

# RJR CONFIDENTIAL

**SENSORY EVALUATION DIVISION**

**DISCRIMINATION**



**DESCRIPTIVE**



**DIAGNOSTIC**



**OTHER**



**TEST REPORT NO.** 1260

**TEST:** Menthol Discrimination

**PROJECT:** Sensory Evaluation of HORIZON 100 Menthol:  
Reduced Cuts Per Inch

**DISTRIBUTION:**

Library (File Original)  
Mike Dube  
Amy Robinson (Client)  
SED File  
Karen Wilkens (Author)

**COVER PAGE ONLY:**

A. J. Borschke  
B. V. Hardin

52097 8257

**AUTHOR:** Karen Wilkens

**DATE:** November 9, 1990

**DEPARTMENT:** 775/R&D Technical  
Support

**NOTEBOOK PAGES:** None  
**DATED:** N/A

**DIVISION:** 565/Sensory Evaluation **PREVIOUS REPORTS:** None

**R&DM 1990, No. 270 [SED #1260]**

**NO. OF PAGES:**

**PROGRAM:** 0216/Cigarette Tech.

**CLIENT NAME:** Amy Robinson  
**DIVISION:** New Business  
Development

**SENSORY EVALUATION OF HORIZON 100 MENTHOL: REDUCED CUTS PER INCH**

**OBJECTIVES:**

To determine if there is an overall perceptual difference between a current HORIZON 100 Menthol product made with 32 cuts per inch of the tobacco blend and 14% G13, and a HORIZON 100 Menthol prototype made with 25 cuts per inch of the tobacco blend and 11% G13. These two test parts also differ in cigarette paper (flax and wood pulp, respectively).

**SUMMARY:**

Production for regional introduction of HORIZON 100 Menthol will begin January 1991. The results from this test will be used to determine if blend and material changes (reduced cuts per inch and G13, and a wood pulp paper) can be implemented in the HORIZON 100 Menthol product (these changes are based on Company objectives).

Menthol Discrimination results indicated that the current HORIZON Menthol 100 product and the modified HORIZON Menthol 100 prototype were not perceptually different.

The blend and material changes evaluated in this study (reduced cuts per inch and G13, and a wood pulp paper) can be implemented in the HORIZON 100 Menthol product without affecting perception.

**STATUS:**

Testing was completed October 23, 1990. Results were verbally reported to Amy Robinson October 26, 1990.

**KEYWORDS:**

Menthol Discrimination, Sensory Evaluation, G13, Wood Pulp Cigarette Paper, Flax Cigarette Paper, Reduced Cuts Per Inch, (54-11-5), (RC0313), (7732-18-5), (630-08-0), (124-38-9), (RC0319), (89-78-1).

52097 8258

**APPROVAL:**

Author of Report:

Karen Wilkens  
Karen Wilkens

Date:

11/12/90

Division Manager:

Margaret Savoca  
Margaret Savoca

Date:

11/12/90

Sent To:  
Division:

Amy Robinson  
New Business Development

Date:

11/12/90

**DISTRIBUTION:**

Library (File Original)  
Mike Dube  
SED File  
Amy Robinson (Client)  
Karen Wilkens (Author)

**COVER PAGE ONLY:**

A. J. Borschke  
R. V. Hardin

52097 8259

SED #1260

TITLE: Sensory Evaluation of HORIZON 100  
Menthol: Reduced Cuts Per Inch

**PRODUCT DESCRIPTIONS:**

PD3800AA: HORIZON 100 Menthol product made with 32 cuts per inch of the tobacco blend, 14% G13, and flax cigarette paper (856).

PD3800AB: HORIZON 100 Menthol prototype made with 25 cuts per inch of the tobacco blend, 11% G13, and wood pulp cigarette paper (456).

Both test parts were made September 26, 1990 in the R&D Pilot Plant. Test specifications, and chemical and physical measurements for these products can be found in APPENDIX I.

**SENSORY METHODOLOGY AND DATA ANALYSIS:**

Testing was conducted on October 23, 1990 in the R&D Smoke Panel Room. Twenty-four members of the Menthol Discrimination panel evaluated the product pair twice, using the Duo-Trio discrimination method.

The Exact Fisher Test for 2x2 Contingency Tables was used to compute a binomial probability from the number of correct responses. The binomial probability was then used to determine the alpha level of significance for a one-tailed test.

