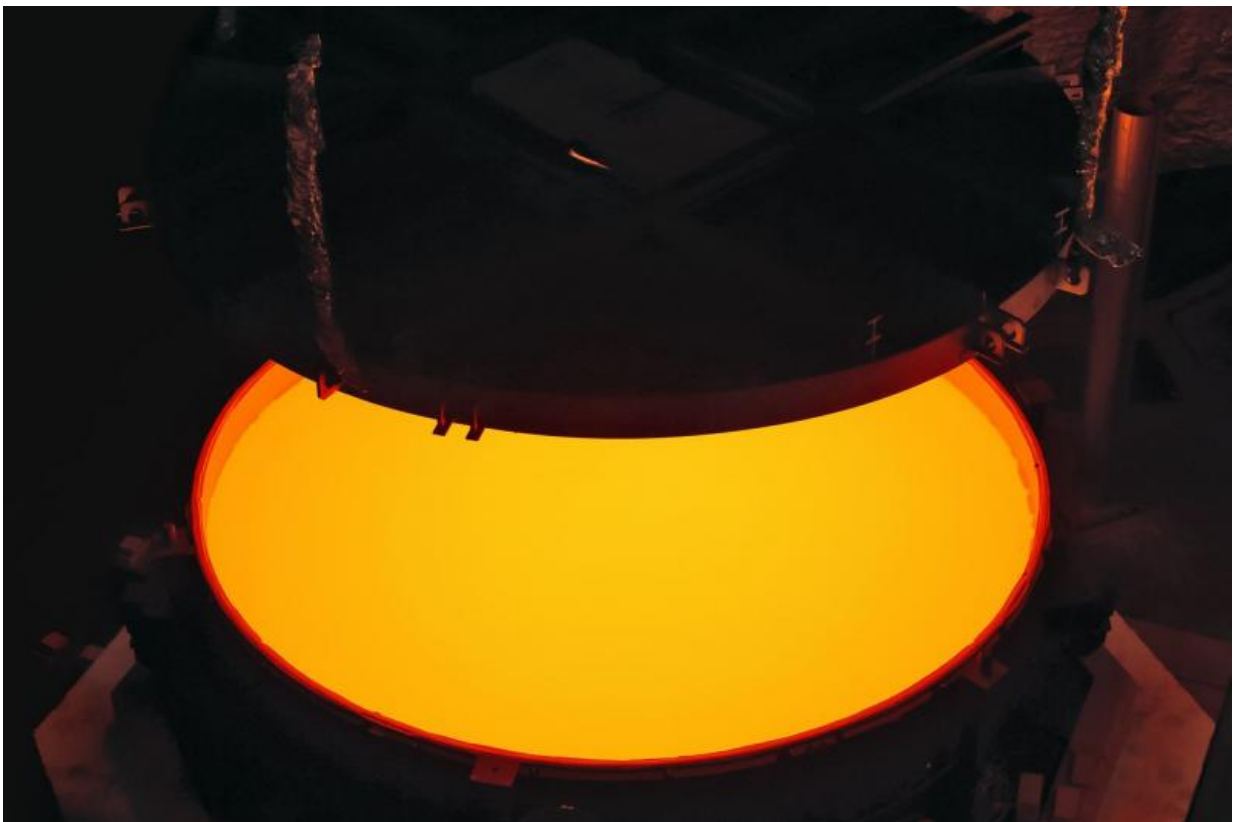


Secondary mirror of ELT successfully cast—largest convex mirror blank ever created

May 22 2017



Opening of the ELT M2 ZERODUR® blank mould containing the still very hot ZERODUR® glass at first annealing at the SCHOTT 4-metre blank annealing facility in Mainz, Germany in May 2017. The completed mirror will be 4.2 metres in diameter and weigh 3.5 tonnes. It will be the largest secondary mirror ever employed on a telescope and also the largest convex mirror ever produced. Credit: SCHOTT/ESO

The casting of the secondary mirror blank for ESO's Extremely Large Telescope (ELT) has been completed by SCHOTT at Mainz, Germany. The completed mirror will be 4.2 metres in diameter and weigh 3.5 tonnes. It will be the largest secondary mirror ever employed on a telescope and also the largest convex mirror ever produced.

ESO's 39-metre Extremely Large Telescope (ELT - www.eso.org/public/teles-instr/elt/) will be the largest telescope of its kind ever built when it achieves first light in 2024. A new milestone has now been reached with the casting of the telescope's secondary mirror (M2), which is larger than the [primary mirror](#) of many of today's research telescopes.

The mirror blank is the cast block of material—in this case Zerodur glass-ceramic—that will then be ground and polished to produce the finished mirror.

The blank of the secondary mirror now has to go through a slow cool-down, machining and heat treatment sequence over the next year. It will then be ready to be ground to precisely the right shape and polished. The French company Safran Reosc will carry this out, along with additional testing. The blank will be shaped and polished to a precision of 15 nanometres (15 millionths of a millimetre) across the entire optical surface.

When completed and installed, the M2 mirror will hang upside down above the [telescope's](#) huge primary mirror and forms the second element of the ELT's novel five-mirror optical system. The [mirror](#) is strongly curved and aspheric and is a major challenge to make and test.

Provided by ESO

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