

Sterilization Results

Ultracur3D® ST 1400

This document is intended to provide guidance for manufacturers regarding sterilization of the 3D printed materials. BASF3D Printing Solutions GmbH has performed specific sterilization tests for the materials 3D printed employing Ultracur3D® ST 1400. Indications on material changes that can occur during the sterilization process were studied. It remains the responsibility of the device manufacturers and/or end-users to determine the suitability of all printed parts for their respective application.

Material

Material
Ultracur3D® ST 1400

Print scene and Test Specimens

Three different test parts were chosen, to help determine the impact of the sterilization.

1. *Color disc* (Figure 1) to measure the color of the material before and after sterilization.
2. *Tensile Bars* (Figure 2) to check possible changes in mechanical properties.

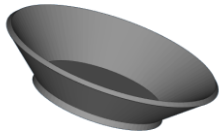


Figure 1 Color disc 2 mm



Figure 2 ASTM D638 Type IV – Tensile Bar

Overall, the following number of specimens were printed for each test:

- 10 Tensile Bars
- 3 Color disc

Steam Sterilization was performed internally.

Steam Sterilization

Table 1 Testing conditions Steam Sterilization

Steam Sterilization Parameters	Settings
Vacuum pulses	4
Temperature	134°C
Pressure	210 kPa
Holding time	4 minutes
Drying time	20 minutes

When exposed to steam sterilization, Ultracur3D® ST 1400 demonstrates a 11 % decrease in elongation at break and 24 % decreases in modulus. The samples also show a 23 % decrease in ultimate strength. The test specimens do not show significant color change post-sterilization.

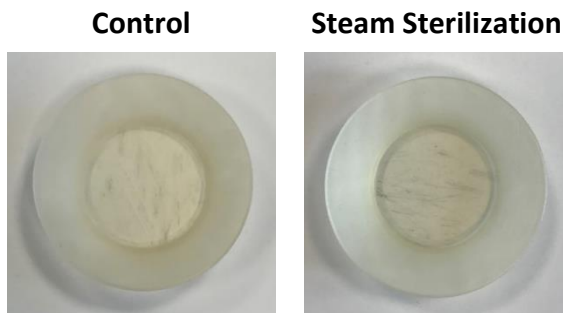


Figure 3 Color discs before and after Steam sterilization

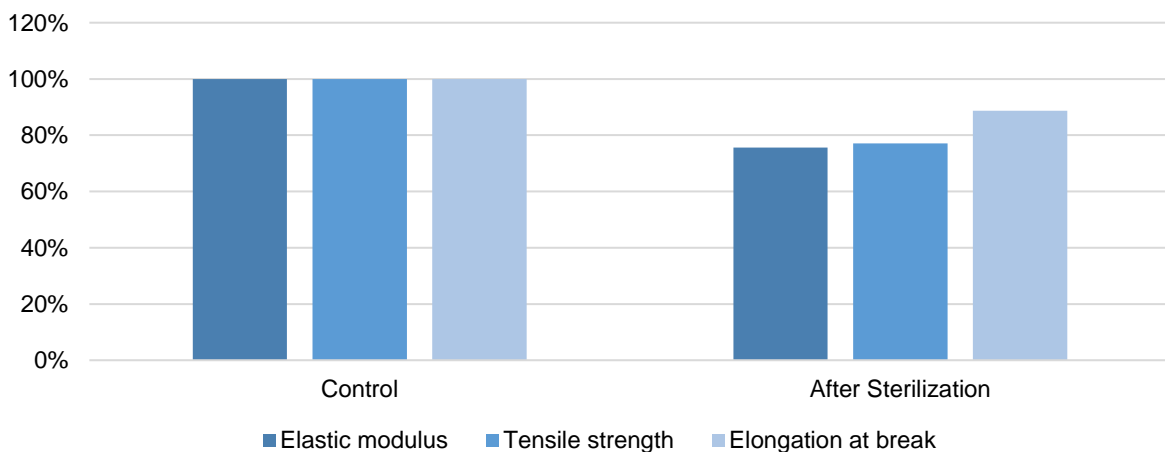


Figure 4 Tensile properties comparison of the Steam-treated samples

Steam sterilization is recommended for Ultracur3D® ST 1400 but the slightly effect on color performance and the stronger effect on mechanical properties and accuracy performance needed to be considered by the user.

Conclusion

The results of the performed tests show that **Ultracur3D® ST 1400** can be summarized in the table below.

Sterilization Method	Ultracur3D® ST 1400
Steam*	☺ recommended, but depends on the final application case

*Additional information available in a separate document on demand.

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