



**PETROBRAS**

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US-SUB/ISBM

**TECHNICAL SPECIFICATION**

Nº: **I- ET-3500.00-1500-940-PMU-001**

CLIENT:	UNIT OF BUSINESS	PAGE: 1 de 4
PROJECT:	SUBSEA INSTALLATION	
AREA:	SUBSEA FIELD	
TITLE:	SYNTACTIC SUBSEA BUOYANCY MODULE GENERAL REQUIREMENTS	

**INDEX OF REVISIONS**

REV	DESCRIPTION AND/OR AFFECTED PAGES
0	<i>Original Issue dor comments</i>

	Rev 0	Rev A	Rev B	Rev C	Rev D	Rev E	Rev F	Rev G	Rev H
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TITLE:

SYNTACTIC SUBSEA BUOYANCY MODULE  
GENERAL REQUIREMENTS

## I N D E X

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- 2.0 MAIN DATA
- 3.0 REQUIREMENTS
- 4.0 IDENTIFICATION OF PRODUCT

## 1 - SUBJECT

This technical specification embraces the manufacturing and delivery of Syntactic Subsea Buoyancy Module.

## 2 - Main Data

<i>2.1- DESIGN PARAMETERS</i>		
1	Application	Several
2	Maximum Water Depth (m)	mwd(see note 1)
3	Service Life (years)	25
4	Hydrostatic crush pressure(Mpa)	>1.5 x mwd
5	Service hydrostatic pressure(Mpa)	≤mwd
6	Deflection temperature	> 120 oC
7	Water absorption after 24 hours at service pressure	< 1.5 %
8	Water absorption after 200 hours at service pressure	< 2.5 %
9	Density(kg/m <sup>3</sup> )	300 to 600
<i>2.2- EXTERNAL ENVIRONMENTAL PARAMETERS AT DESIGN WATER DEPTH</i>		
1	Sea water minimum temperature(°C):	3,20
2	Sea water medium temperature(°C):	3,60
3	Sea water maximum temperature(°C):	4,02
4	Salinity minimum/medium/maximum(%)	35,64
5	Sea water density minimum/medium/maximum(kg/m <sup>3</sup> )	1028,01

Note:

- 1) As according with the material requisition bid.
- 2)

## 3 - REQUIREMENTS

### 3.1 MATERIAL.

#### 3.1.1 SYNTACTIC FOAM CORE CONSISTS OF THE FOLLOWING COMPOSITION:

- epoxy resin matrix with high resistance to hydrolysis and to hydrostatic pressure;
- hollow glass microspheres and/or carbon fibre minispheres;
- hollow thermoplastic or high alloy macrospheres, for achieving the required module density.

#### 3.1.2 EXTERNAL SKIN

The external skin must have requirements for protection against impact and abrasion damage during transportation and handling. This plastic shall have also high resistance to UV light degradation and to hydrolysis.

Consists of the alternatives with the following composition:

- a) moulded polyether poliurethane elastomer with minimum nominal thickness: 12 millimeters.
- b) moulded high density polyethylene with minimum nominal thickness: 12 millimeters.



**3.2 GENERAL**

The buoyancy module(s) shall withstand the specified external pressure without collapsing or losing negative weight, by water absorption, for the specified service life.

**4 - IDENTIFICATION OF PRODUCT**

The following data shall be stamped on the external sheath of the buoyancy module(s) with indelible marking:

- number of purchase order;
- item of purchase order;
- net buoyancy;
- depth rating.