

250 ppb RVCM 5305Recommendations for Winter 1990/91

The following is a list of actions that should be taken to reduce residual RVCM in 5305/5265 to 250 ppb. It is important that the necessity of these actions be communicated to operations personnel.

The RVCM reduction action list is as follows:

1. Improve Reactor Stripping - It was identified last year that supplying a small amount of cooling during stripping reduced reactor RVCM by over 50%. Temporary systems are in place to allow cooling water to the condenser during stripping.

The system is effective when cooling water temperature is constant. If the cooling water temperature changes, the air pressure regulator to the control valve will need to be adjusted. Currently, the system on D-700 is working well, but the system on D-745 needs adjustment.

Action Step - The system is crude and will need to be periodically adjusted to maximize stripping steam flow. Operators need to periodically check steam flow and stripping temperature to ensure the system is operating properly.

2. Air Stripping in Silo - The final RVCM removal step in the process is at the silos, where RVCM is stripped by aeration air. Adequate air flow is necessary to get silo RVCM removal. The following are minimal requirements for air flow to the silos.
 - a. The silo air supply header should be maintained at 25 psig or higher
 - b. Air flow to aerating low mole silos should be at least 250 SCFM (25 on the rotameter)
 - c. Air flow to nonaerating low mole silos should be less than 50 SCFM (5 on the rotameter)
 - d. Air flow to 5385/5395/5415/5465 silos should be less than 50 SCFM at all times (5 on the rotameter).

Silos should be aerated for at least 24 hours.

Action Step - Operators and/or Shift Supervisors should periodically check silo air pressures and flow rates to ensure proper aeration.

3. **Aeration Air Conservation** - Aberdeen needs more aeration air capacity. The existing compressors don't supply enough air for all the blend tanks, silos, and activators. Air conservation is required to maintain adequate air pressure. Air pressure will be an even larger concern during autumn/winter when silo aeration air cannot be pinched back.

Air conservation does not mean decreasing air flow to 5265/5305 silos and blend tanks. Reducing low mole blend tank/silo air flows will only increase RVCM and produce more offgrade material.

Action Step - Shut off air to all empty blend tanks and silos. The dryer panel operator and yard operators will need to communicate more in order to keep air usage for railcar loading minimal. Also, to conserve air, air should be shut off to a low mole silo after it has aerated 24 hours.

4. **Additional Air Compressors**

Additional air compressors will be needed during winter months in order to maintain air pressure. Operations needs to pay very close attention to product RVCM to determine when these compressors are to be turned on.

During August, a test run was conducted which required starting up additional reciprocating compressors. It was found that only one of the five compressors was in working order. These compressors will need to be fixed and maintained before cold weather arrives.

It will be necessary to run one reciprocating compressor when the new low mole blend tank is being used.

Action Step - Make sure that all the reciprocating air compressors are in working order before October.

Action Step - Lab should closely follow RVCM shipment data and communicate problems/trends to operations. Operations will need to start up additional compressors at the first sign of RVCM problems.

5. **Heated Blend Tanks** - RVCM can be reduced by maintaining higher temperatures in the blend tanks. One means of increasing blend tank temperatures is to rinse reactors with hot water. Another means of increasing temperature is to aerate the blend tanks with hot air.

Action Step - Operators should rinse 5265/5305 reactors with hot water starting in September.

Action Step - Operations should turn off the aftercooler on the reciprocating compressor to allow hot, moist air to the blend tanks. This should be done by October.

6. **Blend Tank Aeration**

Adequate aeration in the blend tanks is essential for RVCM removal. With the temporary decalcification system, it is nearly impossible to aerate blend tanks for the minimum 12 hours.

Action Step - The dryer operators need to aerate the blend tanks as long as possible. Operators need to wait until the last minute before pumping over blend tanks.

7. **Railcar Loading Procedures**

Resin railcar loading procedures have a large impact on 5265 and 5305 RVCM. Proper aeration and air conservation is essential at the silos for low RVCM material. With the yard operator's patience and assistance, 250 ppb RVCM 5305 can be produced.

Action Step - Yard operators need to make sure that low mole silos have been aerated for 24 hours before they are dropped.

Action Step - Yard operators should not use unaerated silos to top off a railcar. American Mirrex samples the railcars from the top, and would detect this high RVCM material.

8. **Tight Particle Size Control**

During the January 1990 RVCM test runs, it was determined that resin particle size had a direct impact on 5305 RVCM. Larger particle size resin had higher RVCM.

In January 1990, the average particle size (APS) of 5305 was 152 microns. Engineering found that it was critical to avoid making coarse material to obtain low RVCM numbers. With Aberdeen's process, 5305 with 150 micron APS (just 10 microns above the targeted 140) could not be produced with 250 ppb RVCM. Therefore, it is vital to tightly control 5305 particle size to avoid material above 145 micron.

Action Step - The resin quality lab needs to communicate Coulter Counter reactor particle size information with operations. Operations needs to use this information to adjust suspending agent to avoid making coarser material.

It would be beneficial for reduction of RVCM if operations lowered the targeted 5305 average particle size as much as it could without jeopardizing other customer's quality concerns.

Only by following all these action steps, will Aberdeen be able to produce a 250 ppb resin for American Mirrex all winter. It is important to be proactive in implementing these action steps before RVCM becomes a problem.