

Lyophilised or liquid?

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TwistDx Insights

One of our key aims at [TwistDx](#) is to make the [RPA workflow](#) as simple as possible, eliminating the pipetting of multiple reagents and freeing the user to focus on their research. As a result, we now offer RPA kits in two formats – lyophilised pellets and a liquid – each with unique strengths, suitable for different applications and requirements.

Lyophilised – no expertise needed

RPA has a number of advantages over [PCR](#). The isothermal technique dispenses with thermocycling instruments and offers rapid results within five to 20 minutes, making it ideally suited to point-of-care testing and experiments away from the laboratory. Freeze-drying the reagents into a lyophilised pellet format enables us to put RPA into the hands of non-experts; buffers and magnesium acetate are simply added to the pellet with the template mixture and the reaction starts. Rehydration is the key step, and applying a little heat to the reaction will benefit sensitivity. Results can even be obtained using body heat, and in West Africa – where access to heating technology is limited – an ambient temperature of 30 °C is sufficient to carry out [plant pathogen testing](#) using our technology. Lyophilising the material into dry pellets increases the stability at these temperatures, reducing the need for cold storage and encouraging use outside the lab, from [veterinary diagnostics](#) on the farm to mobile testing for [infectious diseases](#).

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Liquid – high throughput and low volumes

High throughput, lab-based applications in industry and academia are at the other end of the spectrum, and a lyophilised format would, in many cases, be entirely inappropriate. We therefore also provide RPA reagents in a wet, glycerol-stabilised format, which simplifies the production process by cutting out the freeze-drying step. However, the liquid versions of the kits need to be stored at a low temperature to keep them stable, something that would not be suitable for point-of-care testing in the field. Offering RPA in a liquid format also opens the door to applications that would simply not be feasible using a lyophilised pellet. Liquid RPA kits can be used in both high and low volume experiments, allowing reactions to take place in miniaturised formats – nanolitres to microlitres – which remain challenging to PCR. This format is equally advantageous for larger volume reactions from 500 µl to 1 ml. It takes a comparatively large amount of energy and time to heat 1 ml of liquid during PCR, whereas RPA has less intensive requirements, operating at a constant, lower temperature.

Two formats, multiple applications

Both the lyophilised and liquid formats function in the same manner, and we are excited to be witnessing the adoption of the technology across a broad range of sectors, from [microfluidics](#) to [water hygiene](#) to [biodefence](#). There are dozens and dozens of assays that researchers have created and published in peer-reviewed journals; so many that I can no longer keep up with reading all the papers as I used to. Whatever your application, our customer service team is always on hand to talk through any questions and discuss the most suitable RPA format for your application. Please [get in touch](#) and we'll be happy to help.