



## **Dry Lube conveyor lube H1\* Report**

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### **Introduction/Conclusions**

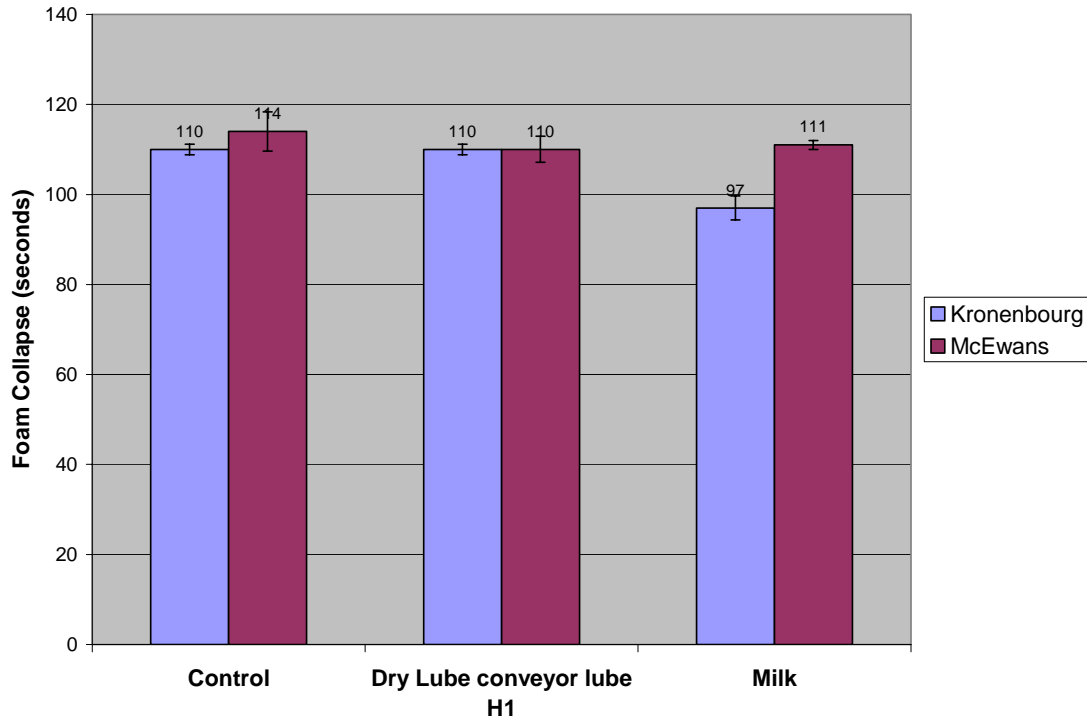
At the request of Dry Lube, Heriot Watt University IBCD carried out tests to establish the impact of Dry Lube's conveyor lube H1 oil on Beer Foam Stability. These tests were performed using both the Rudin method and a visual assessment. The results demonstrated that Dry Lube conveyor lube H1 in a glass of either Kronenbourg lager or McEwans beer did not have a negative impact on beer foam stability.

### **Results and Discussion**

Beer foam is sensitive to low levels of lipids and oils. Milk contains lipids which makes it suitable to simulate a constituent that would have a negative impact on foam quality. The results of the control, Dry Lube conveyor lube H1, and milk prepared samples are compared to determine if Dry Lube conveyor lube H1 has a detrimental effect on head retention.

