High-Temperature Gas Chromatography
Characterizes high-molecular-weight paraffins and wax properties

APPLICATIONS
- Calculation of cloud and pour points
- Input to thermodynamic modeling of wax appearance conditions
- Input to kinetic modeling of wax deposition rates and pigging frequencies

BENEFITS
- Confirmation of laboratory measurements of wax appearance temperature to improve wax deposition prediction
- Optimized selection of chemical inhibitors to save on intervention costs
- Characterization of field deposits
- Identification of rheologic problems

FEATURES
- Licensed technology to determine \( n \)-paraffin content in whole stock tank oil
- Proprietary wax cut preparation that allows reliable quantification of \( n \)-paraffins up to \( C_{90} \)
- Detection limit of 0.1 \( \mu g/g \) (by weight)
- Calibration against gravimetric standards and control oil

Accurate prediction of flow assurance challenges that lead to cost-effective design of development scenarios is of paramount importance in the production of paraffinic (waxy) crude oils. Such oils often exhibit deposition tendencies, elevated viscosity, and gelling phenomena. Reliable fluid characterization of paraffinic oils requires a precise and accurate understanding of the compositional makeup of the waxy components of produced fluids and their deposits.

High-temperature gas chromatography quantitatively and qualitatively resolves the complete \( n \)-paraffin distribution of a crude oil, its deposited fractions, or both. High-temperature gas chromatography analysis is the accepted industry standard for rigorous compositional characterization of waxes. Results of analyses are key inputs to simulation and correlation tools for thermodynamic, rheologic, and depositional predictions.

High-temperature gas chromatography features a licensed process for concentrating dilute heavy molecular-weight components through a sequence of physical fractionation steps. This process enables achievement of a 0.1-ug/g resolution limit by weight for paraffin species to a maximum carbon number of 90. The high-temperature gas chromatography service complements a full suite of physical-property characterization services for waxy fluids, including wax appearance temperatures, rheological profiles, deposition rates, pour points, and gel strengths, all of which can be directly evaluated under realistic physical and compositional production conditions.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Column temperature range, degF [degC]</td>
<td>176 to 842 [80 to 450]</td>
</tr>
<tr>
<td>Column type</td>
<td>25-m fused silica</td>
</tr>
<tr>
<td>Detector type</td>
<td>Flame ionization detector</td>
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<tr>
<td>Calibration standard</td>
<td>Gravimetric multicomponent ( C_{20} ) to ( C_{60} ) ( \beta )-alkane mixture</td>
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<tr>
<td>Component resolution, ( \mu g/g ) (by weight)</td>
<td>0.1</td>
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