

*Breathe in deeply –
a benefit for
your health*



The technical process of grading droplets also allowed to manufacture table salt from water with a very low salt concentration of brine. The springs of Bad Kreuznach have a salt content of 10 grams per litre (1 to 2 %). However, the precipitation of salt isn't effected until 26 %. Therefore, it was necessary to increase the salt content in the water. To extract 1 kilogram of table salt, approx. 98 litres of water has to be removed from 100 litres of brine. The graduation works served this aim and also owed their names. They increased the salt content degree by degree. The procedure consisted of conveying the salty water from springs into the water wheel

drive to the graduation houses by pumping. From there, the brine tickles over the wall surfaces of blackthorns into catch trays at the foot of the graduation works. The tangle of thorns dissolves the tickle of water in countless drops. The brine water is taken by evaporation. In this way, the brine in catch trays has a higher salt content. A single grading is insufficient. Therefore, each of the graduation works is subdivided into seven sections (gradients). The water passes the gradients seven times. This process depends on the weather conditions. Cold and rainy weather conditions hamper the process. But warm temperatures and dryness with a high evaporation support it.



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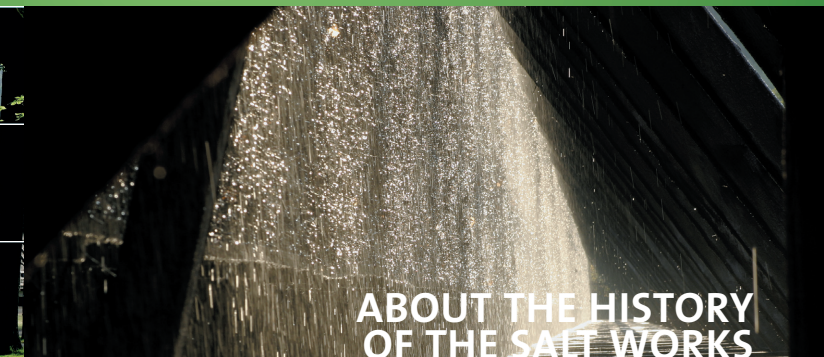
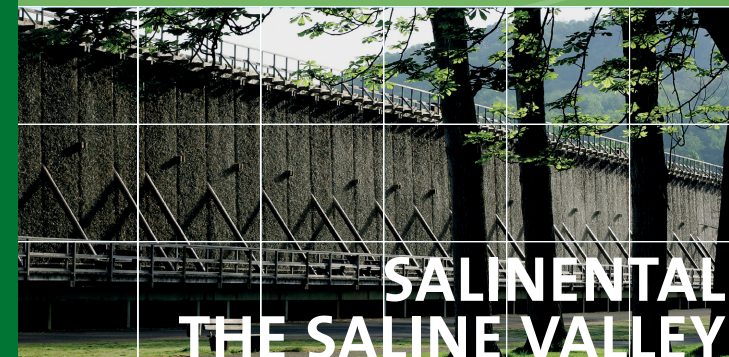


Experience **Salinental**

www.bad-kreuznach-tourist.de

*Experience the largest
open-air inhalation
treatment centre
of Europe*

The fresh salty breeze in Bad Kreuznach



The graduation works form the landscape of the Saline Valley. They are open-air inhalation treatment centres and monuments of the salt production history at the same time. The wooden constructions filled with blackthorns have a height of 9 m and a length of up to 400 m. The total length of the eight graduation works in the spa gardens and in the Saline Valley is 1.1 km. That is the largest landscape of graduation works and the largest sprinkling area in Europe. The local salty springs have already well-known in the antiquity. Since 1606, we have learned about the springs in Bad Kreuznach for the first time. However, the salt work Karlshalle wasn't constructed

until 1728. It was named after the former territorial lord Karl Philipp, the Elector of Palatinate. As from 1732, the first two graduation works were constructed. A further salt work the "Theodorshalle" was established in 1742 on behalf of the Elector Karl-Theodor. A large number of graduation works was created after that and a considerable part of them has been preserved. The salt works were salt factories: They consisted of a spring, pipelines, graduation works, water wheels, administration buildings and salt houses. Salt was produced for food and medical treatments from salt water over 170 years. The production wasn't stopped until 1999, due to new legal regulations.

