

Antoinette Rast-Eicher

Iron Age asbestos strings found in eastern Switzerland

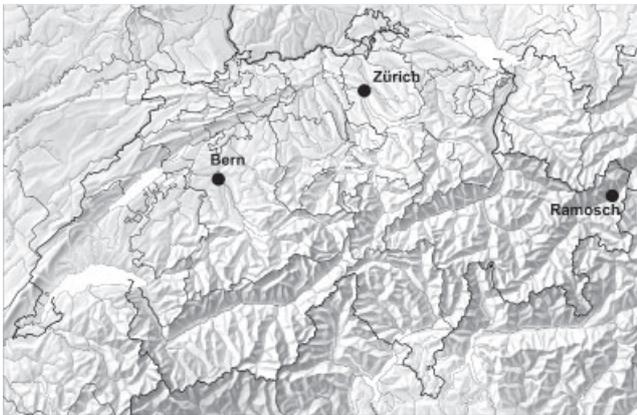


Fig. 1: Map of Switzerland (Image: Antoinette Rast-Eicher)

The first excavations of the site of Ramosch-Mottata in the Lower Engadin in eastern Switzerland were undertaken 70 years ago. In 2024 the site was published in its entirety. It is an important site in the valley, containing five phases dated to the Bronze- and Iron Age (16th century BCE to the fourth century BCE; fig. 1).

Strings were documented on five ceramic fragments. The ceramics are dated to the Early Iron Age and belong to the Laugen-Melaun culture, which is found in the Alps, in Tirol (Austria), Trentino (Italy) and in the Engadin (Switzerland) from around 1350 BCE to the sixth century BCE. These strings were analysed in 2023 (fig. 2).

The strings are all S-plyed and have a diameter of 2–3 millimetres and were fixed in holes in the rims of cooking pots. Two samples were taken to the SEM, and the result was quite astonishing: the fibres showed a smooth surface, and very fine fibrous parts were peeling off this surface (fig. 3). It looked like asbestos. But as the result was quite special,

and sinew not 100% excluded, and as such organic remains seemed quite improbable in this site, we decided to check the result with FTIR (Fourier Transform Infrared Spectroscopy). This analysis was carried out by Erwin Hildbrand of the Swiss National Museum. The FTIR spectroscopy showed the same curve for the samples of Ramosch-Mottata as a sample of chrysotile asbestos.

The village of Ramosch is situated close to an asbestos source in the Val S-charl, the so-called “window of the Engadin”, meaning that very low geological layers appear on the surface in this zone. Asbestos is linked to the green stone serpentinite. Contrary to the short needle-like grunerite and riebeckite asbestos, chrysotile asbestos builds fine and long fibres of 1–15 cm and is therefore spinnable. This fibre has



Fig. 2: Fragments of ceramic with strings (Image: Archäologischer Dienst Graubünden)

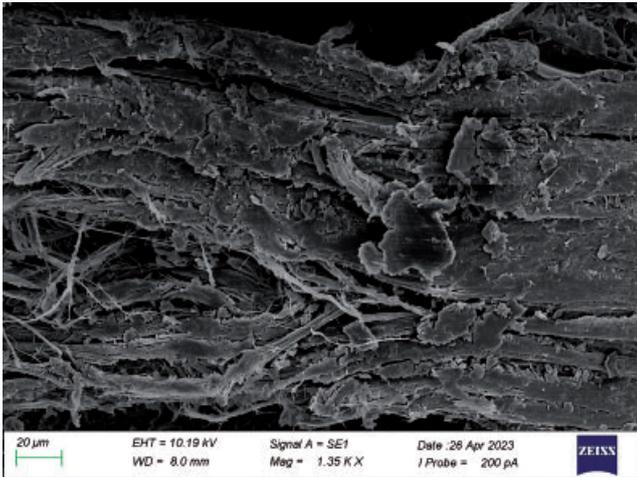


Fig. 3: SEM picture of a sample of Ramosch-Mottata (Image: Antoinette Rast-Eicher)

been known by many people around the world who have used it for several purposes since prehistoric times (Cameron 2000). According to the Greek writer Plutarch, the Greeks used asbestos for towels, nets, and women's head-coverings (Plutarch, *De defectu oraculorum*, 43). The Roman author Pliny the Elder records the use of this fibre for woven shrouds as "they don't burn and become white" (Pliny, *Natural History* XIX, 4). In Neolithic and Bronze Age Scandinavia, unspun asbestos fibres were added to ceramics to stabilise the paste/clay (Gerasimov et al. 2019; Kulkova et al. 2022; Børslid Hop 2016).

The strings found in Ramosch are the first proved processed asbestos fibres found in prehistoric central and western Europe. The strings were ideal for cooking pots, as these handles did not burn.

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