



**Progetto di realizzazione del nuovo sealine e del campo boe per lo scarico  
di gasolio e benzina da navi petroliere al largo del Porto di Pescara**

**Relazione tecnica - Chiarimenti volontari del Proponente nell'ambito della  
Procedura Istruttoria VIA**

**ALLEGATO 11 – Estratto “OCIMF – Guide to manufacturing and purchasing hoses  
for offshore moorings”**

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Oil Companies International Marine Forum

# ***Guide to Manufacturing and Purchasing Hoses for Offshore Moorings***

***(GMPHOM 2009)***

Including Considerations Relating to Hose System Design

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*The OCIMF mission is to be the  
foremost authority on the safe and  
environmentally responsible operation  
of oil tankers and terminals, promoting  
continuous improvement in standards  
of design and operation*

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# Definitions

For the purpose of this Guide, the following definitions will apply:

**a) Involved Parties:**

*Purchaser*

The purchaser is the party who places the order with the manufacturer.

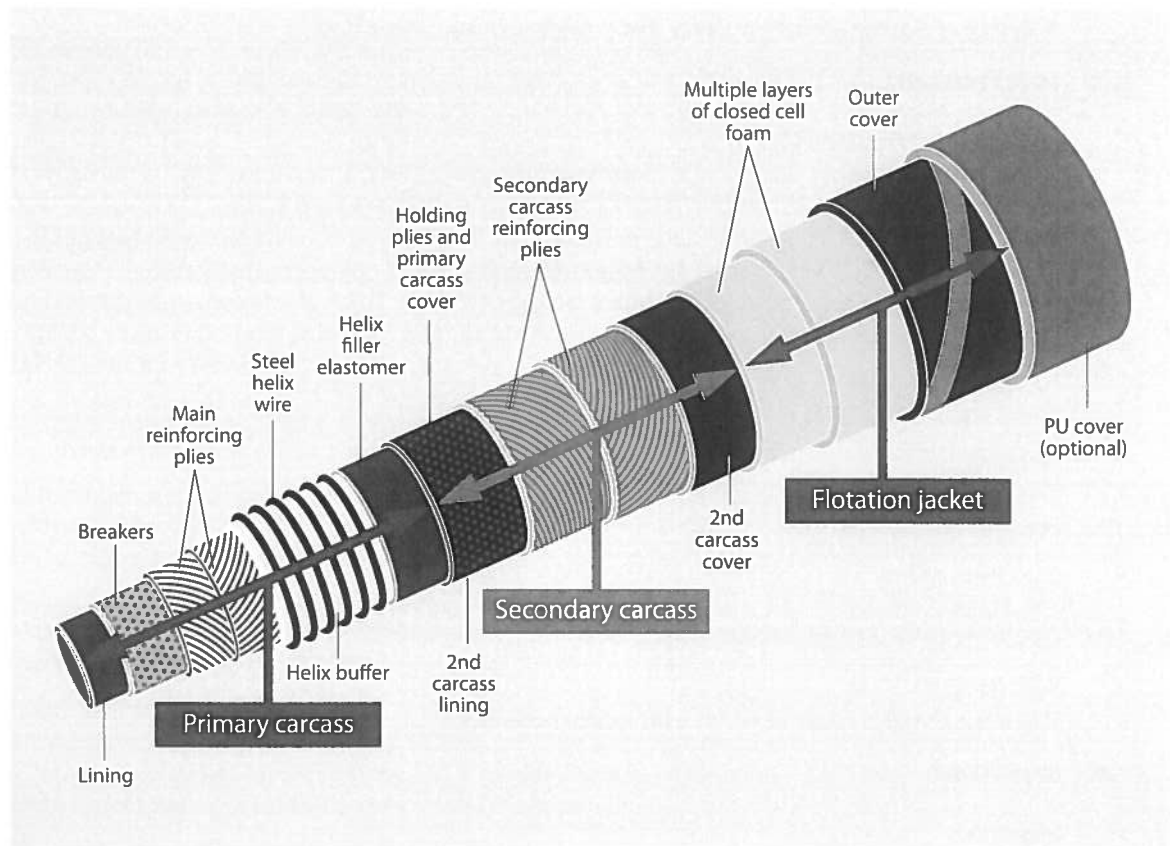
*Manufacturer*

The manufacturer is the party constructing the hose.

*Inspector*

An individual employed or contracted by the purchaser to carry out inspection during the manufacturing, certification and/or testing of hoses.

**b) Hose Construction:**



**Figure 1: Simplified Diagram Depicting Typical Hose Components**

*Note: the diagram depicts a double carcass floating hose. However, individual components will be applied to other hose types.*

*Lining*

An elastomeric layer applied along the entire bore, excluding end fitting where appropriate, which protects the hose body from the product being conveyed.

