

"Panta rei" as the Greek philosopher said everything flows. We live in a world whereby everything flows in a matter of time. To describe these flows, we have come up with a variety of terms such as flowing, gushing, slipping, dripping, running, squirting, oozing, seeping, *etc.* and we can immediately associate each word with the motion it describes. The flow or movement of all these materials can be described by specific equations which we call rheology. Therefore, rheology is the science which describes how a material flows.

APPLICATION

Why are these numbers important? These numbers are important because they describe to us something about the product. For example, cosmetic and toiletries products. When a lotion is pumped from a dispenser, it flows from the dispenser onto the palm. If the products drips or runs off from the palm, it will not be acceptable to the consumers. The characteristic flow will tell us whether a particular product is a lotion or a cream or whether it is a rich bodied lotion which gives us a good skin feel. Another example is a nail polish. The rheology of the nail polish must be correct so that the pigment is able to stay in suspension in the continuous phase. The viscosity of the nail polish must be thick enough in order for the brush to pick up the pigment and transfer it onto the nail. When shear is applied, the product must be able to flow so that it could be transferred onto the nail and after that the structure must recover. If the recovery is too quickly, it may leave the trail of the brush behind. On the other hand, if it recovers too slowly, the consumer may not have the patient to wait. The same goes to food products. The rheology must be correct in order to give the

product a good appearance and palatability. The rheological data could be obtained using a viscometer or a rheometer.

WHO NEEDS THESE DATA

- R&D personnel;
- Product formulator and developer;
- QC personnel; and
- Process engineer.

SERVICES OFFERED BY PHYSICAL TESTING LABORATORY

- Viscosity by Brookfield (*Figure 1*);
- Shear stress *vs.* shear rate and thixotropy loop by Brookfield;
- Shear stress *vs.* shear rate or viscosity *vs.* shear rate and thixotropy loop by Physica (*Figure 2*);
- Viscosity at constant shear rate by Physica;
- Strain sweep or stress sweep; and
- Creep test.

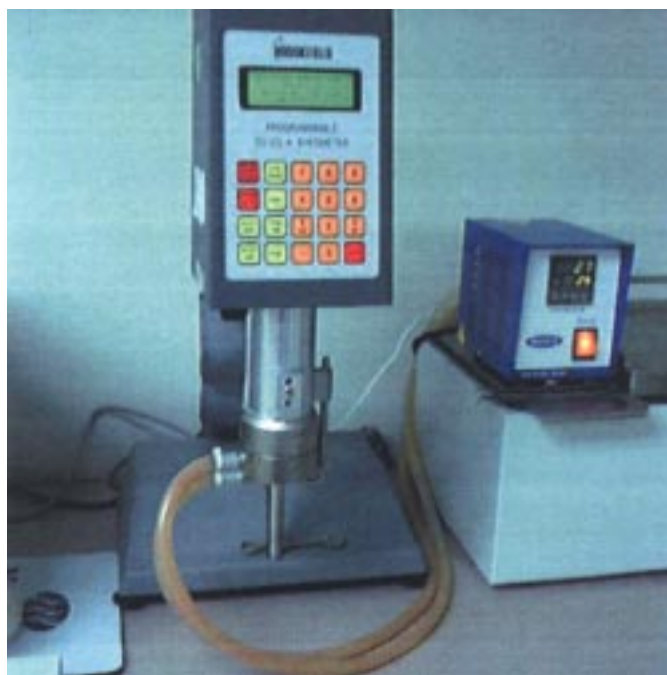


Figure 1. Brookfield viscometer.



Figure 2. Paar Physica rheometer.

Sample Volume Required
5 to 50 ml or 5 g.

WHEN TO EXPECT FOR RESULTS

Under normal circumstances, client can expect to receive report within three weeks. In case of unforeseen circumstances, client will be informed.

REPORTS

A test report will be sent to client together with the data printout from the instrument where it is applicable. Examples of the data printouts are shown in Figures 3 to 6.

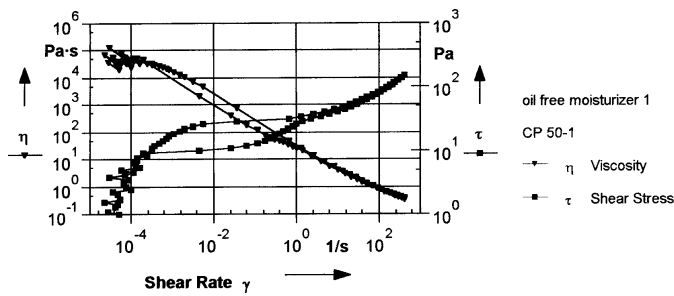


Figure 3. Flow curve.

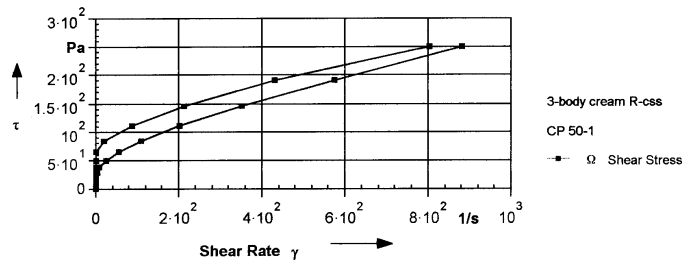


Figure 4. Thixotropy.

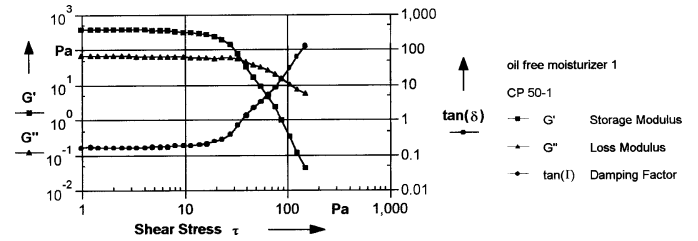


Figure 5. Stress sweep.

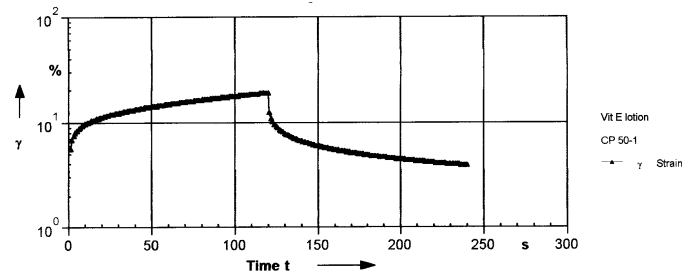


Figure 6. Creep test.

For the cost and further information, please contact Ms Rosnah Ismail, Tel: 03-89255708 ext.144 or e-mail: rosnah@mpob.gov.my.

For more information kindly contact:

Director-General
MPOB
P. O. Box 10620
50720 Kuala Lumpur, Malaysia.
Tel: 03-89259155, 89259775
Website: <http://mpob.gov.my>
Telefax: 03-89259446