BRITISH GEON LIMITED

PRODUCTS APPLICATION DEPARTMENT

LABORATORY WORK REPORT

Job No: 586 **Date:** 3rd November, [illegible]

Project No: 501 **Work Done By:** J. H. [illegible] T. [illegible]

Origin: Customer Trial **Completed:** 2nd November, [illegible]

Customer: Kingston Mouldings **Report By:** J. H. Nelson

ODOUR IN BLOWN PVC BOTTLES

OBJECT:

To assess the effect of stabiliser type on the odour of blown PVC bottles.

CONCLUSIONS:

1. Stanclere 176 caused most residual odour in PVC bottles.
2. Mellite 825 caused least residual odour in PVC bottles.
3. Stanclere 80 and Mellite 825 stabilised bottles were discoloured orange.
4. Stanclere 176 and Mellite 831 stabilised bottles had good colour.
5. Addition of α phenyl indole to Stanclere 80 gave some improvement in bottle colour.

INTRODUCTION:

At a recent trial on a Lesieur DSL5 blow moulder at Kingston Mouldings, attention was drawn to the excessive fuming and objectionable smell of the bottles. Work has been done to reduce the level of odour, by stabiliser variations.

WORK DONE:

The compound used at Kingston Mouldings was 52091/47 has the formulation

[redacted] 2004

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Brown [illegible]

Breon 429

Paraplex G62

Mellite 551

Estol [illegible]

Stearyl Alcohol

Methylene bis stearamide

Kane Ace 312

Kane Ace B11

The stabiliser variations used are shown below:

52091/	530	531	532	[illegible]
Stabiliser	Stabiliser 80 + ...er phenyl indole	Stanclere 176	Mellite 835	Stanclere 80

All the stabilisers were substituted for Mellite 551 in the /473 formulation, at a level of 1.5 phr, except for phenyl indole at 1 phr which was used in conjunction with Stanclere 80.

Powder compounds were made up in the Papenmeier mixer in 25 lb. batches. Each compound was extruded and blown on the Bekum BA5. Note was taken of odour during processing. Extruder and blow moulder conditions and comments on processing odour are given in Table 1, together with bottle descriptions.

Sample bottles were taken from each compound, and a few were sealed directly after manufacture.

A panel of seven persons judged the odour in each bottle and picked out the best two grades and any exceptionally bad grades. The procedure followed was that each person judged first from unsealed bottles and then tried the sealed samples, if in any doubt.

[redacted]esults are given in Table 2.

[redacted]ach compound was tested for D.T.S. on the Brabender Plastograph. Results are given in Table 3.

DISCUSSION:

The results in Table 1 show that both Mellite 551 and Stanclere 80 caused rather sweet sickly odours on processing, whilst being effective

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[illegible] tested in a bath [illegible] kettle. By [illegible] some reduction [illegible]

The colour of the [illegible] caused the [illegible] the test [illegible]

Comparison of D.T.S. [illegible] between them. [illegible] appeared [illegible] the rest.

TABLE I - [illegible]

Compound	Zone Temperatures 1	2	3	4	5	Screw R.P.M.	Screw Amps.	Comments
S[illegible]	14[illegible]	15[illegible]	175	16[illegible]	[illegible]	-	-	
[illegible]/47[illegible]	164	182	160	167	1[illegible]	2[illegible]	10.	Sweet [illegible] colour good.
/[illegible]	[illegible]	18[illegible]	185	[illegible]	[illegible]	[illegible]	10.[illegible]	sharper smell, [illegible] pronounced.
/[illegible]	1[illegible]	184	165	17[illegible]	1[illegible]	[illegible]	10.[illegible]	As for /[illegible]
/[illegible]	[illegible]	[illegible]	16[illegible]	169	[illegible]	[illegible]	10.[illegible]	As for /[illegible], [illegible] less orange.
/[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20		[illegible]	Sharp smell, [illegible] fumes and [illegible]

20[illegible]4

TABLE 2 - Chemical Blends

Compound	Stabiliser	Panel						
		A	B	C	D	E	F	G
52091/473	Mellite 951	2	1	-	-	X	2	-
/530	Stanclere 80 + phenyl indole	-	-	2	-	1	-	2
/531	Stanclere 176	X	X	X	X	X	-	X
/532	Mellite 825	1	1	1	1	-	1	1
/533	Stanclere 80	-	-	-	2	2	-	-

1 = first choice 2 = 2nd choice X = worst

TABLE 3 - Brabender Stability

52091/	473	530	531	532	533
D.T.S. Minutes	17'10"	16'35"	15'0"	15'15"	15'45"
Torque metre Kgms	2.3	2.3	2.3	2.3	2.3
Final Stock Temp °C	200	197	200	198	198

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