



Design principles for hand sanitisers

[A paper¹](#) from the Edinburgh Complex Fluids Partnership demonstrates how soft matter physics can be used to form a framework to guide the design of formulations with desirable properties.

Context

Over the last few years, most of us have used hand sanitisers from a variety of brands and likely have noticed that each formulation offered a distinct hand feel. Have you come across sticky hand sanitisers, or ones that do not spread nicely? Rheology, the branch of physics that deals with the deformation and flow of matter, can explain why this happens and help overcome these issues.



[Source: Silva, A.F., Wood, T.A., Hodgson, D.J.M. et al. Rheological design of thickened alcohol-based hand rubs. Rheol Acta 61, 571–581 \(2022\). <https://doi.org/10.1007/s00397-022-01347-y>](#)



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Project Outcome

In our publication, we set out four principles for designing the rheology of thickened alcohol-based hand rubs with acceptable handleability and hand feel based on the soft-matter science of the system. The criteria chosen were low run off, spreadability, smoothness, and non-stickiness which we related to laboratory measurements of the formulation rheology. The outcomes lead to more sustainable products with enhanced performance and user experience.

While this work focused on hand sanitisers, the general approach can be applied to a variety of different systems and demonstrates how soft matter physics can be used to create a framework to guide the design of formulations with desirable properties.



- A) WHO formulation recommends using 3 ml of product which resulted in spillage/run-off, excess sample and longer drying time compared to;
- B) thickened hand gel formulation requiring half the sample amount to achieve better coverage and faster drying time

Watch video here



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