

THE PROTOTYPE AND THE DELIVERABLES OF THE PROJECT

After receiving the results from the partner CETAL who performed the LIDT tests it was decided to present as prototype and official deliverables 2 mirrors with 150mm as effective diameter and 3 mirrors with 60mm as effective diameter (tab. 1). The 150mm dimensions were inspired from a procurement auction held by IFIN-HH for the ELI infrastructure. By coincidence, this effective diameter is the biggest that can be coated using our owned coating equipment. We mention that all deliverables are mounted in specially designed frames, made of aluminum alloy (fig. 1 and 2).

Table 1 – Summary presentation of the deliverables:

Item code	Effective diameter & thickness	Flatness	Coating	R[%] @ λ central	LIDT (tests made on witness plates) H0 / H50 @ 500P [J/cm ²] [Hx = x% damage probability]
Item No. 01	Φ_e 150mm g = 45mm	λ /16	HfO2 – SiO2 26 layers	99% @ 862 nm	H0 = 0.45 / H50 = 0.66
Item No. 02	Φ_e 150mm g = 55mm	λ /17	HfO2 – SiO2 26 layers	99% @ 800 nm	H0 = 0.45 / H50 = 0.66
REMI 1	Φ_e 60mm g = 20mm		HfO2 – SiO2 26 layers	99% @ 800 nm	H0 = 0.45 / H50 = 0.66
REMI 2	Φ_e 60mm g = 20mm		Mix of Ta2O5/ZrO2 – SiO2 24 layers	99% @ 835 nm	H0 = 0.42 / H50 = 0.55
REMI 3	Φ_e 60mm g = 20mm		HfO2 – SiO2 26 layers	99% @ 785 nm	H0 = 0.45 / H50 = 0.66

We mention that, besides of the deliverables were made many other mirrors with effective diameters from 60mm to 150mm. These mirrors were made using several combinations of coating materials such as HfO2 / SiO2; Ta2O5 / SiO2; (mix of ZrO2 and Ta2O5) / SiO2; (mix of Al2O3 and TiO2) / SiO2. Also these were measured and tested and tested, having properties comparable with the deliverables.



Fig.1 - 150mm effective diameter mirrors



Fig.2 – 60mm effective diameter mirrors