Online Supplementary Material 2. Analytical Methods

An Olympus SZX9 (OM) stereomicroscope was used for to obtain basic documentation of the artefact.

LA-ICP-MS was used to determine the chemical composition of the glass, including the content of trace elements, and the sample was measured in the form of a polished resin puck (a small fragment of glass was embedded in an epoxy resin block, ground and polished). Laser ablation was performed with an excimer laser operating at a wavelength of 193 nm (Analyte Excite, Teledyne Cetac). Each circular spot was 50 μm in diameter. At a repetition rate of 10 Hz, the average fluence was 4.24 J/cm^2. An elemental analysis was conducted using a high-resolution double-focusing sector field ICP-MS (Element 2, Thermo Fisher). The results are represented as an average of three ablated spots in the sample. The measurement process of each spot lasted 30 s, followed by the washing time of 25 s. Prior to the start of the sample measurement, a 15 s blank measurement was performed to identify the background signal of each element. As an external calibrant, NIST SRM 610 synthetic glass (*Jochum et al. 2011*) was employed. The accuracy and precision of the analysis was verified using NIST SRM 612 glass, and Corning Archaeological Reference Glass B (*Adlington 2017,* 5). Isotope ^{29}Si was applied as an internal standard for both resolutions. The time-resolved signal data were processed using the Glitter software (*van Achterbergh et al. 2001*) to select signal areas free of any other mineral/fluid inclusions and inhomogeneities, to subtract the background signal and to recalculate intensities to concentrations through the external and internal calibration.

The Raman spectroscopy method was applied to study opaque glass particles (the sample was again measured in the form of a polished resin puck). Raman spectra were measured with a Thermo Scientific Raman dispersive spectrometer - model DXR Microscope, equipped with an Olympus confocal microscope. The excitation source was a 532 nm Nd:YAG laser with an input power of 10 mW and utilising a grid of 900 notches/mm was utilized. As a detector, a multichannel thermoelectrically cooled CCD camera was used. The samples were measured at 50x magnification with a measurement footprint of approx. 1 μm^2 through the aperture of a 50 μm pinhole. Omnic 9 (Thermo Scientific) was used to process the spectra obtained.

From the set 8 objects made of copper alloys with applied enamel decoration were analysed. Micro-samples of metal material were taken from selected objects by drilling with an HSS spiral drill with a drill diameter of 0.5 mm. For selected artefacts, the corrosion layer was mechanically removed under an optical microscope with the help of a scalpel to reveal the metal surface. The final size of the exposed metal surface was always smaller than 0.5 mm. Tescan Vega 3 scanning electron microscope (SEM) with an Oxford Instruments INCA 350 LMU energy dispersive analyzer (SEM/EDS) was used to determine the elemental compositions of the alloys and the possible plating of artefacts.

Subsequently, surface mapping of surface enamel layer of fibula from Chotělice was determined by micro-ED-XRF (EDAX-Orbis PC with a Rh X-ray tube, acc. voltage 40 kV, sample on XYZ stage in a vacuum, polycapillary optics spot 30 μm, sensitivity Na-U). Samples were analysed in-situ, without any preparation or change, as the chamber of the instrument makes it possible to measure even larger samples. The Orbis device is equipped with X-ray polycapillary optics, which enable the production of a high intensity X-ray beam focused perpendicularly to surface to a small spot. Position of the spot (analysed position) is controlled and captured by two cameras, with low (wide view) and high magnification.

The design of the selected glass beads was investigated using computed micro-tomography scanning (micro-CT). Micro-CT scans were carried out at the laboratory of the Institute of Experimental and Applied Physics, CTU in Prague, using an in-house built scanner. The scanner was equipped with an X-ray tube Hamamatsu L12161-07 and a hybrid-pixel semiconductor detector WidePIX$_{2\times5}$. WidePIX devices are based on technology of hybrid-pixel photon-counting detectors Timepix developed within the scope of Medipix Collaboration at CERN. CT reconstructions and data visualisations were conducted with VG Studio MAX and ORS Dragonfly software, respectively.

van Achterbergh, E. – Ryan, C. G. – Jackson, S. E. – Griffin, W. L. 2001: Data reduction software for LA-ICP-MS. In: P. J. Sylvester (ed.), Laser ablation-ICP-MS in the Earth Sciences: Principles and applications. Ottawa: Mineralogical Association of Canada, 239–243.

Adlington, L. W. 2017: The Corning Archaeological Reference Glasses: New Values for “Old” Compositions. Papers from the Institute of Archaeology 27, 2. https://doi.org/10.5334/pia-515

Jochum, K. P. – Weis, U. – Stoll, B. – Kuzmin, D. – Yang, Q. – Raczek, I. – Jacob, D. E. – Stracke, A. – Birbaum, K. – Frick, D. A. – Günther, D. – Enzweiler, J. 2011: Determination of Reference Values for NIST SRM 610–617 Glasses Following ISO Guidelines. Geostandards and Geoanalytical Research 35, 397–429. https://doi.org/10.1111/j.1751-908X.2011.00120.x