*Body*

The body is the main reinforcing portion of a hose and consists of:-

- a - Reinforcing textile fabric, textile cord or steel wire cord layers impregnated with elastomers
- b - Embedded wire helix(s), rings or other similar types of reinforcement
- c - Additional reinforcement, when needed, by the inclusion of one or a combination of 'a' and 'b'

*Cover*

An elastomeric layer applied over and along the entire hose body protects the hose body from the marine and environmental elements.

*Carcass*

Hose carcass consists of the three main elements of lining, body and cover.

*Single Carcass Hose*

A single carcass hose consists of the three main elements of lining, body and cover, which terminate over an end fitting.

*Double Carcass Hose*

A double carcass hose consists of the single carcass hose (referred to as the first or primary carcass in this hose type) and a second carcass. The second carcass consists of a:

a - Lining

b - Body consisting of reinforcing textile fabric, textile cord or other types of reinforcement

c - Cover

The second carcass has the ability to contain a potential leak of the primary carcass.

A double carcass hose will be provided with a means for detecting any leak from the primary carcass.

*Flotation*

A layer(s) of closed cell foam material that provides buoyancy to a hose.

**c) Hose Pressures:**

*Rated Working Pressure (RWP)*

The International Safety Guide for Oil Tankers and Terminals (ISGOTT) states that RWP is the common oil industry reference that defines the maximum cargo system pressure capabilities. This pressure rating is not expected to account for dynamic surge pressures, but does include nominal pressure variations in the order of a maximum of 10% as expected during normal cargo transfer operations due to the change in velocity that results from the shutting down of a pump or closing of a valve. This is also known as, and is equivalent to, the Maximum Rated Working Pressure (MRWP), and the Maximum Allowable Working Pressure (MAWP).

*Factory Test Pressure*

This is equal to the RWP.

*Proof Pressure*

This is a one-time pressure that is applied to production hoses to ensure integrity following manufacture. It is equal to 1.5 times the RWP.

*Burst Pressure Test*

This is a test requirement for a single prototype hose to confirm the hose design and manufacture of each specific hose type (Section 3.4.17 refers).

*Burst Pressure*

This is the actual pressure at which a prototype hose fails.

**d) Inspections:**

*Inspection*

Inspection comprises all agreed actions to verify if the hose complies with purchase order requirements and, if manufacturing, that testing and specification of the hose is in accordance with manufacturer's quality system.

*In-line Inspection*

In-line inspection covers the progressive inspection of hose manufacture throughout all stages of fabrication.

*Final Inspection*

Final inspection covers all tests that are carried out after removal of the hose from the fabrication mandrel.

*Random Inspection*

Random inspection consists of conducting inspections on some of the phases of manufacture as detailed by the purchaser. This may include the examination of relevant documentation relating to fittings, adhesion testing, quality control records relative to the hose/hoses in question and the final tests.



**e) Miscellaneous Definitions:**

*Aromatic Content*

The aromatic content in full boiling range crude oils can be estimated by volumetric weighted averaging of the aromatic data obtained from analysis of the individual distillation cuts. The aromatic content, by per cent volume, in diesel is obtained as measured by ASTM D5186 and in gasoline as measured by ASTM D1319.

*Allowable Axial Load*

The maximum force the hose can support in general service when the force is applied in-line with the centre line of the hose.

*Damaging Load*

The force applied in-line with the centre line of the hose, which can cause permanent damage, eg necking (localised reduction in diameter), but does not result in a catastrophic failure. The hose is not suitable for future use.

*Failure Load*

The force applied in-line with the centre line of the hose, which will result in a catastrophic failure of a hose. The hose is not suitable for future use.

*Crush Load*

A load applied externally and locally on a hose that can cause or lead to a permanent deformation.

*Safe Working Load (SWL)*

Generally, a load less than the yield or failure load by a safety factor defined by a code, standard or good engineering practice.

**f) System Design Definitions:**

*Catenary Anchor Leg Mooring (CALM)*

The shape of the anchor lines, typically chain or wire rope or a combination of both, which are positioned between the anchors on the sea floor and the mooring buoy or floating F(P)SO hull so that they assume a shape where the anchor line touches down horizontally on the sea floor.

*Marine Breakaway Coupling (MBC)*

A device designed to provide protection to the cargo transfer system and floating hose against surge pressures and/or axial tension in the hose, by automatic shut-off of liquid flow and separation before the floating hose integrity is damaged.

*Single Point Mooring (SPM)*

An integrated mooring arrangement for bow mooring a conventional tanker. An SPM includes CALM (Catenary Anchor Leg Mooring) buoy, SALM (Single Anchor Leg Mooring), SBM (Single Buoy Mooring), F(P)SO and a turret type mooring to a spar or similar structure.

*Pipeline End Manifold (PLEM)*

A PLEM comprises of a structural base supporting a piping manifold and facilitates the subsea termination of the pipeline and the connection to the marine hose.