

INTER-OFFICE MEMO **TENNECO CHEMICALS, INC.**

TO M. W. Williams AT Piscataway DATE November 5, 1969  
FROM H. B. Carr AT Burlington COPY TO E. L. Kanyok  
SUBJECT Electrical Tests for Prominsa File ✓

Quality Control had signals crossed in replying to your request of 9/10/69 regarding standard PVC testing plus standard volume resistivity testing on samples submitted by Jim Hahn.

To clear up some confusion and to set the record straight, the following occurred:

1. Samples were originally sent to Flemington for analysis.
2. Since the Flemington VR instrument was not working, the samples were forwarded to Burlington for VR testing.
3. Earl, not realizing that two of the samples were 250-12 for which the Western Electric Method is run, ran the standard VR test on all samples.
4. Tenneco standard values listed represent VR test results that Earl obtained on Flemington retained standard resins. For the 250-12 standard, the value of 20.0 represents an average of past Burlington VR results (excluding 250-12). This is where the goof occurred. Art Gallmayer thought that this value of  $20 \times 10^{12}$  ohm-cm represented the 250-12 standard value.

While you were acting on jumbled information in your memo to J. C. Hahn, we feel that your statement that a VR value of  $20 \times 10^{12}$  ohm-cm by the standard test is desirable for electrical performance to be correct. However, we should set Jim straight on the fact a Western Electric type test (Method No. 2-4) has been run in Burlington 250-12 with a specification minimum of  $1.0 \times 10^{12}$  ohm-cm. For this test we average a  $3.5 \times 10^{12}$  ohm-cm and this would be considered desirable for electrical performance (by this test).

Regarding the "separate test"; e.g., this Western Electric test:

1. This test was put into effect some years ago as it gave a better correlation to Compound Plant VR testing.

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2. A check with Paul Gawason indicates that an excellent correlation still exists.
3. Earl Kanyok states that this different test causes no problem to our technicians - there is no confusion over the different formulation required.
4. While 1 - 3 may be true, we are presently running some standard VR tests on 250-12 to determine whether a correlation exists with the Western Electric test. When and if this is established, the Western Electric test method will be promptly dropped.



H. B. Carr

HBC/rjl

Inter-Office Memo

TENNECO CHEMICALS, INC.

To M. W. Williams (10) At Piscataway Date 11/5/69  
From H. B. Carr At Burlington Copy to  
Subject Prominsa Copolymer Samples

Reference: Memo: M. W. Williams to H. B. Carr,  
dated 10/29/69

Per the referenced memo, relative viscosity and bound acetate testing has been completed on the two Prominsa copolymer (385 type) samples. The bound acetate testing was performed jointly by Burlington Analytical Control and by the Flemington A & E Group.

The results are:

| Prominsa<br>Sample<br>Designation | Rel. Visc.  | Tenneco<br>Spec. | % Bound Acetate |       | Tenneco<br>Spec. |
|-----------------------------------|-------------|------------------|-----------------|-------|------------------|
|                                   |             |                  | Burl.           | Flem. |                  |
| 618014                            | 1.60        | 1.59-1.62        | 14.6            | 14.4  | 13.1-14.9        |
| 618021                            | 1.63 (1.64) |                  | 13.8            | 13.9  |                  |

As seen in this data, the 021 sample has a slightly high relative viscosity. The bound acetate results are within specification and the lot-to-lot variation noted is not unusual. Burlington has ranged from 13.5 to 15.1% on the last eight lots of 385. It should be noted that these eight lots were produced under SPA 783 which called for a target acetate of 14 to 15%.

H. B. Carr

HBC/rjl

TENNECO PLASTICS DIVISION

TENNECO CHEMICALS, INC.

QUALITY CONTROL

TESTING METHOD

DATE: October, 1969

METHOD NO.: 3-65

TITLE: Evaluation of Triallyl Isocyanurate (TAIC)

APPARATUS: Abbe Refractometer, Type 3L at 25°C  
Brookfield Viscometer RVF with RV #1 Spindle  
Kodak Timer  
Waterbath 25°C and 100°C  
Thermometer 0° - 120°C  
Graduated cylinder 50 ml, 100 ml  
Beaker 600 ml, 50 ml  
Test tube, 19mm OD, 150 mm long; 25 mm OD, 200 mm long  
Pipette, 1 ml  
Glass Rod

CHEMICALS: Sample to be tested  
Benzene, reagent grade  
Heptane, reagent grade  
Benzoyl Peroxide, 99%

PROCEDURES:

A. Refractive Index @ 25°C

1. Pre-condition sample to 25°C in a water bath.  
Check temperature with thermometer.
2. Measure Refractive Index.

B. Brookfield Viscosity

1. Pre-condition sample to 25°C in water bath.
2. Measure Brookfield viscosity in 600 ml beaker.  
Use the RV #1 Spindle.

C. Gel Test

1. Prepare fresh for each test a 10% benzoyl peroxide solution in benzene (8.79 gm of benzoyl peroxide in 100 ml of benzene).

2. Weigh into a previously tared 50 ml beaker 10 gm of the TAIC to be tested.
3. Pipette 1 ml of the freshly prepared 10% benzoyl peroxide solution into the 50 ml beaker containing the TAIC.
4. Swirl well and transfer the mix into a 19 x 150 mm test tube.
5. While starting the timer, insert the test tube into a previously heated waterbath (100°C).
6. Stir the contents in the test tube with the glass rod continuously until all the liquid has polymerized.
7. Stop the timer.

D. Polymer Content Test

1. Transfer 5 ml of the TAIC to be tested into a 25 x 200 mm test tube.
2. Add 45 ml of Heptane.
3. Shake the test tube until all the TAIC has been dissolved.
4. As soon as the TAIC has been dissolved, hold the test tube up into the light and grade.

CALCULATIONS:

- A. Refractive Index is direct reading.
- B. Brookfield viscosity in CPS = scale reading x 5.
- C. Gel time is direct reading.
- D. Polymer content test is visual.

REPORT:

- A. Refractive index to the fourth decimal place.
- B. Brookfield viscosity to the first decimal place.

- C. Gel time is time in minutes elapsed in waterbath until polymerization.
- D. Polymer content is acceptable ("pass") if the solution is clear to a slight haze. If turbid "fail".

Written by: F. W. Kanzler

Issued by: H. B. Carr  
H. B. Carr  
Manager, Quality Control

TENNECO PLASTICS DIVISION

TENNECO CHEMICALS, INC.

QUALITY CONTROL

TESTING METHOD

DATE: April, 1968

METHOD NO.: 3-65

TITLE: Evaluation of Triallyl Isocyanurate (TAIC)

APPARATUS: Abbe Refractometer, Type 3L at 25°C  
Brookfield Viscometer RVF with RV #1 Spindle  
600 ml Beaker  
Water Bath, 25°C  
Thermometer 0° - 100°C

CHEMICALS: Sample to be tested  
Benzene

PROCEDURES: A. Refractive Index @ 25°C

1. Pre-condition sample to 25°C in a water bath. Check temperature with thermometer.
2. Measure Refractive Index.

B. Brookfield Viscosity

1. Pre-condition sample to 25°C in water bath.
2. Measure Brookfield viscosity. Use the RV #1 Spindle.

CALCULATIONS: Refractive index is direct reading.  
Brookfield viscosity in CPS = scale reading x 5

REPORT: Refractive to the fourth decimal place. Brookfield viscosity to the first decimal place.



J. C. Fisher  
Manager - Quality Control