

MONSANTO CHEMICAL COMPANY
Texas City, Texas

RUDP Specifications

January 31, 1957

TO THOSE PRESENT:

A. R. Baker
J. B. Clopton
J. G. McQuarrie
G. T. Ryan
N. W. Snow
J. V. Waggoner
W. F. Yates

COPIES TO:

W. E. Alexander/W. L. Bolles
W. E. Decker
H. K. Eckert
S. L. Hunter
J. S. Putnam
R. J. Schatz/W. H. Lane
W. S. Sevier

MINUTES
VCM SPECIFICATION COMMITTEE MEETING
January 29, 1957

The meeting was held at 2 P.M. in Seaton Hunter's office to discuss the desirability of revising the VCM manufacturing specifications so that Sales can publish specifications competitive to those recently published by Solvay. Sales presently anticipates the need to sell about 20 MM pounds per year of VCM after the Firestone contract expires on June 30, 1958. To develop this market, Sales is planning to contact present users of VCM. And to make this contact effective, they must be able to leave with the prospective customer a specification sheet showing that our VCM is as good or better than other VCM on the market.

It was agreed by the committee that the manufacturing specification should be tightened, if possible, to enable Sales to issue a competitive Sales specification. The specification was then reviewed item by item. A summary of the discussion follows.

	Present Monsanto Mfg.Spec.	Solvay Sales Spec.	Proposed Monsanto Mfg.Spec.
<u>Acetaldehyde, ppm</u>	15 max.	5 max.	5 max.

In the last nine months, only four tank car shipments have exceeded 5 ppm of acetaldehyde. The analysis exceeds 5 ppm only when the reactors are nearly spent. By close watch as reactors near the end of the catalyst life, the acetaldehyde level can be kept within a limit of 5 ppm. The economics are clearly in favor of discarding the catalyst rather than losing VCM sales.

CBY 1110484

RSV0031059

The present analytical method for aldehydes in the reactor effluent stream is good to only 8 ppm. This is not serious, unless more than one reactor approaches the end of the catalyst life at the same time. Should this situation occur often, it may be necessary to have the analytical method improved to detect earlier the possible failure of reactors. The analytical method used by Monsanto on product VCM is the same as the method used by Solvay.

It was agreed by the committee that the maximum limit would be lowered to 5 ppm, to put Sales in a competitive position.

	<u>Present Monsanto Mfg.Spec.</u>	<u>Solvay Sales Spec.</u>	<u>Proposed Monsanto Mfg.Spec.</u>
<u>Acetylene, ppm</u>	5 max.	2 max.	2 max. ✓

Actual performance shows that the acetylene level is generally less than 1 ppm. A few cars are up to 2 ppm, but never over. The acetylene level problem is similar to the acetaldehyde level in that a high level can be avoided by close watch of reactor operation.

In theory, the Monsanto and Solvay analytical methods for acetylene are comparable. However, Bill Yates feels that the Solvay method is less precise, and probably not sensitive enough to detect 2 ppm of acetylene.

It was agreed by the committee that the maximum spec limit would be lowered to 2 ppm.

<u>Acidity (as HCl), ppm</u>	50 max.	10 max.	10 max. ✓
------------------------------	---------	---------	-----------

All past analyses have been reported as less than 10 ppm (0.001%), since this is the accepted sensitivity of the method. It is felt that as long as the VCM is scrubbed by a solid caustic bed, no HCl will be found. On this basis, it was agreed by the committee that the limit should be lowered to 10 ppm maximum.

<u>Appearance</u>	No suspended matter-clear and colorless	No spec.	No change ✓
-------------------	---	----------	-------------

High Boiling Liquid
Impurities (other
than inhibitor) above
25°C, Percent

0.25 max.	None	0.10 max. ✓
-----------	------	-------------

	<u>Present Monsanto Mfg.Spec.</u>	<u>Solvay Sales Spec.</u>	<u>Proposed Monsanto Mfg.Spec.</u>
<u>Non-Volatile, %</u>	No spec.	0.1 max.	No spec.

