



Occidental Chemical Corporation

February 8, 1990

Mr. Jon Little
Chardon Rubber
373 Washington Street
Chardon, OH 44024

Dear Mr. Little:

We have chemically analyzed the three compounds which you submitted during my visit to your facility and also the new CKR compound which you later sent to us. These compounds have also been compared for extrusion characteristics on our Brabender Plasticorder. This work is in reference to your extrusion division's difficulties in holding to the close tolerance which is required.

The chemical analysis appears to indicate that there was no compounding error in the manufacture of your three compounds. The "good" and the two "would-not-run" compounds have been found to have identical formulas.

The only difference found in them was the base resin type used in the color concentrate of one of the "would-not-run" samples. It was a copolymer of PVC and vinyl acetate rather than the straight PVC base in the other two. Because this was only present in one of the samples and the fact that only a limited amount of concentrate is added to the blend, I would not believe this to be the major cause of the problem.

The CKR formula, which you report holds size better than your own compound, has been analyzed for formula. This formula is based on the same molecular weight PVC resin as your own, but it contains significantly less filler. The actual analysis data for compounds is attached.

All four of the compounds were compared for processing characteristics on our Brabender Plasticorder Extruder. Once again, all three of your compounds exhibited very similar characteristics. The CKR compound, being softer, processes with lower torque and with somewhat less pressure and delivery. The tapes made during this extrusion trial were measured for width variation along their length. All four compounds are judged to have about the same variability.

Melt Index appears to confirm the extrusion results in that all three of your compound samples have very similar melt flows and the CKR sample has less flow.

OxyChem

PVC Resins and Compounds/PVC Fabricated Products Divisions

Armand Hammer Boulevard, Box 699, Pottstown, Pennsylvania 19464 215/327-6400

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The conclusions drawn from this work are as follows:

The Chardon Rubber compound per se does not seem to be at fault. The CKR compound, having less filler, may melt faster in the extruder giving a more homogeneous compound and thus hold size better.

I am not familiar with the extruder and the conditions under which the Chardon Rubber compounds were run. It may not be possible to run this special extrusion at very high rates and yet maintain the close width tolerance that is desired.

Very truly yours,

Frank Marshall

Frank J. Marshall
Sr. Technical Service Engineer
General Purpose Resins

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Attachments

cc: Mr. P. A. Firetto
Mr. R. S. Guise
Mr. W. P. May
Mr. T. J. Regueiro
Mr. R. L. Thresher

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PVC Resins

Armand Hammer Boulevard, Box 699, Pottstown, Pennsylvania 19464 215/327-6400

CHEMICAL ANALYSIS

	CHARDON RUBBER "Runs Good"	CHARDON RUBBER Would Not Run-A"	CHARDON RUBBER Would Not Run-B"	CKR COMPOUND
POLYMER - PVC	Approx. 45.6% R.V. 2.39	Approx. 45.9% R.V. 2.39	Approx. 45.6% R.V. 2.39	Approx. 50.8% R.V. 2.37
EXTRACTABLES	Approx. 35.6% DINP Approx. 0.4% ESO	Approx. 35.6% DINP Approx. 0.3% ESO	Approx. 35.5% DINP Approx. 0.5% ESO	Approx. 40.5% DIDP Approx. 0.4% DOP Approx. 0.6% ESO
FILLER	Approx. 18.4% Calcium Carbonate	Approx. 18.2% Calcium Carbonate	Approx. 18.5% Calcium Carbonate	Approx. 7.7% Calcium Carbonate
COLOR CHIP POLYMER	PVC	PVC/ViAc, 90/10	PVC	NONE

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PVC Resins

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WIDTH MEASUREMENTS - EXTRUDER TAPES

CHARDON-RUNS GOOD			CHARDON- WOULD NOT RUN -A		
50 RPM	75 RPM	90 RPM	50 RPM	75 RPM	90 RPM
Width	Variance	Width	Variance	Width	Variance
.663"	-6	.705"	-1	.716"	-4
.661"	-8	.703"	-3	.726"	+6
.675"	+6	.702"	-4	.723"	+3
.672"	+3	.702"	-4	.726"	+6
.659"	-10	.707"	+1	.729"	+9
.667"	-2	.708"	+2	.723"	+3
.672"	+3	.712"	+6	.729"	+9
.680"	+11	.709"	+3	.730"	+10
.669" AVER.		.716"	+10	.721"	+1
		.707"	+1	.726"	+6
		.700"	-6	.721"	+1
		.706" AVER.		.720" AVER.	

DOES NOT RUN -B			CKR COMPOUND		
50 RPM	75 RPM	90 RPM	50 RPM	75RPM	90 RPM
Width	Variance	Width	Variance	Width	Variance
.704"	+8	.693"	-11	.708"	+10
.704"	+8	.702"	-2	.701"	+3
.704"	+8	.708"	+4	.695"	-3
.690"	-6	.708"	+4	.697"	-1
.690"	-6	.694"	-10	.721"	+7
.690"	-6	.713"	+9	.716"	+4
.690"	-6	.697"	-7	.722"	+2
.692"	-4	.703"	-1	.717"	+3
		.703"	-1	.710"	-6
		.709"	+5	.709"	-5
		.709"	+5	.711"	-3
		.704" AVER.		.714"	Even
		.731"	-3	.722"	+8
		.734 AVER.		.714 AVER.	

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