

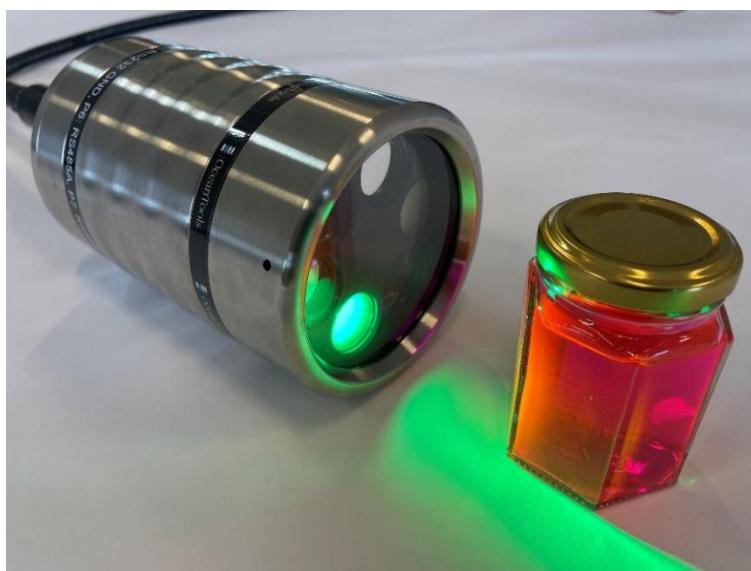


OceanTools

D7 / D8 / D10 DyeTector®

Subsea leak, dye and cement detection systems

The **DyeTector** range of advanced subsea leak and cement dye detection systems has been developed by **OceanTools** based on many years of experience detecting dyes underwater.



Overview

ROV mounted **DyeTector** systems are configured to detect the primary dyes used for underwater leak detection – Rhodamine such as **C-Dye 530**, Fluorescein, and Ultraviolet such as **C-Dye 370**:

- **D7 DyeTector** – single channel to detect Rhodamine, Fluorescein, Ultraviolet or **C-Dye ECO**
- **D8 DyeTector** – two selectable channels to detect Rhodamine and Ultraviolet dyes
- **D10 DyeTector** – three selectable channels to detect Rhodamine, Fluorescein and Ultraviolet dyes

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 smallest of leaks or traces of dye dosed cement.

Detection with a **DyeTector** can be carried out at a safe working distance. Advanced ambient light suppression technology allows operation 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 Windows 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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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 if dye impregnated fluids are used.

Cement returns can be detected during casing cementing operations if 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

Liquid hydrocarbons including crude oil are detectable using the Ultraviolet channel without requiring the presence of any additive tracer dyes.

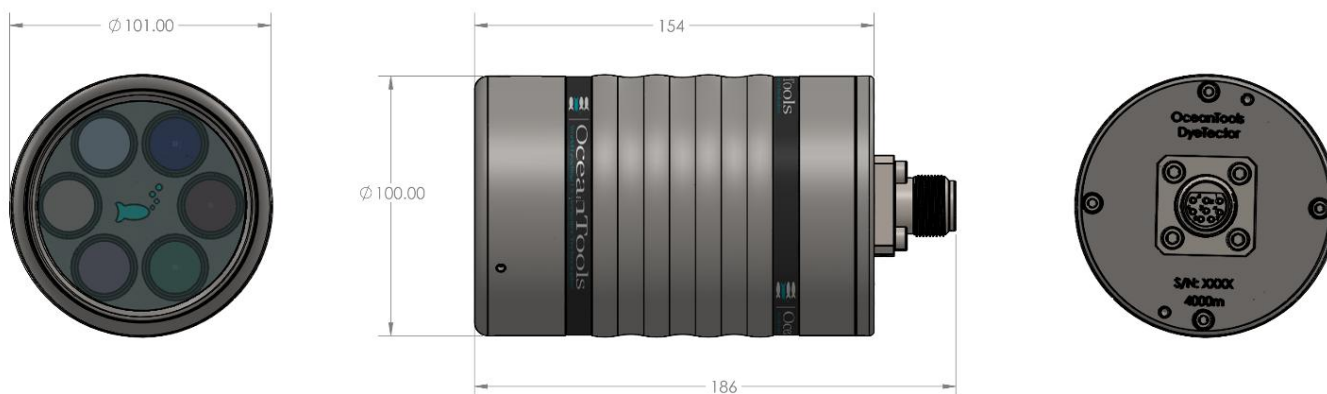
Detection Dyes

As well as offering the **DyeTector**, OceanTools can supply dyes that have been specifically developed to precisely match the characteristics of the **DyeTector**. These include the 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.

The different models of the **DyeTector** are 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, RX-9022, Pelagic 100 Pink
- Fluorescein dyes such as HW443, HW540P, RX-9025, Oceanic Yellow LTF
- Ultraviolet dyes such as RX-9026E, Pelagic 100, Champion Cleardye, Castrol HT2

Please contact OceanTools to discuss suitability and detectability of other dyes or fluids.





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Specifications

	Rhodamine	Fluorescein	Ultraviolet	Biodegradable
OceanTools dye	C-Dye 530	-	C-Dye 370	C-Dye ECO
Excitation wavelength	520–530nm	450–460nm	360–370nm	390–400nm
Detection wavelength	570–590nm	510–520nm	410–450nm	450–460nm

	D7 DyeTector	D8 DyeTector	D10 DyeTector
Number of channels	1	2	3
Target dye types	Rhodamine or Fluorescein or Ultraviolet or Biodegradable	Rhodamine and Ultraviolet	Rhodamine and Fluorescein and Ultraviolet
Detection range	Up to 10m		
Input voltage	24VDC (18–36VDC)		
Maximum current	0.5A @ 24VDC		
Data communications	RS232 / RS485		
Standard connector	Scorpion 5506-1508		
Depth rating	4000m		
Housing material	Titanium		
Window material	Sapphire Glass		
Length (excl connector)	154mm		
Maximum diameter	101mm		
Weight in air	3.1kg		
Weight in water	1.8kg		

Ashtead Technology is the exclusive rental partner for the full range of OceanTools DyeTector leak and dye detection systems.



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

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