

OceanTools

D7 DyeTector®

Subsea leak, dye and cement detection system

The **D7 DyeTector** is state of the art subsea leak and cement dye detection system developed by **OceanTools** based on many years of experience detecting subsea dyes.



## Overview

The ROV mounted **D7 DyeTector** may be used to detect leaks from subsea infrastructure such as manifolds, wellheads or pipelines if a suitable dye has been added to the infrastructure fluids, or during casing cementing operations to detect cement returns.

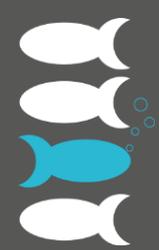
High intensity LED light is focused through lenses and filters to create a concentrated beam that is tuned to a specific wavelength to cause maximum molecular agitation and fluorescence of the dye. A sophisticated optical multiplier employs light amplification technology to detect fluorescence from the agitated dye molecules. Advanced detection electronics convert the measurements to digital data.

The powerful **DyeTector** technology is capable of detecting single photons of light. It can detect down to single digit parts per billion of dye dissolved in water and is approximately one hundred times more sensitive than the human eye. This makes it ideal for detecting the very smallest of leaks or traces of dye dosed cement.

Detection can be carried out at a safe working distance. Advanced ambient light suppression technology allows the **DyeTector** to be used in high levels of background light and also means the ROV's lights do not need to be turned off.

The **DyeTector** is machined from aviation grade titanium and sapphire glass to give it a standard depth rating of 6000 metres. Simple and intuitive DyeTector software displays detection data at the surface, and data can be recorded for future analysis.





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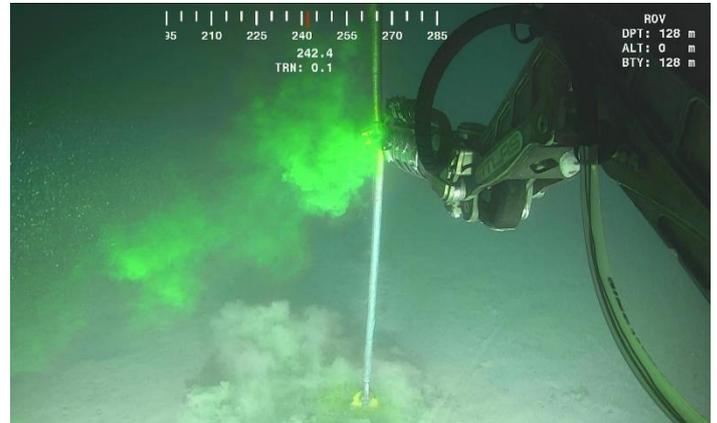
## D7 DyeTector®

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## Applications

The **DyeTector** may be used to detect leaks from subsea infrastructure such as manifolds, wellheads or pipelines if a suitable dye has been added to the infrastructure fluids. Pipeline or flow line pressure testing can be monitored by the **DyeTector** if dye impregnated fluids are used.

The **DyeTector** may also be used during casing cementing operations to detect cement returns. A tracer dye is added to either the seawater spacer or to the cement itself. Unlike pH meters which rely upon the cement passing over them, a **DyeTector** can detect cement from a distance of several metres depending on the dye concentration.



*Cement detection with a DyeTector*

## Detection Dyes

As well as offering the **DyeTector**, OceanTools can supply dyes that have been specifically developed by our friends at Subsea Chemistry Ltd to precisely match the characteristics of the **DyeTector**. This includes the new biodegradable **C-Dye ECO**, developed to fully comply with the latest Substance In Solvent (SIS) regulations. In short, there is no system more capable of detecting dye subsea, nor is there a more detectable dye.

Different versions of the **DyeTector** are designed to excite and detect several types of dye in addition to **C-Dye 530** (Rhodamine) and **C-Dye 370** (Ultraviolet) including:

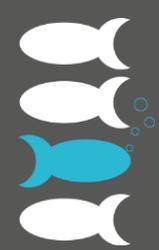
- Rhodamine dyes such as B275, RX9022, Pelagic 100 Pink
- Fluorescein dyes such as HW443, HW540P, Oceanic Yellow LTF
- Ultraviolet dyes such as RX9026E, Pelagic 100, Champion Cleardye, Castrol HT2

Please contact OceanTools for advice on other dyes that may be detected by the **DyeTector**.

## Key Features

- Rhodamine, Fluorescein, Ultraviolet or C-Dye ECO detection
- Focused beam and filtered high intensity LEDs
- Light amplification and photon detection technology
- 6000m standard depth rating





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#### Specifications

	D7-R	D7-F	D7-U	D7-ECO
<b>Target dye</b>	Rhodamine	Fluorescein	Ultraviolet	C-Dye ECO
<b>Excitation wavelength</b>	520–530nm	450–460nm	360–370nm	390–400nm
<b>Detection wavelength</b>	570–590nm	510–520nm	410–450nm	450–460nm
<b>Detection range</b>	Up to 10m			
<b>Input voltage</b>	18–36VDC			
<b>Maximum current</b>	0.5A @ 24VDC			
<b>Data communications</b>	RS232 / RS485			
<b>Standard connector</b>	Glenair G5507-1508			
<b>Depth rating</b>	6000m			
<b>Housing material</b>	Titanium			
<b>Window material</b>	Sapphire Glass			
<b>Length (excl connector)</b>	174mm			
<b>Maximum diameter</b>	98mm			
<b>Weight in air</b>	3.0kg			
<b>Weight in water</b>	1.9kg			

#### Related Products

**D8 DyeTector** dual channel systems have been developed with two sets of optical components to detect Rhodamine and Ultraviolet dyes using a single compact ROV mounted device.

**D9 DyeTector** diver held systems (pictured right) are self-contained dye detection units featuring ruggedised single switch operation, a built-in detection display and a depth rating in excess of 250m.



Product datasheets, GA drawings, case studies and other supporting documents are available to download from [data.oceantools.co.uk](http://data.oceantools.co.uk)

All specifications are subject to change without notice. E&OE.

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