



# Chocolate

The chocolate industry handles products in a liquid phase in most of its processes.

Molten chocolate is a non-Newtonian suspension strongly affected by fat crystals formed during chocolate cooling and solidification. Chocolate flow behavior is extensively studied, and it is known that chocolate texture and stability is strongly affected by the presence of these fat crystals. Consequently, the flow of chocolate needs to be accurately measured and the process must be continuously adjusted to ensure product quality.

Rheological characterization was achieved for tempered and untempered chocolate suspensions. By monitoring the viscosity the degree of temper can be determined in line and in real time.

***“Instant results during dynamic processes”***

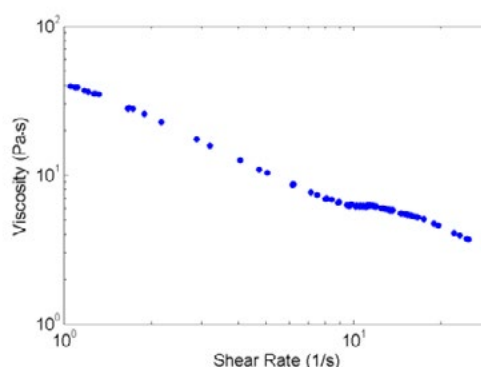
## Benefits

In-line measurements of chocolate rheology

Process monitoring and control of tempering process

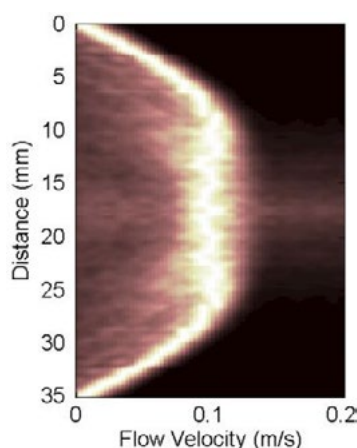
Monitor fat crystallization

Acoustic properties can be linked to solid content



## Rheology

Our ILR instrument was used to measure viscosity of tempered and untempered milk and dark chocolate under real processing conditions in a chocolate manufacturing plant.



## 2D Image of flow

A 2D scan of the flow inside the pipe shows the shape of the velocity profile during the tempering process. The flow image also gives the user access to more information such as air content and fat crystallization stages.