The single-phase multisample chamber (SPMC) is a transportable pressure-compensated reservoir fluid sampling system for use with the Schlumberger MDT modular formation dynamics tester. The SPMC is manufactured from Inconel® or Hastelloy® and captures representative samples during openhole logging operations, enabling advanced and routine PVT and compositional analyses on the entire range of reservoir fluids, even from demanding environments such as HPHT, high-H₂S, and deepwater reservoirs.

The unique pressure-compensating technology and independent gas charge activate concurrent with sample capture, maintaining fluid samples at or above reservoir pressure all the way to surface. This helps meet difficult sampling challenges such as near-saturated gas condensates, fluids with asphaltene-precipitation tendencies, or low-compressibility fluids such as heavy oil or formation waters.

Controlled-displacement MDT sampling techniques eliminate sample flashing in the SPMC by controlling the drawdown to only a few psi, thereby enabling representative sample collection. Whereas noncompensated tools must be closed at surface, the SPMC self-closes downhole, which prevents the loss of any sample components during sampling tool retrieval. This ensures representative and accurate results for compositional analysis, GOR measurement, and saturation pressure determination.

The challenging questions related to H₂S and the concentration of other sulfur species can be reliably addressed by applying unique, latest-generation nonreactive coatings such as Dursan coating. When applied to SPMC and MDT sample flowlines and pumps, this technology inhibits the loss of H₂S, increases durability, and eliminates the need for frequent recoating; as a result, reliable data can be obtained for critical decision making.

In addition, combining silicon coating and the Schlumberger fluids- and reservoir-domain-supported approach to well cleanup, sampling, and analysis techniques provides the opportunity to address mercury-species concentration issues in some gas condensate reservoirs.

Up to six SPMC tools can be run on each MDT multisample module with up to five modules run in a single toolstring, enabling collection of up to 1.98 galUS [7.5 L] of single-phase reservoir fluid. Upon retrieval, the integrated sample agitation piston is used to restore samples to reservoir conditions up to 25,000 psi [172 MPa] and 400 degF [205 degC] prior to sample transfer to the wellsite or laboratory analysis.
Personnel are fully certified to the latest dangerous goods and hazardous materials transportation regulations. Further, sample-management chain-of-custody tracking is provided using the Schlumberger global Web-based sampling and analysis management and tracking system.

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>SPMC</th>
<th>SPMC-T</th>
<th>SPMC-XT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Inconel 718</td>
<td>Inconel 718</td>
<td>Hastelloy</td>
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<tr>
<td><strong>Metallurgy</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Length, in [m]</strong></td>
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<td>36 [0.91]</td>
<td>36 [0.91]</td>
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<tr>
<td><strong>Weight, lbm [kg]</strong></td>
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<td>20 [9.1]</td>
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<tr>
<td><strong>Max. OD, in [cm]</strong></td>
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<td>2 [5.1]</td>
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<tr>
<td><strong>Sample capacity, in³ [cm³]</strong></td>
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<td>15.25 [250]</td>
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<td><strong>Test pressure, psi [MPa]</strong></td>
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<td>30,000 [207]</td>
<td>37,500 [259]</td>
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<tr>
<td><strong>Max. working pressure, psi [MPa]</strong></td>
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<td>20,000 [138]</td>
<td>25,000 [172]</td>
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<tr>
<td><strong>Max. working temperature, degF [degC]</strong></td>
<td>354 [179]†</td>
<td>354 [179]</td>
<td>400 [205]</td>
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<td><strong>Service</strong></td>
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<td>H₂S</td>
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<td>US DOT, TC, PED</td>
<td>US DOT, PED†</td>
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<td>Bureau Veritas</td>
<td>Bureau Veritas</td>
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</table>

† HPHT version rated to 401 degF [205 degC]

‡ Application for TC pending