

Sponsor:
Henkel Corporation
One Henkel Way
Rocky Hill, CT 06067

Date of Test Completion: February 2, 2011
Project Numbers: 10-1843
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ATTN: Colette Rich

**Certificate of Compliance
ISO 10993 Biological Tests**

Test Article Name: LOCTITE 4311
Bulk Number: 1392970
Batch Number: L30B000951

HEMOLYSIS (ISO) –

Toxikon Project 10-1843-G1: The purpose of this assay is to evaluate the hemolytic potential of the test article. Hemolytic activity of the test article with rabbit blood indicated that the test article was non-hemolytic (< 5%).

Reference: Biological Evaluation of Medical Devices – Part 4: Selection of Tests for Interactions with Blood, ISO 10993-4, 2002, as amended 2006.

ACUTE SYSTEMIC INJECTION (ISO) –

Toxikon Project 10-1843-G2: The purpose of this assay is to evaluate the test article extracts for potential toxic effects as a result of single dose systemic injection in mice. Test article extracted in saline, cottonseed oil, polyethylene glycol 400, and alcohol in saline did not produce a significantly greater biological reaction than blank extract when injected into mice. Additional extracts (PEG & Alcohol in Saline) were used to cover the requirements of United States Pharmacopeia 32, National Formulary 27, 2009; Monograph <88>: Biological Reactivity Tests, *In Vivo*. The test article did not show greater biological reactivity compared to the control material.

Reference: Biological Evaluation of Medical Devices – Part 11: Tests for Systemic Toxicity, ISO 10993-11:2006.

IN VITRO HEMOCOMPATIBILITY (ISO) –

Toxikon Project 10-1843-G3: The purpose of the In Vitro Hemocompatibility test is to determine the effect of the test article or its extract to adversely affect selected hematological parameters, including the complete blood count, platelets count, hematocrit, and erythrocytes indices. The test article extract did not have any adverse effects on any of the hematological parameters tested.

Reference: Biological Evaluation of Medical Devices – Part 4: Selection of Tests for Interactions with Blood, ISO 10993-4:2002, as amended 2006.

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PHYSICOCHEMICAL TEST (USP) –

Toxikon Project 10-1843-G4: This test determines some physical and chemical properties of extracts of the test article. The test article passes the USP Physicochemical Tests for plastics. These studies are in conformance to all applicable laws and regulations. Specific regulatory requirements include the current Good Laboratory Practice for Nonclinical Studies (GLP), FDA, 21 CFR, Part 58. *Reference: United States Pharmacopeia 32, National Formulary 27, 2009.*

MUSCLE IMPLANTATION TEST (ISO) –

Toxikon Project 10-1843-G5: The purpose of the implant test is to evaluate local toxicity from direct exposure to the test article. The test article is implanted in the paravertebral muscle tissue of New Zealand White rabbits for a period of two weeks. The results indicate that the test article does not demonstrate any remarkable difference as compared to the control implant sites in local tissue responses and the potential to induce local toxic effects. *Reference: Biological Evaluation of Medical Devices – Part 6: Tests for Local Effects After Implantation, ISO 10993-6: 2007.*

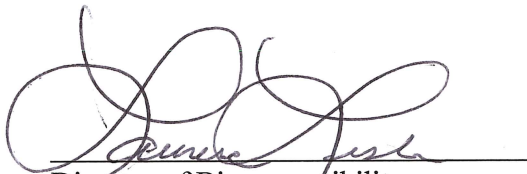
INTRACUTANEOUS INJECTION (ISO) –

Toxikon Project 10-1843-G6: The purpose of this test is to evaluate the irritation potential of the test article extracts in rabbits after intracutaneous injection. Test article extract in saline, cottonseed oil, polyethylene glycol 400, and alcohol in saline did not produce a significantly greater biological reaction than blank extract when injected intracutaneously into rabbits. Additional extracts (PEG & Alcohol in Saline) were used to cover the requirements of United States Pharmacopeia 32, National Formulary 27, 2009; Monograph <88>: Biological Reactivity Tests, *In Vivo*. The test article is not considered an irritant and passes the criteria set fourth by the protocol *Reference: Biological Evaluation of Medical Devices – Part 10: Test for Irritation and Delayed-Type Hypersensitivity, ISO 10993-10, 2002, as amended 2006.*

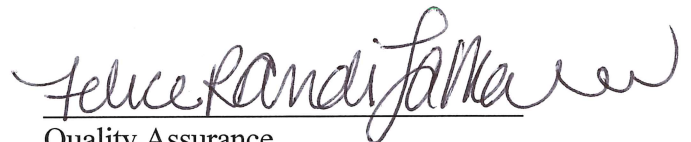
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L929 MEM ELUTION CYTOTOXICITY (ISO) –

Toxikon Project 10-1843-G7: The purpose of the MEM Elution is to determine biological reactivity of the mammalian cell culture (L929) in response to the test article extract via microscopic observation. The test article is considered non-cytotoxic at the 1:4 and 1:8 dilutions and meets the requirements of the MEM Elution Test, ISO 10993-5. *Reference: Biological Evaluation of Medical Devices – Part 5: Tests for In Vitro Cytotoxicity, ISO 10993-5:2009.*



Director of Biocompatibility



Quality Assurance

Date of Certificate: October 4, 2017