



Catania, 02/03/2017

Spett.le SportWeb srl  
Via Martiri della Libertà, 54C  
Ospitaletto (Bs)

**University of Catania - Department of Agriculture, Food and Environment.  
(Di3A)**

Subject: final report of the Lavailcampo-Di3A contract

The undersigned Mrs. Cinzia Randazzo, associate professor at the Department of Agriculture, Food and Environment, of the University of Catania, chief of the Microbiological Laboratory of Foods, confirms that on 28/09/2016 the contract was signed, in third party with the company SALUTE IN CAMPO srl (limited company) and the University of Catania through the Department of Agriculture, Food and Environment. This contract provided the "Study of the bactericidal effect of alkaline detergents in synthetic grass sports facilities". The research activities concerned the preliminary estimate of the degree of contamination of the sports fields studied and the evaluation of the bactericidal effect of Lavailcampo detergent, **made by Chimiver Panseri Spa for SportWeb srl**. The product is classified as an alkaline bactericidal and fungicidal concentrate based on 2-butoxyethanol, 2-propanol and 3-iodo-propynyl butylcarbamate, not classified as dangerous according to the provisions of Regulation (EC) 1272/2008 (CLP), as reported in the technical specifications.

Research activities have provided microbiological analysis at four different synthetic grass sports facilities, located in the province of Catania. The samplings, on different points of the grassy field, was carried out in three phases: first, to evaluate the degree of microbial contamination; then, immediately after the treatment with the Lavailcampo detergent;

finally, after one month of treatment. In order to optimize the sanitization process, different detergent concentrations (20% and 40%) as well as different contact times (5, 10 and 20 min), were taken into account. Microbiological analyzes provided the use of selective and non selective cultivation grounds, such as: Kanamycin Aesculin Azide Agar for enterococci count; Mannitol Salt Agar, for the count of positive and negative coagulase staphylococci; Plate Count Agar, for the total aerobic mesophilic charge count; MacConkey Agar Mug, per *Escherichia coli*; Pseudomonas Agar Base, per *Pseudomonas* spp. Subsequently, confirmatory tests were carried out on the insulates to identifying at species level. The results are shown in Table 1.

**Table 1:** microbiological analyzes carried out on synthetic grass mantle samples. The values are expressed in colonies forming units (ufc) / square centimeter (cm<sup>2</sup>) of sample.

Microbial counts	Samples								
	PT	Treatment at 40%				Treatment at 20%			
		5'	10'	20'	30 gg	5'	10'	20'	30 gg
Total aerobic mesophilic charge	1,90 x 10 <sup>4</sup>	3,2 x 10 <sup>2</sup>	<1	<1	<1	9,10 x 10 <sup>3</sup>	4,0 x 10 <sup>1</sup>	<1	<1
Staphylococci	4,2 x 10 <sup>3</sup>	6,0 x 10 <sup>2</sup>	<1	<1	<1	3,1 x 10 <sup>3</sup>	1,5 x 10 <sup>1</sup>	<1	<1
Enterococci	3,8 x 10 <sup>2</sup>	2,6 x 10 <sup>2</sup>	<1	<1	<1	2,8 x 10 <sup>2</sup>	<1	<1	<1
<i>Pseudomonas</i> spp	6,3 x 10 <sup>3</sup>	8,1 x 10 <sup>2</sup>	5,4 x 10 <sup>1</sup>	<1	<1	7,5 x 10 <sup>2</sup>	1,3 x 10 <sup>1</sup>	<1	<1
<i>E. coli</i>	1,0 x 10 <sup>2</sup>	9,0 x 10 <sup>1</sup>	<1	<1	<1	9,6 x 10 <sup>2</sup>	<1	<1	<1

PT: pre-treatment;

The results of microbial counts before the treatment with the Lavailcampo (PT) detergent showed a total microbial charge of about 20.000 colony forming units (ufc)/cm<sup>2</sup>, presence of staphylococci, equivalent to more than 4,000ufc/cm<sup>2</sup> and presence of *Escherichia coli* equal to 100 ufc/cm<sup>2</sup>, *Pseudomonas* spp even beyond 6000 ufc/cm<sup>2</sup>, and enterococchi equal to 400 ufc/ cm<sup>2</sup>.

Lavailcampo detergent treatment at 40% concentration proved to be very effective by reducing the cell density of all the microbial target groups after 10 minutes of contact with



the grassy field. The treatment at 20% caused a significant reduction in the initial microbial charge after 10 minutes contact with the grassy field and after 20 min contact, a strong total reduction of all the considered microbial groups. Overall, a reduction of 3-4 log units was recorded for mesophilic total aerobic charge, about 2-3 logs for staphylococci and for Pseudomonas, and 2 log for E. coli and for enterococci.

Microbiological analyzes were repeated for both treatments (40% and 20%), after 30 days of grassy field cleansing. The results showed the persistence of the detergent effect, watching how the microbial charges remained below the sensitivity limit of the method ( $<1$  ufc/100 cm<sup>2</sup>).

This study is the first investigation of both the synthetic grass field contamination and the bactericidal effect of alkaline detergents. This research activity has highlighted the efficacy of the Lavailcampo detergent in disinfection of synthetic grass fields as an effective solution to ensure the hygienic quality of sports facilities to protect the health of the users.

Laboratory Chief

Prof. Mrs. Cinzia Randazzo