CAVIWIPES and CAVIWIPES XL

Technical Bulletin

CaviWipes and CaviWipes XL Disinfecting Towelettes are non-woven disposable towelettes pre-saturated with CaviCide. CaviWipes and CaviWipes XL are intended for use in health care settings such as hospitals, laboratories, clinics, dental offices, ophthalmic offices and veterinary facilities. CaviWipes and CaviWipes XL are effective against the following microorganisms on hard, non-porous surfaces when used as directed:

	Kill Time (Required contact time as indicated on the product label)
Mycobacterium bovis BCG	3 minutes
Pseudomonas aeruginosa	3 minutes
Salmonella enterica	3 minutes
Staphylococcus aureus	3 minutes
Trichophyton mentagrophytes	3 minutes
Methicillin Resistant *Staphylococcus aureus* (MRSA)	2 minutes
Staphylococcus aureus with Reduced Susceptibility to Vancomycin	2 minutes
Vancomycin Resistant *Enterococcus faecalis* (VRE)	2 minutes
Hepatitis B Virus (HBV)	2 minutes
Hepatitis C Virus (HCV)	2 minutes
Herpes Simplex Virus Type 1	2 minutes
Herpes Simplex Virus Type 2	2 minutes
Human Immunodeficiency Virus (HIV-1)	2 minutes
Influenza A2 Virus	2 minutes

Tuberculocidal Efficacy Studies:

Mycobacterium bovis BCG

"Testing Pre-Saturated or Impregnated Towelettes for Tuberculocidal Effectiveness" Microbiotest, Inc. April 21, 2006. Lab ID # 198-350.
Conclusion: When tested as described CaviWipes/CaviWipes XL passed the Testing Pre-Saturated or Impregnated Towelettes for Tuberculocidal Effectiveness test when *M. bovis* was exposed to the test agent as described in the test conditions section for 3 minutes at 20±2°C.

Bactericidal Efficacy Studies:

Staphylococcus aureus
Pseudomonas aeruginosa
Salmonella enterica
Staphylococcus aureus with Reduced Susceptibility to Vancomycin

"Testing Pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection"
Microbiotest, Inc. May 28, 1999. Lab ID # 198-143.
Conclusion: When tested as described, against *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Salmonella enterica*, and with a contact time of three minutes, CaviWipes/CaviWipes XL meet the EPA established criteria for an effective pre-saturated or impregnated towelette for hard surface disinfection.

"Testing Pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection"
Microbiotest, Inc. April 21, 2006. Lab ID # 198-358.
Conclusion: When tested as described, CaviWipes/CaviWipes XL passed the Testing pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection Test when *Staphylococcus aureus* with Reduced Susceptibility to Vancomycin was exposed to CaviWipes/CaviWipes XL for 2 minutes at 20±1°C.

Virucidal Efficacy Studies:

Hepatitis B Virus (HBV)
Hepatitis C Virus (HCV)
Influenza A2 Virus

"Pre-Saturated or Impregnated Towelette Virucidal Effectiveness Test using Bovine Diarrhea Virus (BVDV) (Surrogate for Human Hepatitis C Virus)"
Microbiotest, Inc. February 8, 2006. Lab ID # 198-354.
Conclusion: CaviWipes/CaviWipes XL passed the Pre-Saturated or Impregnated Towelette Virucidal effectiveness test when Bovine Diarrhea Virus (BVDV), as a surrogate for Human Hepatitis C virus, containing at least 5% organic soil, was exposed to CaviWipes/CaviWipes XL for 1 minute at 20±2°C.

"Pre-Saturated or Impregnated Towelette Virucidal Effectiveness Test Influenza A2 Virus"
Microbiotest, Inc. January 27, 2006. Lab ID # 198-352.
Conclusion: CaviWipes and CaviWipes XL passed the Pre-Saturated or Impregnated Towelette Virucidal effectiveness test when Influenza A2 Virus was exposed to CaviWipes/CaviWipes XL for 30 Seconds at 20±2°C.

"Pre-Saturated or Impregnated Towelette Virucidal Effectiveness Test using Duck Hepatitis B Virus"
Microbiotest, Inc. March 29, 2006. Lab ID # 198-353.
Conclusion: CaviWipes and CaviWipes XL passed the Pre-Saturated or Impregnated Towelette Virucidal effectiveness test when Duck Hepatitis B Virus was exposed to CaviWipes/CaviWipes XL for 2 minutes at 20±2°C.

The following Bactericidal, Fungicidal, Virucidal and Toxicity studies were performed on CaviCide Surface Disinfectant/Decontaminant Cleaner. Due to the similarity between CaviWipes, CaviWipes XL and CaviCide, the results of these studies are bridged to support the CaviWipes/CaviWipes XL product claims.

Bactericidal Efficacy

Trichophyton mentagrophytes
Methicillin Resistant *Staphylococcus aureus* (MRSA)
Vancomycin Resistant *Enterococcus faecalis* (VRE)

"Fungicidal Activity of CaviCide in a Stainless Steel Cylinder Use-Dilution Test and in Suspension"
MicroChem Laboratory. January 24, 1994. Lab ID# 931230-1; 940104-1; 940106-1; 940110-2; 940112-4; 940114-2.
Conclusion: CaviCide killed *Trichophyton mentagrophytes* in suspension within 30 seconds at 20±1°C. CaviCide also killed these fungi on stainless steel surfaces within 1 minute at 20±1°C.