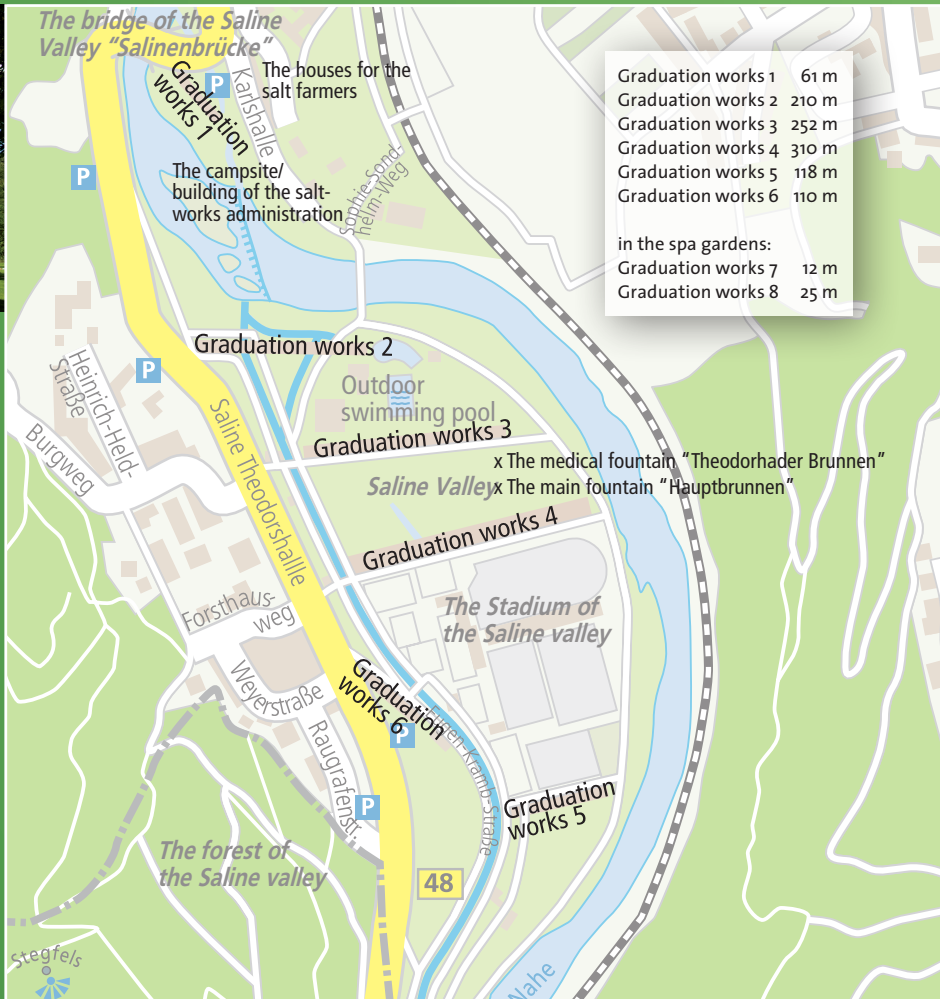
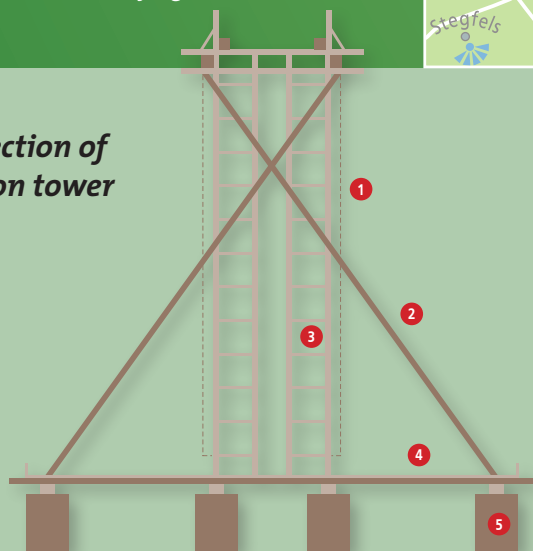
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leben.erleben.lebenswert.



