fabrication notes

akvocaddisfly BETA
FLUORIDE FIELD TEST KIT

There are certain constraints governing the methods of fabricatio and choice of materials to be employed in fabrication of a Caddisfly Beta Fluoride Field Test Kit.

E1 Cuvette

The cuvette part needs to be made ideally as one part, not joined in anyway and should be glossy, transparent and made from a foodsafe material such as Poly Carbonate or Poly Propylene. The part needs to be fabricated such that the entire part is watertight and is not porous as it needs to hold the test sample.

Glass is not suitable for use in Fluoride applications as glass reacts with Fluorides over time. The reagent, Xylenol Orange is has an extremely low pH (approximately 1pH) and hence is highly corrosive.

E2 Main Cartridge Body

This part needs to be made in a non-porous natural black material in order to effectively block ambient light. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

E3 Overflow Chamber

This part needs to be made in a non-porous natural black material in order to effectively block ambient light. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

E4 Lid

This part needs to be made in a non-porous natural black material in order to effectively block ambient light. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

E5 Screen

This part needs to be made in a non-porous, foodsafe plastic in natural white colour, with a glossy finish. The particular surface qualities are important as the camera is calibrated to recognise colours as seen against this part. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

E6 Attachment Ring

This part needs to be made in a non-porous natural black material in order to effectively block ambient light. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

Capsule1 Reagent Dispensing Capsule Body

This part needs to be made in a non-porous foodsafe material in order to hold the acidic reagent. The part can be any colour although darker colours are favoured. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

Capsule2 Reagent Dispensing Capsule Plunger

This part needs to be made in a non-porous foodsafe material in order to hold the acidic reagent. The part can be any colour although darker colours are favoured. The part should ideally not be painted as it often comes in contact with the acidic reagent, which usually reacts with paints.

Stopper

This part needs to be made in a natural rubber. We find that elastic materials are best suited to the stopper's mechanical requirements to fit in the Capsule1 Reagent Dispensing Capsule Body mouth and effectively seal the capsule. Synthetic rubbers have corroded over time in contact with the reagent and this breaks the seal and allows reagenet to leak.

O-Ring

This part needs to be made in a natural rubber. We find that elastic materials are best suited to the mechanical requirements to fit in the Capsule2 Reagent Dispensing Capsule Plunger ridge and effectively seal the capsule. Synthetic rubbers have corroded over time in contact with the reagent and this breaks the seal and allows reagenet to leak.