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MEASUREMENT OF BERYLLIUM CONCENTRATION ON THE SURFACE OF THE ITER FIRST WALL PANEL FULL-SCALE PROTOTYPE ^{*)}

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The first wall panels were planned to be faced with beryllium. In NIEFA, beryllium tiles are bonded to a CuCrZr substrate by induction brazing. Figure 1 shows a photo of the panel of the first wall.



Figure 1 – Full-scale Prototype after all the tests and controls

The article presents experimental results the concentration of beryllium contamination on the surface of the beryllium tiles after brazing and subsequent cleaning in an ultrasonic bath and after all heating and testing on the FSP.

Studies of beryllium concentration were also carried out on mock-ups after 25,000 cycles of thermal tests and 2 successive stages of ultrasonic cleaning. In addition, measurements of beryllium concentration on the surface of the mock-ups were carried out after 30,000 cycles of thermal tests.

The work was carried out within the framework of the contract between the Project Center ITER and the International Organization ITER No. IO/21/CT/4300002502 “Beryllium Smearing Analysis” dated 18.04.2022. The objective of the contract was to establish actual surface contamination values on First wall components following the planned manufacturing route. This would allow the ITER Organization to reassess the final acceptable levels of beryllium (class 1 B carcinogenic) surface contamination for the final series production FW panels and update the RPrS.

^{*)} [abstracts of this report in Russian](#)