"CaviCide versus Methicillin Resistant *Staphylococcus aureus* (MRSA) in the AOAC Germicidal Spray Products Test"
MicroChem Laboratory. April 19, 1995. Lab ID# 950406-1.
Conclusion: Two lots of CaviCide diluted to the minimum manufacturing concentrations of Isopropanol and Hyamine 1622 passed the AOAC Germicidal Spray Products Test against MRSA in 2 minutes at 20±1°C.

"CaviCide versus Vancomycin Resistant *Enterococcus faecalis* (VRE) in the AOAC Germicidal Spray Products Test"
MicroChem Laboratory. April 19, 1995. Lab ID# 950406-1.
Conclusion: Two lots of CaviCide diluted to the minimum manufacturing concentrations of Isopropanol and Hyamine 1622 passed the AOAC Germicidal Spray Products Test against VRE in 2 minutes at 20±1°C.

Virucidal Studies

Herpes Simplex Virus Type 1
Herpes Simplex Virus Type 2
Human Immunodeficiency Virus (HIV-1)

"CaviCide v. Herpes Simplex Virus Type 1" (Liquid)
Gibraltar Biological Laboratories, Inc. July 31, 1984. Lab ID# 279-161-1056.
Conclusion: CaviCide inactivated Herpes Simplex Virus Type 1 at 30 seconds.

"CaviCide v. Herpes Simplex Virus Type 2" (Liquid)
Gibraltar Biological Laboratories, Inc. July 31, 1984. Lab ID# 276-161-1044.
Conclusion: CaviCide inactivated Herpes Simplex Virus Type 2 at 30 seconds.

"Virucidal Efficacy of CaviCide Against the Human Immunodeficiency Virus (HIV-1)"
Southern Research Institute. July 14, 1992. Lab ID# 0051.
Conclusion: CaviCide demonstrated virucidal activity against HIV-1 in a CPE assay with MT-2 cells during a 2 minute exposure period.

Toxicity Studies

Oral Toxicity
Inhalation Toxicity
Dermal Toxicity/Irritation/Sensitization
Ocular Irritation

"Acute Oral Toxicity Study of CaviCide in Sprague-Dawley Rats"
American Standards Biosciences Corporation. May 23, 1986. Lab ID# 86-367.
Conclusion: CaviCide was tested for potential acute oral toxicity in accordance with the procedure outlined in the Pesticide Assessment Guidelines. No signs of toxicity were exhibited at any time during the 14-day observation period of this study. Based on the results obtained in this study, the acute oral toxicity LD_{50} of CaviCide is greater than 5g/kg of body weight.

"Acute Inhalation Toxicity Limit Test: CaviCide"
Product Safety Labs. May 20, 1996. Lab ID# 4244.
Conclusion: An Acute Inhalation Toxicity Test was conducted with rats to determine the potential for CaviCide to produce toxicity via the inhalation route at an exposure level of 2.0 mg/L. Based on the results of this study, the single exposure Acute Inhalation LC_{50} of the test substance is greater than 2.08 mg/L.

"Acute Dermal Toxicity Study of CaviCide on New Zealand Albino Rabbits"
American Standards Biosciences Corporation. June 6, 1986. Lab ID# 86-368.
Conclusion: CaviCide was tested to evaluate the potential dermal toxicity on New Zealand Rabbits. The animals did not exhibit any signs of toxicity during the 14-day observation period. Skin reactions did not reveal any erythema, eschar or edema. Based on the results obtained in this study, the LD_{50} is greater than 2.0 g/kg of body weight.

"Primary Dermal Irritation in Rabbits: CaviCide"
American Standards Biosciences Corporation. September 18, 1986. Lab ID# 86-591.
Conclusion: CaviCide was tested for potential dermal irritation in accordance with the procedure outlined in the Pesticide Assessment Guidelines. CaviCide exhibited no erythema, no edema and no eschar at 1, 24, 48 and 72 hour intervals during the observation period. Based on the results obtained in this study, CaviCide is not considered an irritant.

"Dermal Sensitization Test: CaviCide"
Product Safety Labs. May 20, 1996. Lab ID# 4243.
Conclusion: A dermal sensitization test was conducted with guinea pigs to determine the potential for CaviCide to produce sensitization after repeated topical applications. Based on the results of this study, CaviCide is not considered to be a contact sensitizer.

"Primary Eye Mucosa Irritation in Rabbits: CaviCide"
American Standards Biosciences Corporation. September 25, 1986. Lab ID# 86-590.
Conclusion: New Zealand Albino Rabbits weighing between 2.0-3.0 kg were employed to evaluate the potential irritant effects of CaviCide on the eye mucosa. Based on the criteria outlined in Grades for Ocular Lesions: Pesticide Assessment Guidelines, CaviCide exhibited positive effects that were reversible.

Stability Studies

"Metrex Stability Study- Summary Report CaviWipes XL Towelette"
Metrex Research Corporation. December 8, 2006 Lab ID# M2001
Conclusion: All data were within specification at all test intervals. This information substantiates the 2-year shelf-life established for CaviWipes XL.

"Metrex Stability Study- Summary Report CaviWipes Towelettes"
Metrex Research Corporation. August 16, 2005 Lab ID# M2001
Conclusion: All data were within specification at all test intervals. This information substantiates the 2-year shelf-life established for CaviWipes.

"CaviWipes Product Chemistry and Storage Stability Data"
Metrex Research Corporation. June 11, 1999 Lab ID# M2001.
Conclusion: All parameters were found to be within specification at 11.1 months at 40°C. The data justifies expiration dating of 2 years.