

SHELL WATER DETECTOR

The Shell Water Detector is a device for determining the presence in jet fuels of finely dispersed undissolved water in concentrations lower than those normally detectable by visual examination. Water dispersions of this type can result from the emulsification of a water/fuel mixture during pumping, or from the precipitation of dissolved water due to a fall in fuel temperature.

CONSTRUCTION

The detector consists of two parts:

- a) Standard polythene or nylon hypodermic syringe of 5 ml capacity with a Record type nozzle fitting.
- b) Plastic detector capsule in which is fitted a disc of filter paper treated with water sensitive chemicals.

USE

Before use the detector capsule should be examined in order to confirm that the paper is of a uniform yellow colour. The detector capsule is fitted to the syringe, then the capsule and approximately half of the syringe is immersed in the sample under test and the plunger withdrawn until the fuel reaches the 5 ml mark. The capsule should be examined for any difference in colour between the inner wetted portion and the outer portion which is protected by the plastic moulding. It is important to note that:

- a) The screw cap should be replaced on the capsule container immediately the required capsule has been removed to prevent discolouration of the remaining capsules by atmospheric humidity. Unused capsules should not be left lying about or kept loose in the pocket.
- b) A capsule should be used once only and then discarded because the sensitivity of the device is a function of the quantity of fuel passing through the paper.

INTERPRETATION OF RESULTS

The presence of undissolved water is indicated by a change in colour of the centre portion of the detector paper. The Shell Water Detector begins to react at very low levels of water contamination even below 10 ppm and the resulting colour change becomes progressively more noticeable with increasing water content until at approximately 30 ppm a distinct green colour is obtained giving a positive indication of water contamination. At lower water contamination levels a yellow/green colour is obtained which increases to blue/green and finally blue/black at very high levels of water contamination.

APPLICATION

The Shell Water Detector should be used as follows to check samples of jet fuels immediately after they are drawn:

- a) Road vehicle and RTW drain samples - before discharge into airport storage.
- b) Bottom samples from airport tanks - immediately before release.
- c) Fueller and trailer compartment drain samples - after each replenishment.
- d) Hydrant dispenser filter drain samples - after each aircraft fuelling.
- e) Fueller filter drain samples - after the first aircraft fuelling, after filling or topping up either fueller or trailer.
- f) Drain samples from filtration equipment on hydrant delivery and fueller loading rack daily.

STORAGE LIFE AND SUPPLY ARRANGEMENTS

The recommended life for Shell Water Detector capsules is nine months from manufacture date. This date is marked on the bottom of each tube of capsules and printed on each box of ten tubes.