**RESULTS:**

TEST	OVERALL PROBABILITY	N
PD3800AA versus PD3800AB	p=0.7646 NSD	48

NSD: No significant difference between products ( $p > 0.05$ )

**SUMMARY OF RESULTS:**

Production for regional introduction of HORIZON 100 Menthol will begin January 1991. The results from this test will be used to determine if blend and material changes (reduced cuts per inch and G13, and a wood pulp paper) can be implemented in the HORIZON 100 Menthol product (these changes are based on Company objectives).

Menthol Discrimination results indicated that the current HORIZON Menthol 100 product and the modified HORIZON Menthol 100 prototype were not perceptually different.

The blend and material changes evaluated in this study (reduced cuts per inch and G13, and a wood pulp paper) can be implemented in the HORIZON 100 Menthol product without affecting perception.

52097 8260

**APPENDIX I**  
**TEST SPECIFICATIONS AND**  
**CHEMICAL AND PHYSICAL MEASUREMENTS**

52097 8261

TSLRPT06  
16:01:38.0

\*\*\* TEST SPECIFICATIONS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 1  
10/10/90

Test Number: PD 3800

Program Number: 216

No of Testparts: 2 Priority:

Status: REPORT

Requested by: AMY ROBINSON (4210)  
BGTC 611-1/217

Date Requested: 04/21/90

Related Test Number:

Division: 581

Test Name: GR LT 100 MENTHOL

Test Purpose: TO COMPARE MENTHOD PRODUCTS WITH BLENDS OF 32 CPI & 25 CPI.

Making and Packing Date:

Mail Out Date:

Type of Panel Testing: SED

Keyword(s):

Added by: EDWARDK

Special Instructions for the Pilot Plant:

TOBACCO PROCESSING: MAKE AT R&D. "A" - BLEND #H252 (32 CPI). "B" -  
SEE ATTACHED BLEND (25 CPI).

FILTER MAKING: MAKE AT R&D.

MAKING AND PACKING: MAKE AND PACK IN WHITE SOFT PACKS AT R&D. \*\*WHITE  
TIPPING IS TO BE USED. WE WILL SUPPLY IT FOR YOU.  
PROJECT LEADER TO BE PRESENT. MIKE DUBE IS THE  
BACKUP (4980). MACHINE #2. NO CONTROL CHART.

SAMPLING TYPE: STANDARD.

52097 8262

TSLRPT06  
16:01:38.0

\*\*\* TEST SPECIFICATIONS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 2  
10/10/90

Test Number: PD 3800

Program Number: 216

No of Testparts: 2 Priority:

Status: REPORT

Requested by: AMY ROBINSON (4210)  
BGTC 611-1/217

Date Requested: 04/21/90

Related Test Number:

Division: 581

Test Name: GR LT 100 MENTHOL

Test Purpose: TO COMPARE MENTHOD PRODUCTS WITH BLENDS OF 32 CPI & 25 CPI.

Making and Packing Date:

Mail Out Date:

Type of Panel Testing: SED

Keyword(s):

Added by: EDWARDK

Special Instructions for the Labs:

Lab Notes to the Requestor:

52097 8263

TSLRPT05  
16:01:39.8

\*\*\* TEST SPECIFICATIONS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 3  
10/10/90

TEST PART	PD 3800 AA	PD 3800 AB
Part Name	GR LT SKS MEN	GR LT SKS MEN
Brand Sub	3698AB	3698AB
Item Rev	2000513 AB	2000513 AB

CIGARETTE SPECIFICATIONS

Tobacco Rod Length, mm	68.00	68.00
Total Cigt Length, mm	99.00	99.00
Tape Circumference, mm	24.75	24.75
Total Weight, gms	1.1382	1.1382
Tobacco Rod Weight, gms	0.8843	0.8843
Firmness, 0.1 mm	8.00	8.00
Print?		
Cigt Paper ID	1004884	TD5478
Tipping ID	T4-3591	T4-3591
Filter ID		FT0000000459
Blend ID	SEE ATTACHMENTS	SEE ATTACHMENTS
Glue Roller No.	86-9L	86-9L
Air Dilution %	34.0	34.0
Air Dilution Low, %	31.0	31.0
Air Dilution High, %	37.0	37.0

ON LINE LASER SPECIFICATIONS

Laser Wattage	200	200
No. Perforations	12	12
Size Correction Factor		
Pulse Time	60	60
Beam Control	390	390

