

APPLICATION REPORT

info@xsight.eu

www.xsight.eu

THREE-POINT FLEXURAL TEST OF POLYMER SPECIMEN

APPLICATION SPECIFICATION

Planar plastic specimens of printed PA 12 were measured with the X-Sight 3D-M12 DIC measuring system.

Initially, the X-Sight 3D system was positioned in front of the sample at the correct distance and calibrated using a corresponding calibration grid.

Because the surface of the specimen lacks a visible natural pattern, markings were necessary to secure optimal measuring conditions.

Data on the deflection of the sample were obtained. The value of flexural elastic modulus was determined from the test results. The test was performed according to EN ISO 178.



Flexural test set-up

The measuring system is also applicable to a four-point bending test.

There is also the possibility of setting up a stress-relaxation test to assess and quantify the viscoelastic phenomena typical for polymeric materials. The main advantage of the DIC technique is its universality stemming from use without physical contact with specimens, which can save time and material compared to other measuring methods (mechanical tensometer, classical strain gauge).

KEYWORDS

- Plastic specimen testing
- 3-point bend test
- Standard: ISO 178:2019
- Flexural elastic modulus
- 3D DIC measurement

TEST SETUP

- X-Sight 3D-M12 DIC system
- Alpha DIC SW Modules: Transversal Strain (T)
- Measuring tools:
 - Bend Line probe
- PA 12 planar specimen

Flexural elastic modulus

OUTPUT

Force-deflection curve

WHY CHOOSE X-SIGHT?

- Easily manageable calibrations
- Easy-to-use and intuitive software interface
- Real-time and post-process measurements
- Multi-probe measurement
- Suitable for strain control
- Outstanding customer support

MEASUREMENT PROCESS AND TOOLS

LINE PROBE

An elementary measuring probe for strain and length determination. Intelligent features allow for precise setup of gauge length and aligning the line probe according to the direction of a selected axis.



MEASUREMENT EVALUATION



The force-deflection curve was obtained.

Sample dimensions: $3.1 \times 13 \times 90.0$ mm

The value of flexural elastic modulus was determined from the test results, according to EN ISO 178:

E = 683 MPa