HIGH-QUALITY ANALYTICS - RELIABLE RESULTS

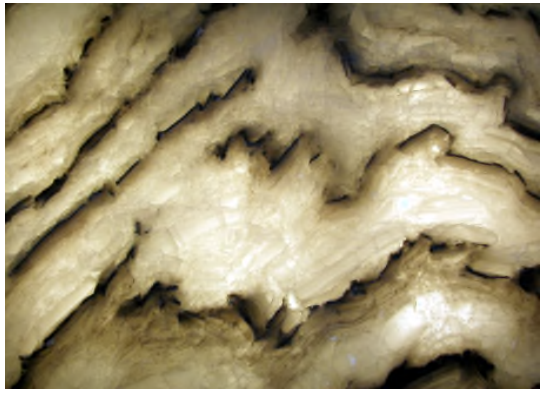
When it comes to building, operating and decommissioning underground storage facilities and production sites, our chemical laboratories provide key information for

- Characterizing salt rock
- Interpreting geological structures and geochemical processes
- Site development and mining planning
- Planning, control, management and optimization of brine degradation processes
- Assessing potential, security and integrity
- Monitoring the quality of product solutions and caving fluids from brine or process engineering processes

Depending on the task at hand, we distinguish between the following:

- Brine and water analysis
- Salt rock analysis
- Bromide analysis (trace element analysis)

When needed, we evaluate the analytical results on a project-specific basis, providing an expert assessment. We regularly take part in collaborative test series with other laboratories which confirm the high quality of our analytics capabilities.



DEEP.KBB GmbH

Convincing Competence

DEEP.KBB provides engineering and geoscientific services for underground energy storage facilities as well as brine and salt extraction. As a full-service provider, we cover the entire range of services from consulting to planning to construction and operations. Our extensive knowledge and experience in areas such as deep drilling and completion technology, geology, rock mechanics and reservoir engineering make us your partner of choice for a wide range of underground projects and any drilling and reservoir engineering task.

LABORATORY ANALYTICS MADE TO MEASURE

High reliability and good reproducibility of lab results are essential for many projects. Our labs are designed for focused, efficient processing of sample material according to optimized routines, allowing us to deliver results our clients can depend on.
Depending on the material and the condition of the samples and the project requirements, we can also design customized work plans and laboratory routines to address specific questions.

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DEEP. KBB

LABORATORY ANALYTICS

SALT ROCK & BRINE

INNOVATIVE ENERGY STORAGE.

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BRINE AND WATER ANALYTICS

Solutions resulting from the dissolution of salts and salt rocks can be characterized in terms of their chemical composition by determining the main components sodium, potassium, calcium, magnesium, chlorine and sulfate. The analytical processing of high-salinity solutions requires special know-how to avoid problems caused by influencing factors such as matrix effects. Both in our laboratory in Bad Zwischenahn and in the laboratories at the operator sites, we determine the concentrations of the main components in salt solutions and waters using ion chromatography.

EXCELLENT EQUIPMENT

Combined with the long experience of our lab staff, our well-appointed laboratories deliver reliable analyses of:

- Product brines (rock salt, potash, and magnesium brines)
- Brine samples from salt caverns
- Fresh water for excavating salt caverns (groundwater, river water, seawater)
- Formation waters in salt or potash mines or boreholes
- Caving solutions/residual solutions from brine and process engineering processes
- Solutions obtained from dissolution tests

During the solution mining process, we make sure that the excavation progresses according to plan by continuously taking brine samples.
Solution equilibria and mineral-related saturation states are calculated using the latest thermodynamics-based technologies.

SALT ROCK ANALYTICS

Salt rock analysis provides information on the minerals contained in the rock structure. This information can be used to perform detailed stratigraphical analyses of the saline rocks and to identify areas that require special attention when excavating or operating a cavern.

WHAT AND HOW MUCH

Our labs create measurement solutions by dissolving salt rock. As with brine and water analytics, we use ion chromatography to determine the concentrations of the main components in the dissolved rock fraction.

We use the results to determine ion and unsoluble component content. If additional information on salt mineralogy is available, contents of individual minerals in the rock can be reliably quantified.

BROMIDE ANALYTICS

Determining the bromide content of halite in rock salt helps to interpret depositional conditions, for the detailed stratigraphic differentiation of saline units and for the reconstruction of tectonic-structural conditions in a salt deposit. Combined with other methods, bromide determination is used to optimally fit salt caverns into the geological situation.
We routinely determine bromide on salt rock samples using ion chromatography according to the highest quality standards. Our bromide expertise covers all important steps from obtaining suitable sample material to comprehensive interpretation of results for different project requirements.

GAINING VALUABLE DATA

The laboratory routine for bromide determination is the result of a large number of test series and test measurements. In this way we have developed an optimal sample preparation procedure as well as procedures for an accurate, reproducible and thus meaningful bromide analysis.
For cavern drilling, the use of the bromide method can reduce the time-consuming and cost-intensive extraction of drill cores to a minimum. By accelerating sample processing, it is possible to gain knowledge while drilling that will allow improvement of the drilling and testing program.