FILTER SPECIFICATIONS

Segment Length, mm	31.00	31.00
Rod Length, mm	124.00	124.00
Circumference, mm	24.43	24.43
Plasticizer ID	E-18	E-18
Plasticizer %	8.29	8.29
Segment Draft, mm	93.0	93.0
Plugwrap ID	0047823	0047823
Tow ID	1003918	1003918
DPP/Total Denier	3.9/35000	3.9/35000
Additive Flavor		
Injection Type		
Additive Wt/l Rod, gms		
Additive %		
Transport Jet?	Y	Y
% Wt Change	+8.50	+8.50
Tray Shelf Life, days	70	70
Special Equipment	TYPE II JET	TYPE II JET

52097 8264



TSLRPT05  
16:01:39.9

\*\*\* TEST SPECIFICATIONS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 4  
10/10/90

TEST PART	PD 3800 AA	PD 3800 AB
Part Name	GR LT SKS MEN	GR LT SKS MEN
Brand Sub	3698AB	3698AB
Item Rev	2000513 AB	2000513 AB

TIPPING SPECIFICATIONS

Width, mm	70.00	70.00
Color	70 MM GR LOGO & LI	70 MM GR LOGO & LI
Perforation Method	ON LINE LASER	ON LINE LASER
Number of Rows	1	1
EP Zone		
Porosity		
Center to Center		
Dry Line Width		
Location from Edge		

PACKAGING

Total Cartons	15	15
Printed Cartons		
White Cartons	15	15
Banded Cartons		
Cartons not Banded	15	15

SAMPLING PROTOCOL

Sampling Type	STANDARD	STANDARD
All Analyses	1 Point	1 Point

52097 8265

TSLSUM02  
16:01:40

\*\*\* ANALYSES RESULTS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 5  
10/10/90

Test Part	PD 3800 AA	PD 3800 AB
Part Name	GR LT SKS MEN	GR LT SKS MEN
Brand Code	3698 AB	3698 AB
Item Rev	2000513 AB	2000513 AB

CIG SMOKE : BURNING RATE

BURNING RATE MG/MIN	63.09	62.25
Count	3	3
Std. Deviation	0.48	1.31
BURNING RATE MM/MIN	4.82	4.79
Count	3	3
Std. Deviation	0.01	0.09

CIG SMOKE : NICOTINE, FTC TAR, CO & CO2

PUFFS/CIGARETTE	9.9	9.9
Count	5	5
Std. Deviation	0.3	0.2
TPM MG/CIG	14.0	14.5
Count	5	5
Std. Deviation	0.5	0.5
95% CI	13.4 14.6	13.9 15.2
NICOTINE MG/CIG	0.85	0.90
Count	5	4
Std. Deviation	0.07	0.02
95% CI	0.77 0.94	0.87 0.94
WATER MG/CIG	1.3	1.3
Count	5	5
Std. Deviation	0.1	0.2
95% CI	1.2 1.4	1.1 1.6
TAR MG/CIG	11.9	12.4
Count	5	4
Std. Deviation	0.3	0.4
95% CI	11.5 12.3	11.8 12.9
TPM/PUFF	1.42	1.47
Count	5	5
Std. Deviation	0.05	0.07
NICOTINE/PUFF	0.086	0.091
Count	5	4
Std. Deviation	0.007	0.003
TAR/PUFF	1.20	1.25
Count	5	4
Std. Deviation	0.04	0.06
% CO	3.18	3.38
Count	5	5
Std. Deviation	0.13	0.28
ML CO	11.04	11.67
Count	5	5
Std. Deviation	0.20	0.75
MG CO	12.4	13.1
Count	5	5
Std. Deviation	0.2	0.8
% CO2	7.01	7.23
Count	5	5
Std. Deviation	0.18	0.37
ML CO2	24.37	25.00

52097 8266

TSLSUM02  
16:01:40

\*\*\* ANALYSES RESULTS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 6  
10/10/90

Test Part	PD 3800 AA	PD 3800 AB
Part Name	GR LT SKS MEN	GR LT SKS MEN
Brand Code	3698 AB	3698 AB
Item Rev	2000513 AB	2000513 AB

Count	5	5
Std. Deviation	0.40	1.06
MG CO2	43.0	44.0
Count	5	5
Std. Deviation	0.7	1.9
CO PUF/CIG	9.9	9.9
Count	5	5
Std. Deviation	0.3	0.2
CO2 PUFFS/CIG	9.9	9.9
Count	5	5
Std. Deviation	0.3	0.2