The two characteristics are shown together here since the Monsanto spec for high boiling liquid might be compared to the Solvay spec for non-volatile. The high boiling liquid at 25°C is felt to be a tighter spec than the non-volatile spec of 0.1% max at 70°C.

A review of past analyses shows that all analyses for high boiling liquid have been less than 0.05%. On the basis of this, the committee agreed to lower the high boiling liquid specification to 0.1% at 25°C maximum. This limit can be met easily by Production, and will give Sales an edge over a non-volatile specification of 0.1% at 70°C.

<u>Inhibitor (phenol), ppm</u>	40-100	500-1000	No change ✓
--------------------------------	--------	----------	-------------

It was agreed by the committee that no change would be made in the present specification for two reasons. First, it costs the customer money to scrub out the phenol. And second, the possibility of lowering the phenol concentration or eliminating phenol entirely is now being actively investigated.

<u>Iron, ppm</u>	0.5 max.	0.5 max.	No change ✓
<u>Peroxides</u>	Not detectable	No spec.	No change ✓
<u>Polymerization Rate, %</u>	80 min.	80 min.	No change ✓

The analytical method used by Monsanto is distinctly different from the analytical method used by Solvay. Thus, the two specification limits really are not comparable. The method used by Solvay is the same as that used by Firestone, and Firestone is the only company which uses this method. Bill Yates stated that Research has checked the Firestone (Solvay) method and found that it is easier to meet than the Monsanto method. In fact, borderline material by the Monsanto method has always given 100% polymerization by the Firestone (Solvay) method.

It is not desirable to change our method, nor do we wish to adopt another method for polyrate. It was agreed by the committee that no change would be made in our present specification. However, should a customer demand that our VCM meet the spec by the Firestone method, we could guarantee that our material would meet this spec, but we would not make the analysis.

<u>Sulfur, ppm (as S)</u>	No spec.	3 max.	No spec. ✓
---------------------------	----------	--------	------------

	<u>Present Monsanto Mfg.Spec.</u>	<u>Solvay Sales Spec.</u>	<u>Proposed Monsanto Mfg.Spec.</u>
<u>Sulfur Dioxide, ppm</u>	25 max.	No spec.	5 max. ✓

The Monsanto and Solvay analytical methods for sulfur are the same, except for the final calculations. Monsanto calculates the sulfur as sulfur dioxide, while Solvay calculates it as sulfur. The Solvay specification of 3 ppm max is equivalent to 6 ppm max as sulfur dioxide.

A review of past data shows that Monsanto material always contains less than 5 ppm. Since there is no chance for sulfur to get into the process, it was agreed by the committee that the maximum limit would be reduced to 5 ppm. This is equivalent to 2.5 ppm of sulfur as S.

<u>Water, %</u>	No free water	0.1 max.	No change ✓
-----------------	------------------	----------	-------------

A review of the Solvay method of analysis shows that their method is impractical in areas of high humidity. Since water will not mix with VCM, it was felt that the present Monsanto specification was more realistic. And it was agreed by the committee that no change should be made.

<u>Relative Viscosity of Polymer in 1% cyclohexanone, units</u>	No spec.	2.7 max.	No spec. ✓
---	----------	----------	------------

Bill Yates stated that this is a function of the temperature of polymerization. Previous work on comparable Firestones and Monsanto data showed that our VCM will always meet this test. This is another test which is used by Firestone only. It was agreed by the committee that if the customer insists, we will accept this specification, but will not make the analysis. It is felt that our specifications are better.

<u>Dorell Weathering Test, temperature differential at 0.5 ml, °C</u>	No spec.	0.5 max.	No spec. ✓
---	----------	----------	------------

This is another test for high boiling liquids. It is believed that the Solvay method of preparing the sample will eliminate any high boiling liquids present, except perhaps ethylene dichloride. Our present test for high boiling liquid is more specific. This is another method which is used by Firestone only. Again, it was agreed by the committee that if the customer insists, we will accept this spec, but not make the analysis.

Revised Specification

A revised specification will be prepared incorporating the changes proposed in these minutes. This revised specification will be circulated to the specification committee for approval, and when approval is received the formal specification will be prepared and issued.

J. G. McQuarrie
J. G. McQuarrie

rd

CBY 1110488

RSV0031063