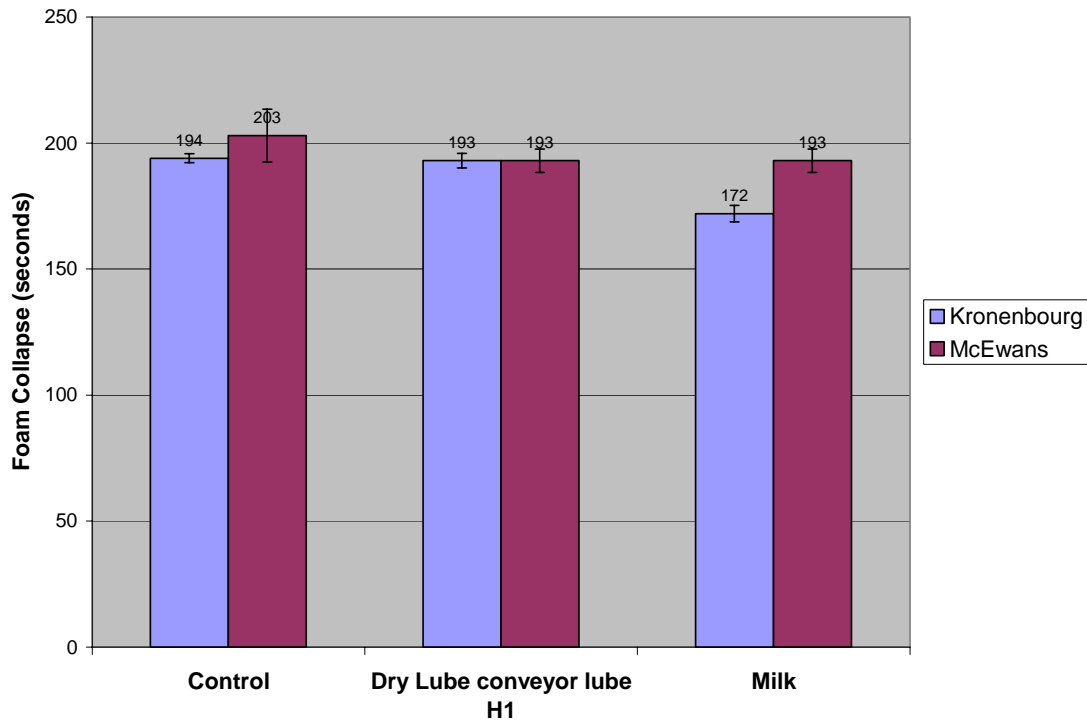
Beer is poured into glasses with a known substance. The beer is allowed to degas and then purged with carbon dioxide under standard conditions. The foam collapse rate is measured by the time taken for the liquid/foam interface to traverse two fixed marks on the foam chamber. This method is suitable for all bright beer. The objective of the experiment is to determine if Dry Lube conveyor lube H1 negatively impacts beer foam stability.

**\*Note:** “Dry Lube conveyor lube H1” is a product of Dry Lube Limited, Units 1 & 2, Wren Court, Strathclyde Business Park, Bellshill, Lanarkshire, Scotland. ML4 3NQ.



**Figure 1.** Foam collapse rate at 50mm.

At 50mm (Figure 1), the foam collapse rate for the Kronenbourg control and Dry Lube conveyor lube H1 are both 110s and for the milk solution 97s, or 12% decrease. The foam collapse rate for the McEwans control is 114s, for Dry Lube conveyor lube H1 is 110s, and for the milk solution is 111s.



**Figure 2.** Foam collapse rate at 75mm.

At 75mm (Figure 2), the foam collapse rate for Kronenbourg control is 194s, for Dry Lube conveyor lube H1 is 193s and for the milk solution is 172s, or 11% decrease, from both the control and Dry Lube conveyor lube H1 rate. The foam collapse rate for the McEwans control is 213s, for Dry Lube conveyor H1 is 193s, and for the milk solution is 193s, which are statistically similar.

### Visual Assessment

A visual assessment of foam stability for Kronenbourg (Figures 3-6) and McEwans (Figures 7-11) is depicted below. Three beer cans were fastened together in order to replicate a standard pour. Glasses were designated as control, Dry Lube conveyor lube H1, and milk. The appropriated substance was introduced to the glass. Photos were taken at time intervals after the pour.



