



INTEROFFICE

DATE SEPTEMBER 19, 1974

TO MR. M. W. HANDLER

FROM L. R. TETZLAFF

REFERRING TO LETTER OF

SUBJECT

HIGH TEMPERATURE STRIPPING SUMMARY

Introduction:

This is a compilation of old and new slurry stripping data. Its purpose is to determine optimum stripping conditions.

Results:

- 1) Residual VCM can be stripped to less than 0.01%* residual in slurry by conventional stripping techniques.
- 2) At the low residual VCM in slurry dryer emissions can be reduced to less than 5 ppm (200-400 is current range) with VCM in the product at trace (less than 0.1 ppm) or undetectable concentrations.
- 3) Stripping rates and attainable end points are drastically improved when only one batch (instead of the "normal" two) is in a stripper. This is attributable to the higher exposure of slurry to the surface.

Recommendations:

- 1) Modify one stripper agitator to give slurry more exposure to the surface and verify test results.
Cost \$2,550.00 plus a
3-5 day loss of one stripper
- 2) Begin setting strippers to 180°F.
- 3) If number 1 is successful, modify all four strippers; if not, buy a larger agitator assembly and motor.
(Estimated cost is \$40,000.00 - \$60,000.00/stripper.)
- 4) Once sufficient agitation is attained, institute prompt pump out of batches to see if additional steam supply or strippers are required.

Discussion:

Stripping rates are faster and end points for residual concentrations are lower at elevated stripping temperatures. This corresponds similarly to the data supplied us by the Germans (Huls) and is verified by our data. Somewhat unexpectedly we also have found that one batch in a stripper, instead of two, will strip much faster to a lower end point than would be expected for half as much slurry.

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The elevated temperature apparently increases stripping rates by raising the vapor pressure of the residual monomer.

One batch in a stripper apparently releases more residual monomer faster because of more exposure to the surface than when the stripper is full. A full stripper load has very little surface turbulence or slurry turnover.

Because of these two observations it is recommended that we strip at higher temperatures and increase slurry exposure to the surface.

Slurry has been stripped at temperatures as high as 190°F with no affect on heat stability or any other properties. However, our studies found that at 180°F, or slightly below, stripping rates are adequate.

Recommendation #1 will maximize the mixing and surface exposure of slurry using the existing agitator drives and gear-boxes. It represents increasing the power input to the slurry and a change in the flow characteristics of the slurry as it is mixed. It involves trimming 3" off each of the existing agitator blades and installing a pitched blade turbine about 3/4 of the way up the agitator shaft. The pitched blade turbine will require a keyway to be machined into the agitator shaft. One to two days are estimated for machining and one day each for removal and installation of the agitator.

If #1 does not work, it is recommended that we purchase and install a larger agitator drive and gearbox and go to higher agitator RPM's to increase turnover of slurry.

The data indicates a significant vinyl savings are possible only with the agitation change, if it holds for two batches in a stripper. Stripping yield may be further increased (if warranted) by doubling the rate of steam input to the strippers.

To fully utilize the high agitation benefits it is critical that a "good" vacuum be continuously drawn on the strippers, if need be, once the bulk of the VCM is stripped off the jets may be used to insure a low level of residual monomer in the product. High temperature stripping with adequate agitation can eliminate any problems encountered by our customers regarding VCM levels in their plants.

The concept of more than five strippers is very expensive and, in my estimation, should only be resorted to if increased agitation and/or increased rate of steam input are not fully tested and proven unsatisfactory.

LRT:nl

LRT
L. R. TETZLAFF

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