THE PROCESS OF SALT MANUFACTURE

The ingredients of salt water were a major benefit for the graduation works in Bad Kreuznach: They locally contain no gypsum. Elsewhere, there are deposits on thorn walls. So it necessitates constantly renewing the brushwood. This has to be effected in Bad Kreuznach only every 13 years. After grading, the water has a salt content of between 14 % and 24 %. After that, it was brought to the boiling house, which no longer exists today. The brine was originally heated in vast salt pans. In a system of two pans, wood was used to heat at first and hard coal was used in the second step. After 1902, the first step was replaced by a multiple-evaporation system at high pressure. In the end, the salt crystallised up to 90 degrees Celsius in the salt pan with a length of 18 m and a width of 5.65 m. The salt was knocked down with a rake and filled in wicker baskets for drying.

The cross-section of a graduation tower



- 1 Thorn wall:** The brine which is at first pumped onto the top tickles down here. Only the site of a thorn wall on which the wind hits is sprayed all the time. Approx. 15 % of the passing brine is sprayed in aerosol form over the graduation works by the wind under favourable wind conditions.
- 2 Wind braces:** They run up to the upper beam and cross each other in the gap between the wooden frames.
- 3 Wooden frames:** They carry the upper part of the building. They are suitably, doubly constructed so that the longitudinal bracing can be placed in the gap which is not filled with any blackthorns.
- 4 Brine container:** Here the brine accumulates. One square metre of a blackthorn surface is sprayed by approx. 15 litres of brine per hour. The salts concentrate in the brine through evaporation of the water content and lately accumulate in the brine container.
- 5 Brine trough:** They are partly made in natural stone. They carry the construction.

The Salt Works and the Spa

If the medical practitioner Dr. Johann Erhard Peter Prieger hadn't worked, the graduation works would have already disappeared. In 1817, he discovered that the salty springs can be effectively used in the medical treatment of skin diseases. In the course of the following centuries, many other therapeutic indications were added. In this way, the spa area was developed as from 1820. From now on, the graduation works served to health: During the evaporation, the wind carries a part of the salt into the surrounding area. This actually undesirable side effect caused by production of salt was a great value for the spa: The salty air makes the graduation works to an open-air inhalation treatment centre. Furthermore, the salt production created an additional pro-

duct: an highly concentrated cocktail of minerals. It was used as an effective medical bath essence. In the course of the years, nine springs and fountains were discovered. The town put the last spring into operation in 1998 by a drill hole that entered into the porphyry cliff at a deep of 500 m. The spring is situated between the graduation works, (see map). With its high temperature of 30 degrees Celsius, it provides especially the thermal bath, the graduation works, the brine sprayer in the spa gardens and the clinic "Augusta Klinik". The brine was used for inhalation, course of treatment at a spa and mineral water cure. Finally in the end of the 80s, it was trunk in the pavilion of the Elisabeth Spring which was put into operation in the middle of the spa gardens in 1842.

Our recommendation: a guided tour around the Saline Valley

The Saline Valley combined the history of industry and spa with a magnificent landscape in a fascinating way. Experience this unique combination in Europe and learn the details about the salt works on a tour which is competently and diversified guided. Guided tours for groups can be booked at the tourist information in the house of the guests "im Haus des Gastes", Kurhausstraße 22-24. Information about open guided tours can be also obtained there.

Services	1 x guided tour around the Saline Valley bookable incl. lunch or dinner on request
Bookings	from April to October

HOTLINE FOR BOOKING AND INFORMATION
PHONE +49 671 836005-0

The Spa bath of Bad Kreuznach

The brine springs of Bad Kreuznach and Bad Münster am Stein-Ebernburg contain a numerous valuable mineral salts: The current analysis of spring detects a total of 17 elements. In addition of sodium, salt compounds like iodine, bromine and strontium salts as well as potassium characterise the springs. Rheumatic diseases, diseases of the airways, skin diseases and vascular diseases are alleviated by brine baths and brine inhalations.



A benefit for your health – Inhalations at the brine sprayer in the spa gardens & brine bath in the health centre of "Crucenia".

A positive health effect by bathing and inhalation with brine

The salt content of two percent of thermal brine has a passive stimulating effect on the whole body and helps to improve circulation at the same time in a gentle manner. The thermal brine has a purifying effect on skin. Water is taken from the cell tissue which has the effect of rinsing the tissue thoroughly and cleansing the skin softly. A plenty of vitalizing microparticles are in the salty air. The tiny water droplets in the air the so-called aerosol which are electrically charged naturally stimulate the circulation of the lungs and the transport of oxygen into your blood – an energy kick for each cell of the body.

