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Chocolate Analysis by Centrifugation

Why centrifuge chocolate?

Chocolate analysis makes it possible to assess parameters related to viscosity and stability and to verify that the final product meets industrial standards for processability and sensory quality.

Chocolate is a suspension: solid particles (cocoa, sugar, milk solids) dispersed in a continuous fat phase (cocoa butter + added fats). Centrifugation lets you:

- **Separate phases:** fat vs. solids, sometimes even multiple fat fractions.
- **Quantify fat content:** by measuring the mass or volume of the separated fat layer.
- **Study particle behaviour:** sedimentation, packing, and density differences.
- **Prepare samples:** for downstream tests like particle size analysis, rheology, or microscopy, viscosity, stability and helps verify that the final product meets industrial standards for processability and sensory quality.

Among the methods used for chocolate quality control, centrifugation makes it possible to observe how the sample behaves when subjected to phase separation. This information can help optimise production processes, reduce waste and improve the consistency of the final product.

Learn more about our products at scientiquipp.com/centrifuges

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Analysis of Chocolate using the Scientiquipp™ ROTA 4 (Non-Refrigerated) centrifuge

In summary, the centrifugation analysis procedure can be carried out by following these steps:

1. Obtain a representative chocolate sample and melt it at a temperature of 45–50 °C.
2. Place 20–30 g of the sample in a 50ml conical test tube.
3. Centrifuge the sample, starting at 1,000 rpm and progressively increasing the speed until reaching 4,500 rpm, for 10–15 minutes using the swing-out Rotor
4. Analyse the sample, taking into account, among other aspects, the following points:
   - Good-quality chocolate should not show significant segregation or phase separation after centrifugation. Any sign of separation could indicate improper processing, poor emulsification or formulation issues.
   - Viscosity measured through centrifugation or by using viscometers should be compared with established standards to ensure that the product meets the required flow characteristics for the production of final products such as chocolate bars or coatings.

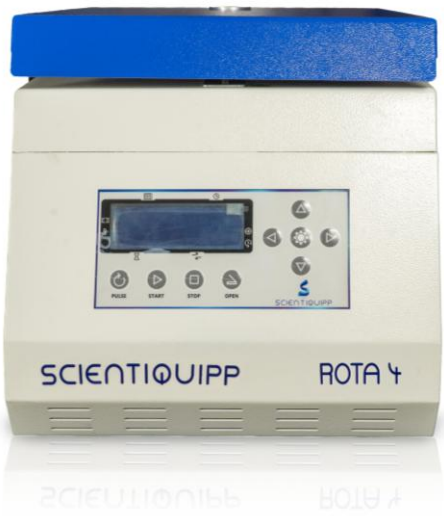
For this type of test, the ROTA 4 centrifuge can be used. Its maximum speed using a swing-out rotor is 4,500 rpm, providing a wide operating range within the parameters indicated in this procedure. In addition, for other downstream tests like particle size analysis, rheology or microscopy, Scientiquipp recommends having two rotors.

Rotor Selection Matrix

SR.NO	GOAL	ROTOR TYPE	WHY
1	Fat Quantification	Swing-Out	Vertical tubes ⟶ clean phase layers
2	Sediment height measurement	Swing-Out	Direct volume measurement
3	Rapid pelleting of solids	Fixed Angle	High g-force, compact pellets
4	Fractionation for microscopy	Fixed Angle	Efficient solid isolation
5	Studying fat crystal behavior	Swing-Out	Gentle separation without smearing

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This combination gives you a complete chocolate analysis workflow.



Product ROTA 4	Part No.
Machine	100129
Fixed Angle Rotor	200151
Adapters	200157

About Scientiquipp. Pvt.Ltd.

Since the 1980ôs Scientiquipp (formerly known as Plasto Crafts) has been synonymous with customer-oriented processes and innovative products, such as laboratory devices. Today, we serve as experts and advisors, using our unique knowledge and experience to support laboratories and research institutions around India. The foundation of the companyôs expertise is its focus on its customers. Scientiquippôs exchange of ideas with its customers results in comprehensive solutions that in turn become industry standards. Scientiquipp will continue this path in the future, to the standard set by the companyôs founders: that of *enabling the future of medicine.*

European Brushless Technology | CE ISO 9001:2015 Certified | IR | MGM RVAC IAF

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