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STN	**Aditívna výroba kovov Skúšobné artefakty Vzorky na overenie stláčania pre mriežkový dizajn (ISO/ASTM 52959: 2026)**	**STN EN ISO/ASTM 52959** 18 8533

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Additive Manufacturing of metals - Test artefacts - Compression validation specimens for lattice designs (ISO/ASTM 52959:2026)

Fabrication additive de métaux - Pièces types d'essai - Éprouvettes de validation de compression pour les conceptions de treillis (ISO/ASTM 52959:2026)

Additive Fertigung von Metallen - Testartefakte - Kompressionsvalidierungscoupons für Gitterkonstruktionen (ISO/ASTM 52959:2026)

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European foreword

This document (EN ISO/ASTM 52959:2026) has been prepared by Technical Committee ISO/TC 261 "Additive manufacturing" in collaboration with Technical Committee CEN/TC 438 “Additive Manufacturing” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2026, and conflicting national standards shall be withdrawn at the latest by August 2026.

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International Standard

ISO/ASTM 52959

Additive manufacturing of metals — Test artefacts — Compression validation specimens for lattice designs

Fabrication additive de métaux — Pièces types d'essai — Éprouvettes de validation de compression pour les conceptions de treillis

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Foreword

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This document was prepared by Technical Committee ISO/TC 261, *Additive manufacturing*, in cooperation with ASTM Committee F42, *Additive Manufacturing Technologies*, on the basis of a partnership agreement between ISO and ASTM International with the aim to create a common set of ISO/ASTM standards on Additive Manufacturing, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 438, *Additive manufacturing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Introduction

Validation and verification activities to support the manufacture of components are critical quality requirements to ensure reliable production of consistent parts. Additive manufacturing (AM) offers the opportunity to seamlessly incorporate computationally designed, high resolution, lattice structures into components. On the other hand, AM systems can have different capabilities in terms of feature resolution, therefore impacting physical properties of lattice structures. In order to ensure quality requirements, there is a need to develop standardized lattice specimen geometries that can be used as surrogates in destructive evaluations. Specifically, components incorporating lattice structures can be placed under compressive loads. Since lattice designs, including, beam, gyroid or schwartz, can be unique to manufacturers, a standardized approach is needed to ensure that the lattice design is adequately represented and can be consistently assessed. This can allow for the evaluation of the compressive mechanical strength with adequate representation of the manufacturing of the lattice design.

This document provides the lattice compression specimen and other AM specific considerations for using the specimen per an existing compression test method like ASTM E9 or ISO 13314. Although ASTM E9 and ISO 13314 provide standard methods of compression testing for metallic materials, in this document specific considerations for lattice structures, such as the minimum number of unit cells, ductile and brittle material considerations, the option for building specimens with endplates, and differences between regular and non-regular lattices are included along with reporting requirements of AM build parameters.

International Standard **ISO/ASTM 52959:2026(en)**

Additive manufacturing of metals — Test artefacts — Compression validation specimens for lattice designs

1 Scope

This document specifies requirements and provides guidance for the preparation for axial force compression testing of additively manufactured (AM) metallic lattice specimens for validation purposes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/ASTM 52900, *Additive manufacturing — General principles — Fundamentals and vocabulary*

ISO/ASTM 52931, *Additive manufacturing of metals — Environment, health and safety — General principles for use of metallic materials*

ASTM E9, *Standard Test Methods of Compression Testing of Metallic Materials at Room Temperature*