

# Viscosity Logging

GUSHOR

Gushor Inc. is a fluid analysis and reservoir engineering company that provides innovative geochemical and reservoir engineering solutions to practical production and exploration problems in the heavy oil and oil sands (HOOS) industry through the integration of geology, fluid properties, geochemistry, and reservoir simulation.

## Viscosity Logging in the Field

Through our Mobile Laboratory, we offer onsite mechanical extraction, viscosity analysis, and data interpretation services. The mobile laboratory can be modified for additional testing should this be requested. Our laboratory is staffed by safety certified technicians and geochemists to ensure the most accurate and reliable data possible. The mobile laboratory is built to withstand harsh oil field work environments.

### Viscosity Logging Steps:

1. Laboratory mobilization to rig or camp site
2. Assist in sample selection
3. Core sampling (if required)
4. Onsite mechanical extraction core samples to obtain an oil sample (also a water sample if available)
5. Viscosity analysis and field report
6. Sample transport back to Calgary

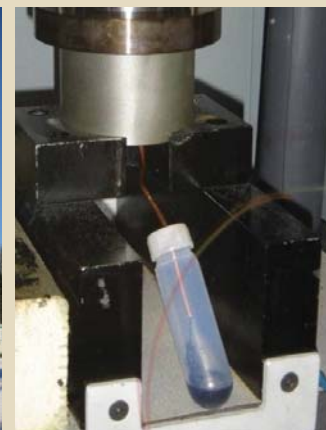
Gushor strives to provide the most accurate data possible and provides one-on-one customer service; the mobile laboratory allows us to accomplish this. The mobile laboratory has the same research grade equipment as we use in our Calgary laboratory and utilizes much of the same staff which ensures that clients will receive consistent results.

Core storage procedures and unreliable oil and bitumen extraction methods play their part in contributing towards oil samples whose apparent viscosity may increase by up to an order of magnitude over normal storage times. This can result in very misleading and confusing viscosity data.

The problems associated with assessing oil viscosity results start from minute one of sample collection - so where do we go from here for the most accurate data possible or for operational decision making? **Gushor's Onsite Viscosity Logging!**

Onsite viscosity logging allows rig site recovery of bitumen and viscosity determination, this not only serves to provide the best available viscosity data to date, but the speed which data is acquired can help operating decisions, such as whether or not to run a field production test potentially saving in excess of \$250,000!

For more information on our **Plunger™** or any other Gushor technologies, please contact us at [info@gushor.com](mailto:info@gushor.com).



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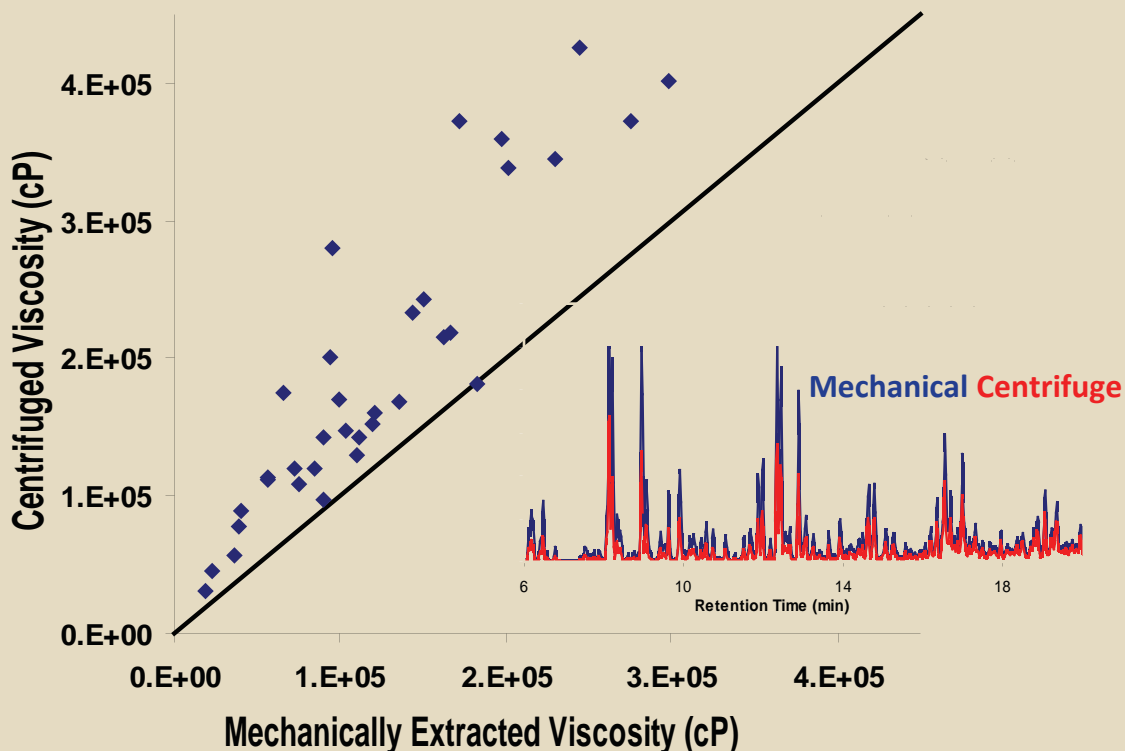
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## Why Perform Viscosity Logging in the Field?

Onsite viscosity logging of core samples allow for "real time" viscosity determination of heavy oils and bitumen; this enables several different field operations to be undertaken:

1. Decisions as to whether well testing to recover production data or fluids is viable or not can be made based on real fluid data generated at well site.
2. In conjunction with other well data, decisions on where to place a horizontal well segment can be made from analysis of fluid property variations from a vertical well segment facilitating cold production well locations at rig site while the rig is still on site.
3. The most accurate viscosity data possible is obtainable free from sample storage and processing artefacts.
4. Freeze coring and on site viscosity assessment allows for live oil viscosity profiles to be assessed.

## How Accurate Are Your Viscosity & API Readings?



As shown in the diagram above, Gushor's **Plunger™** extracts enlivened oil with a higher light end content than that of centrifuge extracted oils.

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