Sorb Ultra Solid Inhibitors
Providing multi-year flow assurance and mitigate intervention costs for offshore wells

Inhibit downhole deposition
Sorb™ Ultra treatments minimize the risk of lost production and can significantly delay expensive interventions in deepwater wells. Like the Baker Hughes Sorb™ products, the Sorb™ Ultra family of products delivers multi-year inhibition. Unlike Sorb products, Sorb Ultra products withstand high closure pressures.

The Baker Hughes Sorb Ultra family of solid specialty chemicals safely and efficiently inhibits downhole deposition with slow-releasing and long-lasting chemicals that are adsorbed onto a solid substrate and then pumped deep into the formation. The solid substrate is specially engineered for compressive strength to ensure reliable applications in high-pressure deepwater environments.

The Sorb Ultra chemical treatment begins before produced fluids reach the sensitive areas of the formation where temperature or pressure changes commonly cause flow-assurance problems. The treatments are matched to the specific reservoir and well environments, and can be designed to handle a wide range of downhole conditions including scale, paraffin, and asphaltene deposition. By effectively inhibiting against deposition, the economic life of the well can be extended.

Sorb Ultra treatments last longer than conventional liquid flow assurance chemistry because, as a solid, these chemicals slowly desorb into the appropriate fluid. For example, the Sorb Ultra products for scale desorb into the water phase, whereas those for paraffin and asphaltene inhibition desorb into the oil phase. In contrast, liquids flow back with the bulk production, regardless of solubility, and may be completely absent from the well by the time it is needed to perform its job. In some cases, Sorb chemicals have remained in

Applications
- Deepwater and ultra-deepwater oil and gas wells

Features and benefits
- Reduced costs
  - Eliminates or reduces interventions
- Extended flow assurance
  - Safely and efficiently inhibits downhole deposition with slow-release, long-lasting chemicals
  - Works on produced fluids before reaching the near-wellbore area
  - Simultaneously treats multiple problems by combining treatments
- Comprehensive well protection
  - Uses proprietary chemical systems to inhibit scale, bacteria, paraffin, asphaltene, salt and corrosion
- Simple application
  - Applications include gravel packs, frac packs, or fractures in new or existing wells
  - Specially engineered high-strength substrate ensures that the reliable application can withstand 16,000 psi at a 20% loading
- Qualified member of the SmartCare family of environmentally responsible solutions
  - Minimizes environmental impact without sacrificing performance
  - Increases transparency of chemical composition to stakeholders
  - Improves research and development efforts to proactively expand the Baker Hughes portfolio of environmentally responsible products
production fluids at effective levels five years after they were pumped.

As a result, Sorb Ultra treatments can delay and, in some cases, eliminate the need for expensive deepwater interventions. The treatments can also do away with weeks or months of delayed production, waiting for the proper remediation treatment to be identified and applied.

**Protect near-wellbore area and formation**

Sorb Ultra chemistry is applied as part of the well stimulation to protect the near-wellbore environment (gravel pack) or the near-wellbore area and formation (frac pack and fracture). It functions as an intermediate strength proppant with no negative impact on conductivity. The solid is added to the fluid at a specified ratio to the proppant in order to provide maximum protection based on the well’s downhole environment and the application’s specific requirements.

The treatment can be run in new or existing wells as part of a propped stimulation. It is ideal for high-closure-rate wells. Since the Sorb Ultra substrate is inert and doesn’t dissolve, the risk of shifting, cavitation, and fines migration in the proppant pack is reduced.

The amount of Sorb material added is based on pre-job crush and conductivity tests, and on the desired life of the treatment. Because the product is dry and inert, it can be easily cleaned up and will not contribute to chemical runoff if spilled, unlike conventional liquid additives.

**Prevent production problems**

The Sorb Ultra inhibitor is a Baker Hughes StimPlus™ services product and is compatible for use with common stimulation fluids. StimPlus services include:

- Pre-stimulation system analysis
- Stimulation fluid compatibility
- Coordination with pressure pumping services
- Post-frac monitoring.

This regular production monitoring helps ensure that the Sorb Ultra treatment continues to deliver the necessary inhibition against deposition and that, if needed, it helps operators prepare a smooth transition plan into a long-term chemical flow-assurance program. This also permits staged budgeting, if the chemistry needs to be delivered via long umbilicals.

**Ensure environmental compliance**

As a member of the Baker Hughes SmartCare™ family of environmentally responsible chemical solutions, the Sorb Ultra chemistry helps ensure that clients’ technical performance and environmental priorities are mutually achieved. Evaluated by the Baker Hughes Environmental Services Group’s chemical assessment review process, the Sorb Ultra chemistry has been methodically vetted for health, safety, and environmental criteria, performance, consistency, compatibility, and value.

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<tr>
<th>Typical properties</th>
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<tr>
<td>Sorb™ Ultra family of solid inhibitors</td>
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<tr>
<td>AsphaltSorb Ultra 1201</td>
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<tr>
<td>CorSorb™ Ultra HT</td>
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<tr>
<td>ParaSorb™ Ultra 7200</td>
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<td>ParaSorb™ Ultra 7205</td>
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<tr>
<td>ScaleSorb™ Ultra 9006</td>
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<td>ScaleSorb™ Ultra 9008M</td>
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Contact your Baker Hughes representative today or visit [www.BakerHughes.com/Sorbultra](http://www.BakerHughes.com/Sorbultra) to find out how Sorb Ultra treatments can help you minimize lost production and enhance flow assurance in deepwater wells.