



## Gelled Surface Crystallization™ Kit

MD1-12

For optimization – Gelled Surface Crystallization™ an improved variation of the containerless crystallization method. Ideal for problem proteins that many small unusable crystals.

Each kit for Gelled Surface Crystallization™ Kit contains 5 × 96-well, individual strip microplates and paraffin oil. The wells are all pre-gelled and ready to use.

### Features of Gelled Surface Crystallization™ Kit:

- Promote the growth of fewer crystals.
- Promote the growth of larger crystals
- Avoid attachment of crystals to the container surface.
- Ideal for problem proteins that produce many small unusable crystals.

### Introduction

Gelled Surface Crystallization™ Kit is an improved variation of the containerless crystallization method<sup>1</sup>. In the containerless crystallization method a crystallization drop is suspended between two oils of different densities. By isolating the crystallization growth drop from the surface of the container, nucleation sites can be largely controlled to achieve the growth of fewer and larger crystals.

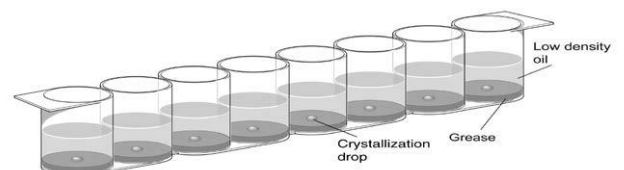
In Gelled Surface Crystallization™ the dense, lower and expensive fluoro-silicon oil is replaced with an inert (non-aqueous) gelled layer thus providing a stable interface to the upper layer oil.

This interface offers a number of advantages over the previous method; the interface is planar/slightly concave, and not convex so -

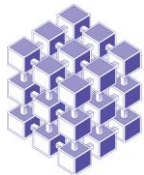
- The drop stays where you put it -
- The crystallization drop does not migrate to the edge.
- Plates are more safely transported without the drops moving to the edge.
- Crystals are easier to harvest with a loop.
- The Gelled Surface layer is totally transparent for easy examination of crystal growth through a microscope.
- Flexibility of optimization technique.

In the micro batch technique the upper layer is normally paraffin oil which is essentially not permeable to water. Hence, even long-term batch crystallization experiments can be set up with very small volume drops (1-2ml) without fear of drying out. The upper layer can also permit controlled diffusion through silicon oils, which can be mixed to provide the required degree of water permeability to enable a slow and controlled rate of concentration to occur in the drop.

Gelled Surface Crystallization™ need not be limited to micro-crystallization experiments. The technique is equally suited to larger scale experiments in 24-well plates (contact us if you require 24-well pre-filled gelled-surface plates). In the same manner as described above, the experiment can be either true batch (drop conditions are set up at supersaturation) or the drop can be allowed to concentrate by diffusion through oils.



Cross-section of wells of the gelled-surface crystallization kit.



### Method

Gelled Surface crystallization is a small-scale batch or diffusion experiment in which drops of sample in crystallization reagent are dispensed under a layer of oil on to the surface of a gel. The gel is available in the wells of microtitre plates. The type and the thickness of the oil layer covering the drops determine the experiment. Water vapour can pass through certain oils thus concentrating the reagent and sample. Mixtures of paraffin and silicon oils are used to control the rate of evaporation.

1. Pipette the paraffin oil into the wells of the Gelled Surface plate.
2. Prepare the protein/precipitant drops as follows: withdraw a volume of screen reagent using a standard micropipette, and an equal volume of sample solution and mix in the pipette tip.
3. Insert the pipette tip into the well, under the surface of the oil, and dispense the drop.

N.B. Experiment with different drop sizes, e.g. 1 – 20  $\mu$ L.

### References

1. Chayen N.E. (1996) Protein Engineering, 9, 927-929.
2. Chayen N.E. and Saridakis E. (2002) Lead Article Acta Cryst. D. 58, 921-927

### Contact Us

Molecular Dimensions will be happy to discuss the precise formulation of individual reagents.

Individual reagents and stock solutions for optimisation are available from Molecular Dimensions.

Enquiries regarding Gelled Surface Crystallization™ Kit Formulation, interpretation of results or optimization strategies are welcome.

Please e-mail, fax or phone your query to Molecular Dimensions.

Contact and product details can be found at [www.moleculardimensions.com](http://www.moleculardimensions.com)