

**BORREGAARD**

# LIQUID AMERI-BOND 2X IN BROILER WITHDRAWAL PELLET

## PURPOSE

To document the ability of liquid Ameri-Bond 2X to allowed increased conditioning temperature and increased production rate in a Broiler Withdrawal 2 ration containing 10% DDGS.

## RESULT

Application of liquid Ameri-Bond 2X caused an immediate reduction in amperage and allowed both conditioning temperature and production rate to be increased.

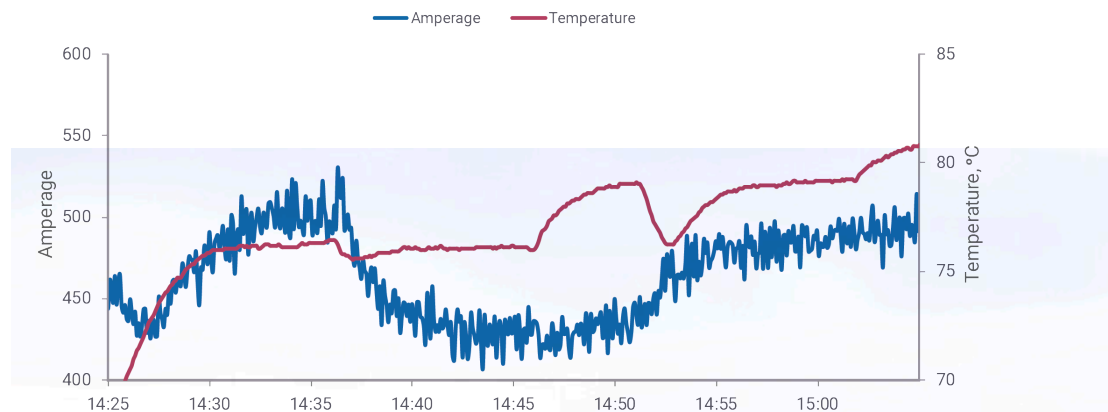


Figure 1 -Impact of 0.71% (DM) liquid Ameri-Bond 2X on process conditions.

14:36 Begin application of liquid Ameri-Bond 2X at 0.71% of DM.

14:46 Increase temperature set-point to 79 °C.

14:51 Increase production rate from 45 to 50 TPH. Dosage drops to 0.64% of DM.

15:02 Increase temperature set-point to 82 °C.



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# PROCEDURE

Pelleting was done on a press driven by two 250 HP motors. The die had an effective thickness of 1-3/4" and a bore diameter of 11/32" (L:D = 5.1). Press motor amperage and conditioning temperatures were monitored continuously with HOBO U12 data loggers. Panel readings of amperage, temperature, and feeder rate were also observed and recorded.

Liquid Ameri-Bond 2X was provided in a 250-gallon tote. Liquor was metered into the back end of the lower conditioning chamber using a Viking G432 gear pump. Pump rate was controlled by a ZeroMax drive.

Samples were collected off the die at 5-minute intervals. These were cooled under a stream of forced air for 8 minutes, then weighed, and screened over an 8/64" circular hole sieve. The remaining pellets were weighed, and the percentage of pellets off the die was calculated on a weight basis. One hundred grams of sieved pellets were then tested for durability on the New Holmen Tester (30 sec, 60 mbar).

Table 1 - Production and durability results for individual samples

Time	Application % of DM	Spout temp., °C	Pellet press			Pellets, %	Pellet durability
			Amps	Tons/Hr	kWh/Ton		
11:15	0.00	78.6	488	45	7.4	93.8	79.0
14:20	0.00	53.4	428	45	6.5	--	--
14:25	0.00	68.4	453	45	6.9	89.6	49.0
14:30	0.00	75.9	477	45	7.3	93.3	74.5
14:35	0.00	76.3	501	45	7.6	92.1	77.7
14:40	0.71	76.1	439	45	6.7	93.0	76.2
14:45	0.71	76.2	431	45	6.6	93.2	77.2
14:50	0.71	78.9	435	45	6.6	69.1	80.0
14:55	0.64	78.3	482	50	6.6	93.0	78.1
15:00	0.64	79.2	485	50	6.7	93.1	76.0
15:05	0.64	80.8	501	50	6.9	92.7	77.9
15:10	0.64	80.9	505	50	6.9	91.9	78.0
15:15	0.64	80.7	485	50	6.6	91.2	77.6
15:20	0.71	76.9	414	45	6.3	92.9	74.4
15:25	0.00	76.2	462	45	7.0	92.4	72.2

