

Test report

Client: Hermann Fedra/hda Contractor: Brita
Pyttel/fbmk, hda

Order regarding: Tensile tests on additively manufactured plastic components

Test material: 4 additively manufactured plastic components, Figure 2 Testing
machine: Zwick/Roell Z250, calibrated, FBMK Materials Engineering Laboratory

Date Test specimen handover January 14, 2026
Test performed on January 29, 2026
Report: February 7, 2026

Initial condition and tests performed

A sketch of the plastic components delivered is shown in **Figure 1** on the left. The width at the thinnest point is approx. 22.4 mm and is marked with the middle yellow stripe, **Figure 2** center.

The installation condition of the components in the Z250 test machine is shown in **Figure 1** on the right. The components were clamped 50 mm from the bottom and 40 mm from the top, **Figure 1** on the left and yellow outer markings in **Figure 2** in the middle.

Tensile tests were performed on four plastic components in accordance with DIN EN ISO 527-1 (Plastics – Determination of tensile properties), and the force and crosshead travel were determined. The designation of the components can be found in **Table 1**.

Test results

The force-crosshead travel diagrams are shown in **Figure 3**, and the maximum force and fracture mode are shown in **Table 1**. **Figure 2** shows the plastic components after testing, with the front and rear sides compared to their initial state.

The individual values for force and crosshead travel are stored in the file "*Measurement values tensile test of additively manufactured plastic parts_Py.xlsx*."

Table 1: Designation of plastic components and further information

No	Designation	Thick ness in mm	Thinnest width point in mm	Maximum force F_{max} in N	Fracture type
3	BambuLab PLA	8.2	22.4	2,298	Brittle fracture in one place
4	Onyx(TM) Carbon CFF	7.9	22.4	13,801	Terrace break
5	PETG - CFC 1K	8.0	22.5	16,301	Terrace break
6	Fiberon PA6 CF20	8.0	22.6	1,863	Brittle fracture at one point

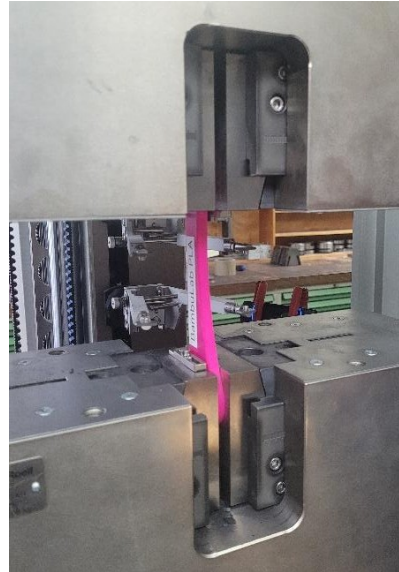
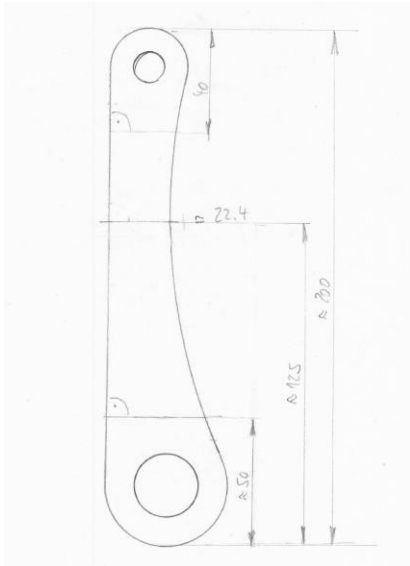


Figure 1: Sketch of the plastic components (left) with installation status in the Z250 tensile testing machine (right)



Figure 2: Plastic components in their initial state (left) and after the tensile test, front and rear (center, right)

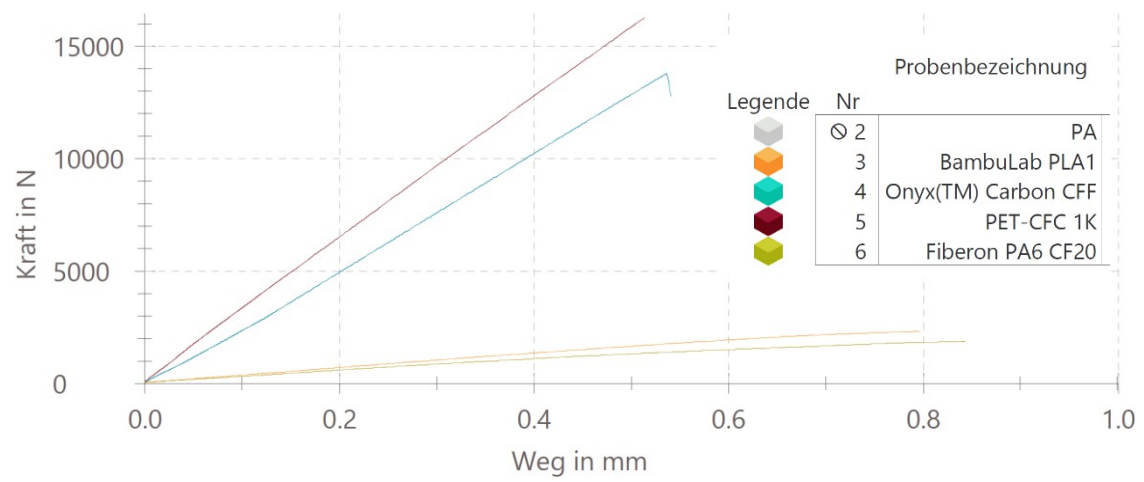


Figure 3: Force-crosshead displacement diagrams of the 4 plastic components