CIG TOBACCO : NICOTINE & TOTAL SUGAR %

NICOTINE %	1.67	1.63
Count	2	2
Std. Deviation	0.01	0.01
TOTAL SUGAR %	9.2	9.3
Count	2	2
Std. Deviation	0.1	0.1

CIG TOBACCO : FILLING CAPACITY AFTER MAKING

FILLING CAPACITY	444.10	442.50
Count	1	1
Std. Deviation	N/A	N/A

CIG TOBACCO : % G-13

% G-13	11.72	8.46
Count	1	1
Std. Deviation	N/A	N/A

CIG TOBACCO : MOISTURE 5 MINUTE

% MOISTURE	13.00	13.26
Count	1	1
Std. Deviation	N/A	N/A

TOBACCO : PREMAKE MOISTURE 5 MINUTE

% MOISTURE	13.47	13.60
Count	2	2
Std. Deviation	0.02	0.01

CIGARETTE : CIGARETTE BREAKDOWN

IND WEIGHT (GM)	1.133	1.129
Count	50	50
Std. Deviation	0.018	0.019
SIZE (MM)	24.79	24.82

52097 8267

TSLSUM02  
16:01:40

\*\*\* ANALYSES RESULTS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 7  
10/10/90

Test Part	PD 3800 AA	PD 3800 AB
Part Name	GR LT SKS MEN	GR LT SKS MEN
Brand Code	3698 AB	3698 AB
Item Rev	2000513 AB	2000513 AB

Count	50	50
Std. Deviation	0.03	0.03
TIP DILUTION %	35.0	33.6
Count	50	50
Std. Deviation	1.4	1.9
COLUMN DILUTION %	4.5	3.3
Count	50	50
Std. Deviation	0.4	0.3
OPEN DRAFT	109	102
Count	50	50
Std. Deviation	6	6
CLOSED DRAFT	151	139
Count	50	50
Std. Deviation	7	9
FIRMNESS MM	9.31	9.88
Count	50	50
Std. Deviation	1.11	1.22
CIG GROUP WEIGHT(GM)	1.1374	1.1342
Count	50	50
Std. Deviation	0.0000	0.0000

CIGARETTE : MOISTURE PACKED

% MOISTURE	12.63	12.84
Count	2	2
Std. Deviation	0.03	0.14

52097 8268

TSLRPT06  
08:23:45.6

\*\*\* TEST SPECIFICATIONS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 1  
10/18/90

Test Number: AN 9460

Program Number: 216

No of Testparts: 2 Priority:

Status: REPORT

Requested by: AMY ROBINSON (4210)  
BGTC 611-1/217

Date Requested: 10/10/90

Related Test Number: PD 3800

Division: 558

Test Name:

Test Purpose: INFORMATION FOR SED

Making and Packing Date:

Mail Out Date:

Type of Panel Testing:

Keyword(s):

Added by: ROBINSA

Special Instructions for the Pilot Plant:

52097 8269

TSLRPT06  
08:23:45.7

\*\*\* TEST SPECIFICATIONS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 2  
10/18/90

Test Number: AN 9460

Program Number: 216

No of Testparts: 2 Priority:

Status: REPORT

Requested by: AMY ROBINSON (4210)  
BGTC 611-1/217

Date Requested: 10/10/90

Related Test Number: PD 3800

Division: 558

Test Name:

Test Purpose: INFORMATION FOR SED

Making and Packing Date:

Mail Out Date:

Type of Panel Testing:

Keyword(s):

Added by: ROBINSA

Special Instructions for the Labs:

SMOKE MENTHOL \*\*NEED BY WEDNESDAY, OCT 17, 1990\*\* THANKS!!

A- PD 3800 A

B- PD 3800 B

Lab Notes to the Requestor:

52097 8270

TSLSUM02  
08:23:48

\*\*\* ANALYSES RESULTS \*\*\*  
\*\*\* FINAL REPORT \*\*\*

Page 3  
10/18/90

Test Part	AN 9460 AA	AN 9460 AB
Part Name	PD3800 A	PD3800 B

CIG SMOKE : MENTHOL

MENTHOL MG/CIG	0.75	0.64
Count	2	2
Std. Deviation	0.01	0.01
MENTHOL UG/PUFF	74.7	66.7
Count	2	2
Std. Deviation	1.6	0.8
MENTHOL PUFFS/CIG	10.0	9.7
Count	2	2
Std. Deviation	0.4	0.2

52097 8271