# DISCUSSION

Withdrawal 2 contains less fat than Withdrawal 1 and is typically a more difficult feed to pellet. In this case, it was impossible to increase production rate beyond 45 tons per hour. The initial temperature set-point of 76 °C resulted in a steady increase in amperage. It is likely that this restriction on temperature was caused by the inclusion of 10% DDGS.

Addition of liquid Ameri-Bond 2X (14:36) caused amperage to quickly drop from 500 to 440. This lubricating affect made it possible to increase temperature set-point to 80°C. These changes combined to improve pellet durability. The production rate was then increased from 45 to 50 tons per hour (14:53). Amperage was stable at this temperature. The temperature was then increased to 81°C.

At 15:15 production rate was returned to 45 TPH and conditioning temperature to 170 °F in anticipation of shutting off the supply of liquid Ameri-Bond 2X. When this was done at 15:20, there was an immediate increase in amperage.

Pellet quality of Withdrawal 2 was generally good. Tumbler durabilities with no binder averaged 83.7 versus 76.0 in Withdrawal 1. The better pellet quality relates to the work done by the pellet mill. Withdrawal 2 required 7.3 kWh/ton versus 5.6 kWh/ton for Withdrawal 1. When liquid Ameri-Bond 2X was added to Withdrawal 2 the average kWh/ton dropped to 6.6.

# CONCLUSIONS AND RECOMMENDATIONS

Application of liquid Ameri-Bond 2X provided the following benefits:

- The production rate was increased from 45 to 50 TPH;
- Power required by the press was reduced from 7.2 to 6.6 kWh/Ton; and
- Pellet durability increased from 75.9 to 77.3.

THIS WORK WAS PERFORMED AND REPORTED BY BORREGAARD

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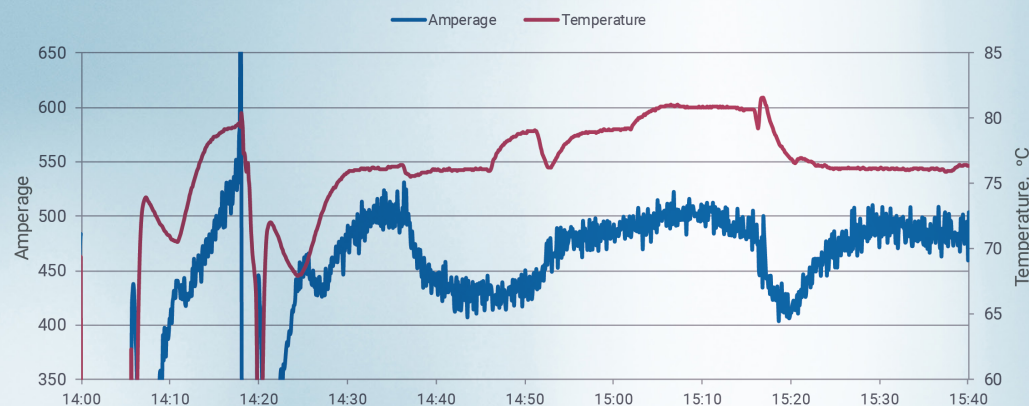


Figure 2 – Data logger record of conditioning temperature and motor amperage.

Comments:

- 14:10 Target rate of 45 TPH established.
- 14:18 Reduce Temp set-point to 77°C.
- 14:09 High Temperature choke.
- 14:25 Target rate of 45 TPH established.
- 14:36 Pump on at 3.0 (0.71%)
- 14:45 Increase Temp set-point to 70°C.
- 14:51 Begin rate increase to 50 TPH.
- 15:04 Increase Temp set-point to 81°C.
- 15:15 Begin to reduce Temp and TPH set-points.
- 15:17 Target rate of 45 TPH established.
- 15:20 Pump off.