

## **EVALUATION OF VACUUM LEAKAGE CONDITION OF MEAT PRODUCTS PRODUCED AT KEELLS FOOD PLC - EKALA, JA-ELA**

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Leaks in food packages may result in the ingress of gases, microorganisms or contaminants. Keells Food Products PLC is experiencing a large number of returns due to the vacuum leaks. Hence, this study was conducted to evaluate the present circumstances of the company regarding vacuum leakages in their meat products. It was found that packages of sausages and meatballs are mostly returned to the company. Further, these returns were from two distribution channels that are supplying the products to supermarkets and to retail shops through modern and general channels, respectively. Dispatched level data of mostly returned products (250 g, 450 g, 500 g of sausages and 200 g, 500 g of meatballs packages) were collected over a five day period. Bubble test was carried out for 900 returned samples of above products from both distribution channels. Thickness of the bottom and top reels of 250 returned samples were measured by using a gauge meter. The factory introduced a new packaging material and return data were collected. It was revealed that, at the dispatch level all products had similar number of leaks. Further, average number of micro holes ( $39.7 \pm 7.1$ ) and macro holes ( $38 \pm 6.4$ ) were significantly high ( $p < 0.05$ ) in the modern channel while significantly ( $p < 0.05$ ) higher number of micro holes ( $45 \pm 4.4$ ) were reported in the general channel. Significantly higher ( $p < 0.05$ ) number of leaks were observed at the bottom reel ( $89.8 \pm 7.41\%$ ). There was a significant ( $p < 0.05$ ) negative correlation ( $r = -0.702$ ) between the gauge of the packing material and the number of leaks. Further, number of returns were decreased ( $p < 0.05$ ) significantly by introducing a new packaging material with higher gauge ( $180 \pm 10.8 \mu\text{m}$ ). Hence, it is possible to lower the incidences of leakages at the factory by increasing the thickness of the packaging material.

**Keywords:** Thickness, Vacuum leaks, Vacuum packaging