

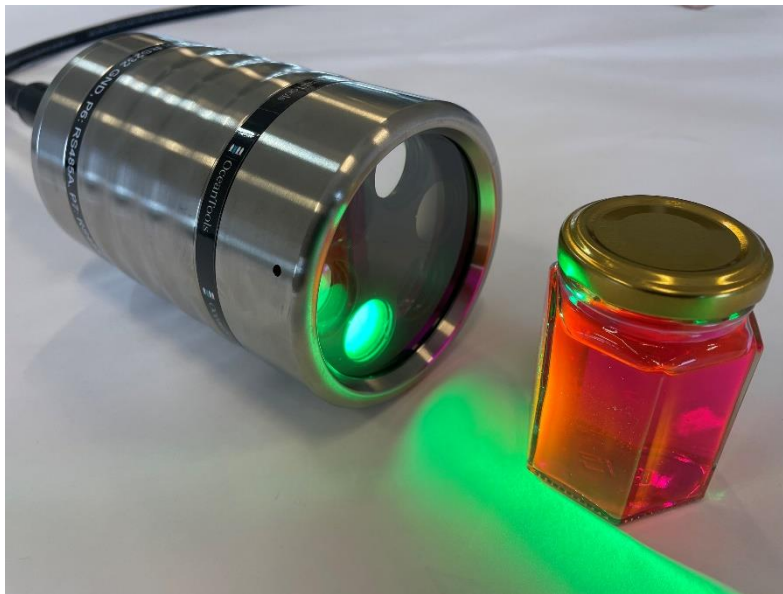


OceanTools

D10 DyeTector®

Three channel subsea dye detection system

The **D10 DyeTector** is an advanced subsea leak and dye detector developed by **OceanTools** to detect Rhodamine, Fluorescein *and* Ultraviolet dyes using a single compact ROV mounted device.



Overview

The ROV mounted **D10 DyeTector** has three sets of optical components, configured to detect the three primary dyes used for underwater detection – Rhodamine such as **C-Dye 530**, Fluorescein, and Ultraviolet such as **C-Dye 370**. One set of optics is activated at a time, so that rhodamine, fluorescein or ultraviolet dyes can be detected in isolation.

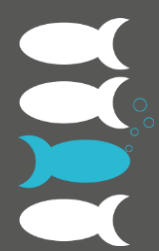
High intensity LED light is focused through lenses and filters to create a concentrated beam that is tuned to a specific wavelength to cause maximum molecular agitation and fluorescence of the dye. A sophisticated optical multiplier employs light amplification technology to detect fluorescence from the 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 4000 metres. Simple and intuitive DyeTector software is used to select the required dye detection optics, display detection data at the surface, and record data for future analysis.





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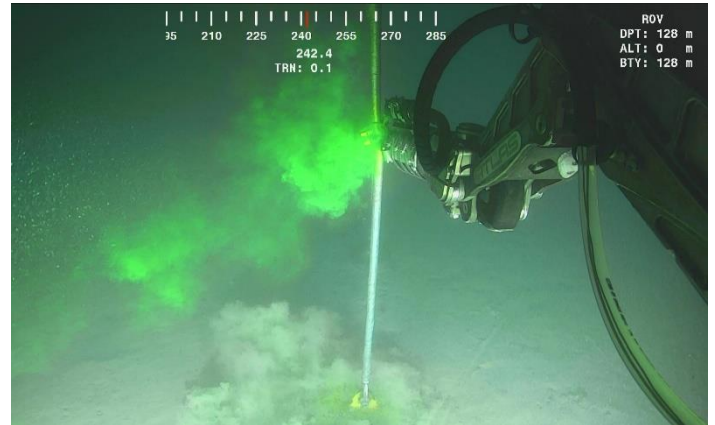
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Applications

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**. In short, there is no system more capable of detecting dye subsea, nor is there a more detectable dye.

The **D10 DyeTector** is designed to excite and detect several types of dye or fluid in addition to **C-Dye 530** (Rhodamine) and **C-Dye 370** (Ultraviolet) including:

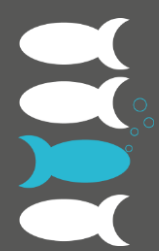
- Rhodamine dyes such as B275, RX9022, Pelagic 100 Pink
- Fluorescein dyes such as HW443, HW540P, Oceanic Yellow LTF
- Ultraviolet dyes such as RX9026E, Pelagic 100, Champion Cleardye, Castrol HT2

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

Key Features

- Rhodamine, Fluorescein and Ultraviolet dye detection
- Focused beam and filtered high intensity LEDs
- Light amplification and photon detection technology
- Compact alternative to using separate detectors





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Specifications

	D10		
Target dye	Rhodamine	Fluorescein	Ultraviolet
Excitation wavelength	520–530nm	450–460nm	360–370nm
Detection wavelength	570–590nm	510–520nm	410–450nm
Detection range	Up to 10m		
Input voltage	18–36VDC		
Maximum current	1A @ 24VDC		
Data communications	RS232 / RS485		
Standard connector	Glenair G5506-1508		
Depth rating	4000m		
Housing material	Titanium		
Window material	Sapphire Glass		
Length (excl connector)	155mm		
Maximum diameter	101mm		
Weight in air	3.1kg		
Weight in water	1.8kg		

Related Products

D7 DyeTector single channel dye detection systems are designed to excite and detect a particular rhodamine, fluorescein or ultraviolet dye.

D9 DyeTector diver held systems 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

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

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