

# Geological Aspects of the Construction of Caverns in Salt

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## Abstract

The geological work involved in solution mining activities depends on the specific nature of each project. This presentation outlines a broad field of applications and activities and how they can be implemented and optimised.

After the initial *exploration* phase based on e.g. remote sensing methods or a gravimetric survey for a general determination of suitable structures, the second step is to establish the depths of the vertical boundaries of the salt body. The position and dimension of caverns within these geological limitations is related to its future purpose e.g. either as a gas storage cavern or for solution mining. *Solution mining* anomalies caused for example by carnallite can affect the development of a cavern ranging from an irregular cavern shape to leaching unacceptably close to adjacent caverns. Determining solubility is undertaken by correlating special dissolution tests with well logs and the associated definition of mineral paragenesis.

*Rock-mechanics* is applied to specify the pillar thickness between caverns, in order to minimise any interaction due to different pressure regimes during operations. In addition, other requirements can include minimum thicknesses for the underlying and overlying beds, safety distances to anomalies (anhydrite) and to the margins of the salt structure. In the case of gas caverns, the determination of the density profile of the cover rock has a major influence on the permissible pressure range and consequently the economic viability.

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