DHF Impact and Actions Recommendation – ISO 10993-6:2026

Design History File (DHF) Impact Analysis

Gap Assessment: ISO 10993-6:2026 versus ISO 10993-6:2016
Document Type: Design History File (DHF) Impact Analysis
Standard Reference: ISO 10993-6:2026 – Biological evaluation of medical devices – Part 6: Tests for local effects after implantation
Date: August 4, 2026
Revision: 01

1. Executive Summary

ISO 10993-6:2026 preserves the core biocompatibility-testing intent of the 2016 edition but raises the control level across animal-study governance, sample characterization, control selection, absorbable-material evaluation, and reporting depth. The attached gap assessment identifies the principal DHF impacts as mandatory GLP enforcement for animal studies, expanded physical-property documentation for test samples, a new formal control-sample-selection requirement, broader degradation-standard references, extended and clarified absorbable-material test periods, stronger macroscopic/microscopic evaluation and tissue-retrieval detail, and more rigorous test-report content across the general clauses and Annexes A-D.

Key Impact Areas for DHF:

- Enforcement of Good Laboratory Practices (GLP) or recognized QA systems for all animal implantation studies.
- Expanded sample-preparation documentation covering density, porosity, texture, geometry, and multi-material coupon use.
- New formal control-sample-selection requirement tied to geometry, porosity, absorption rate, and reference-material justification.
- Broader animal-model, scaffold, and neuro-implantation provisions, including immune-deficient models and separation of test/control animals in neuro studies.
- Extended absorbable-material test periods and degradation-standard references (ISO 13781, ASTM F1635, ASTM F3268, ISO/TS 17137, ISO/TS 37137-1).
- Deeper macroscopic/microscopic evaluation, tissue-retrieval, and test-report requirements, including justification of scoring criteria and reporting deviations.

This document converts the attached ISO 10993-6:2026 versus 2016 comparison into a DHF impact-and-actions.

2. Key Changes Summary

2.1 GLP enforcement for animal implantation studies

Change: Clause 4.1 now requires that all animal studies be conducted under Good Laboratory Practices (GLP) or a recognized equivalent quality assurance system, whereas the 2016 edition allowed studies to be performed under good laboratory practice without the explicit GLP designation. Pilot implant studies retain some flexibility provided the facility maintains adequate controls, and the provisions extend across Annexes A-D.

DHF Impact:

- Animal-study protocols and facility-qualification records must demonstrate GLP compliance or an equivalent recognized QA system, not general good-practice adherence.
- Test-facility selection and audit records need explicit GLP-certification evidence traceable in the DHF.
- Pilot-study exceptions must be documented with clear rationale and facility-control evidence.

Recommended Actions:

Action	Timeline	Owner	Priority
Update animal-study SOPs and facility-qualification checklists to require GLP or equivalent QA-system evidence	3 weeks	Quality Systems / Test Facility Management	**Critical**
Audit current and planned test facilities for GLP certification status and gap closure	4 weeks	Supplier Quality / Regulatory	High
Document pilot-study exception criteria and facility-control justification templates	3 weeks	Quality Systems	Medium

2.2 Expanded sample-preparation and physical-property documentation

Change: Clause 4.2.1-4.2.2 expands sample-preparation requirements to record physical and geometrical properties (density, hardness, surface porosity, shape) affecting tissue response, and formally permits smaller coupons for complex or oversized devices that capture all tissue-contacting materials and finishes, including multi-material representative sampling. The 2016 edition required only compliance with ISO 10993-12 without detailing these specific properties.

DHF Impact:

- Sample-preparation records must capture density, hardness, porosity, and geometry data, not just ISO 10993-12 conformance statements.
- Multi-material and complex-device DHFs need coupon-based sampling rationale showing representative coverage of all tissue-contacting materials and finishes.
- Annex A-D cross-references must be traceable for sample-number and implantation-period guidance by device type.

Recommended Actions:

Action	Timeline	Owner	Priority
Update sample-preparation protocol and DHF template to capture density, hardness, porosity, and geometry data	4 weeks	Materials Engineering / Quality	**Critical**
Develop coupon-sampling rationale template for complex and multi-material devices	4 weeks	Design Engineering	High
Cross-reference sample-number and implantation-period guidance to Annexes A-D in study protocols	3 weeks	Quality Documentation	Medium

2.3 Scaffold materials and tissue-engineered products

Change: Clause 4.2.3 clarifies that implantation in an appropriate immune-deficient animal can be used as an option to avoid xenograft response for tissue-engineered scaffolds, and notes that products containing living cells are not classified as medical devices in all jurisdictions. The 2016 edition did not mention the immune-deficient animal option and used "and/or" for cells and proteins without this jurisdictional clarification.

DHF Impact:

- Risk files and animal-model selection records for scaffold-containing products should document the immune-deficient-model option and its scientific rationale.
- Regulatory classification files must reflect jurisdictional variability for living-cell-containing products.

Recommended Actions:

Action	Timeline	Owner	Priority
Update scaffold/tissue-engineered product risk files to include immune-deficient animal-model rationale	4 weeks	Risk Manager / Regulatory	High
Review regulatory classification records for living-cell-containing products across target jurisdictions	5 weeks	Regulatory Affairs	Medium

2.4 Composite and multicomponent material handling

Change: Clause 4.2.4 specifies that multicomponent-material devices must be mixed and allowed to set prior to implantation, whereas the 2016 clause referred to composite materials curing before implantation or polymerizing in situ without detailing the mixing/setting process.

DHF Impact:

- Study protocols for combination and multicomponent devices must document mixing and setting procedures prior to implantation as part of sample preparation.