**Figure 3.** Kronenbourg, 0 minute after pour.



**Figure 4.** Kronenbourg, 1.5 minute after pour.



**Figure 5.** Kronenbourg, 2.5 minute after pour.



**Figure 6.** Kronenbourg, 3.5 minute after pour.



**Figure 7.** McEwans, 0 minute after pour.



**Figure 8.** McEwans, 1.5 minute after pour.



**Figure 9.** McEwans, 2.5 minute after pour.



**Figure 10.** McEwans, 3.5 minute after pour.



**Figure 11.** McEwans, 4.5 minute after pour.

## **Analytical Method**

### **Reagents**

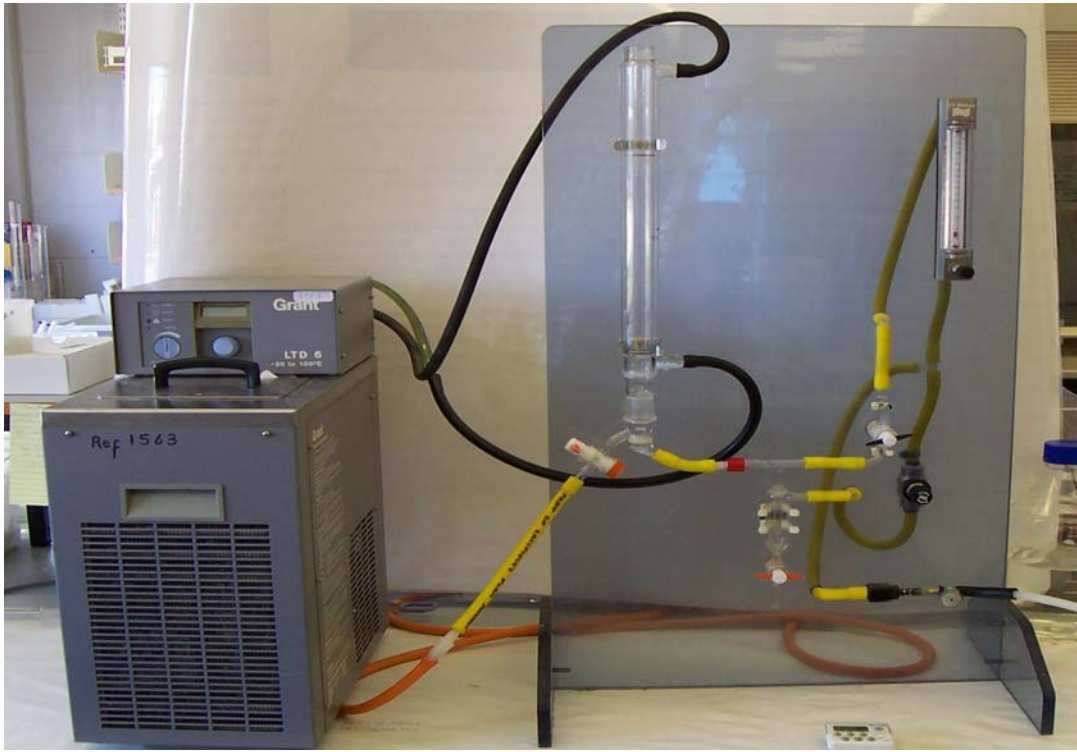
1. Deionised water
2. Dry Lube conveyor lube H1
3. Milk solution: 4 ml of whole milk (3.6% fat) is made up to 100 ml with distilled water in a volumetric flask.

### **Sample Preparation**

1. To avoid sample to sample variation, the analysis is performed in triplicate. Twenty four hours before commencing the analysis, all samples were put into a refrigerator at approximately 4°C.
2. Glasses are washed with hot water and are allowed to dry overnight
3. Glasses are checked for cleanliness and then wetted with beer twice. Discard residual beer in each glass. The wetted surface should be free of adhering bubbles.
4. Set aside three glasses for the control.
5. Add one drop of Dry Lube conveyor H1 to three glasses.
6. Add one drop of milk solution to three glasses.
7. Pour the beer into glasses at the same flow rate and stop when the foam reaches the top of any one glass.
8. The samples are allowed to degas for 24 hours and attemperate to 20°C.

### **Procedure**

1. The cleanliness of the Rudin apparatus (Figure 12) is paramount as traces of grease, detergent etc. will seriously affect the determination of foam stability. The foam chamber should be washed with 2% caustic solution and thoroughly rinsed with deionised water.
2. Between successive determinations, the foam chamber should be washed with deionised water, and then filled with beer sample twice to remove any water residue.
3. Pour the beer sample into the foam tube carefully so that foam is not produced. The level of the sample is adjusted to the 100mm mark by opening the stopcock.
4. Allow CO<sub>2</sub> flow to sinter. The foam should reach the 325 mm mark (within 60±5 seconds) and then CO<sub>2</sub> flow is stopped immediately.
5. As the foam collapses, measure the time taken for foam/beer interface to traverse at 50mm and 75 mm.



**Figure 12.** Rudin apparatus.