

Eaton Germany GmbH
Baden-Baden, Baden-Württemberg, Germany

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses**Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**

Type:	Temperature range:	Max. working press.:	Sizes:
EC110	-40°C up to +100°C	225 bar / 3250 psi	6.4 mm up to 50.8 mm / 1/4" up to 2"
EC210	-40°C up to +100°C	400 bar / 5800 psi	6.4 mm up to 50.8 mm / 1/4" up to 2"

Issued at **Hamburg** on **2019-06-26**This Certificate is valid until **2024-06-25**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Christian Kaemmer**

Olaf Drews
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

EC110-Series:

Flexible non-metallic hose consisting of synthetic rubber inner tube, 1wire braid reinforcement, synthetic rubber cover. Design according to EN 853 type 1SN.
Fire resistant acc. to ISO 15540.

EC210-Series:

Flexible non-metallic hose consisting of synthetic rubber inner tube, 2wire braid reinforcement, synthetic rubber cover. Design according to EN 853 type 2SN.
Fire resistant acc. to ISO 15540.

Materials:

Reinforcement: Steel wire braid
Inner Tube: Synthetic rubber
Cover: Synthetic rubber
Couplings: Carbon steel

Size and pressure range:

Part Number EC110	Hose I.D.		Maximum working pressure		Part Number EC210	Hose I.D.		Maximum working pressure	
	mm	inch	[bar]	[psi]		mm	inch	[bar]	[psi]
EC110-04	6.4	¼"	225	3250	EC210-04	6.4	¼"	400	5800
EC110-05	7.9	5/16"	215	3125	EC210-05	7.9	5/16"	350	5100
EC110-06	9.5	3/8"	180	2600	EC210-06	9.5	3/8"	330	4800
EC110-08	12.7	½"	160	2300	EC210-08	12.7	½"	275	4000
EC110-10	15.9	5/8"	130	1900	EC210-10	15.9	5/8"	250	3650
EC110-12	19	¾"	105	1525	EC210-12	19	¾"	215	3125
EC110-16	25.4	1"	88	1275	EC210-16	25.4	1"	165	2400
EC110-20	31.8	1 ¼"	63	925	EC210-20	31.8	1 ¼"	125	1800
EC110-24	38.1	1 ½"	50	725	EC210-24	38.1	1 ½"	90	1300
EC110-32	50.8	2"	40	580	EC210-32	50.8	2"	80	1150

Types of Couplings: 1A TTC, Winner 2pcs TTC-fitting.

Production places

- Eaton Germany GmbH, Dr. Reckwegstr. 1, 76532 Baden-Baden.
- POLİMER KAÜÇUK SAN. VE PAZ. A.Ş., Çerkezköy Organize Sanayi Bölgesi Karaağaç mah. 6. Sok No:3, Kapaklı / TEKİRDAĞ, TURKEY
- Eaton Corporation, 1225 W. Main Street, Van Wert, Ohio, USA.

Responsibility

Eaton Germany GmbH, Baden-Baden takes the responsibility that the design and production of the hoses, hose end fittings and manufacturing of hose assemblies are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Job Id: **262.1-030328-1**
Certificate No: **TAP00001T7**

Application/Limitation

Hose assemblies covered by this type approval certificate are type approved for lubricating oil, gasoline oil, crude oil, fuel oil, hydraulic oil and air.

Flexible hoses are only to be used in short lengths up to 2 m where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

Installation

The hose assemblies must only be fitted in places where they are always accessible.

Flexible hoses of these types are not to be used on boiler fronts.

The hoses are to be mounted in accordance with the manufacturer's instructions.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, fresh water cooling applications, lube oil, fuel oil and petroleum base hydraulic oil.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized. The cover on hoses for gaseous applications shall be pin-pricked.

Type Approval documentation

Tests carried out

Production testing

All hose assemblies shall be subject to a pressure test at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to the type approval certificate.

Marking of product

For traceability to this type approval, each hose assembly is to be marked with:

Manufacturer's name
Type, Nominal Diameter
Maximum working pressure M.A.W.P.
Date Code
Temperature Rating

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.

The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

In connection with the renewal assessment, a surveyor shall witness / review test reports with respect to the following tests on every 3rd size appropriate test reports to be submitted:

- dimensional check, change in length test,
- pressure test with 1.5 times M.A.W.P. and burst test (witnessed by DNV GL surveyor)