Induction brazing is one of the most successful techniques for joining Beryllium (Be) armour tiles to CuCrZr heat sink material, used as High Heat Flux Components for ITER. In the early days of the development for Fusion, silver based brazes were used because of their appropriate liquidus and solidus temperatures and their wide application in different industrial fields. However, it is known that the use of silver containing brazes could have a negative impact on the vacuum systems in ITER because of the transmutation of silver into cadmium.

Copper (Cu) based brazes were produced in ribbons form using melt spinning technique. Several compositions in the Cu-Sn-In-Ni-Mn system were elaborated and characterized using Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD) and Differential Scanning Calorimetry (DSC).

All the ribbons obtained are microcrystallized. Foils are 8mm wide and their thickness is between 60 and 90 µm. Among the compositions studied, two were selected for Be/CuCrZr mock-ups brazing tests; their ribbons can be easily manipulated and their last transformations are close to 740°C. The results of the braze trials on the mock-ups are also reported here.