



## &lt; SENSORY EVALUATION REPORT &gt;

QDP CONSUMER TEST PLATFORM 1 ZRH

PDIMS: EXP-000659 TO-05235

(STUDY NUMBER: SS\_015\_2014\_05\_2)

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PROJECT NAME	Flavor Development						
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Exploratory	<input type="checkbox"/>						
Developmental	<input checked="" type="checkbox"/>						
Regulatory submission	<input type="checkbox"/>						
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DATE OF FINAL APPROVAL	SEE PDIMS REFERENCE						

T&PD EXPERIMENTAL PLAN AND  
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### 1 Abstract

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### 2 Introduction

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### 3 Research Question/ Approach

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The significant differences will be calculated with ANOVA at 95% confidence level.

### 4 Methods / Experimental Plan & Results

#### 4.1 Experiment 1

##### 4.1.1 Experiment 1 Plan

##### 4.1.1.1 Design of Experiment

A Quantitative Descriptive Profile (QDP) was performed by a trained panel in blind booths which are controlled into temperature and humidity (22°C +/- 2°C; 50% RH +/- 10%).

The products were evaluated in blind conditions. Thus, the panelists were not seeing what they were smoking.

3 sessions were performed in this study from the 12<sup>th</sup> to the 20<sup>th</sup> of May 2014.

##### 4.1.1.2 Sample

6 Zürich cigarette products were tested in this study. The [Table 1](#) below shows the product descriptions. Two products were presented in each session. The products were stored in a storage room which is controlled in temperature and humidity (22°C +/- 2°C; 58% RH +/- 5%).

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**Table 1 : Product descriptions**

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**4.2.1.1 Procedure**

A Quantitative Descriptive Profile (QDP) was carried out. The panelists were asked to evaluate the products (b) (4). Each of them were rated on a 100mm linear scale from 0 = not at all to 100 = extremely. The panelists had the possibility to write free comments at the end of the evaluation (see comments in [Table 4](#)).

The marker product (Marlboro Gold) anchored on the scale (see values in [Table 2](#)) was smoked at the beginning of each session to calibrate the panelists.

Between each product, the panelists were asked to rinse their mouth with water, yogurt and bread.

The sample presentation was randomized over the 3 sessions. The presentation plan was reported in [Table 6](#).

**4.2.1.2 Instruments and Materials**

Zürich prototypes were evaluated with Zürich FPD 4.2 devices. For sensory tests, (b) (4)  
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Before the evaluation, the RTD of Zürich cigarettes inserted in the heating device was measured with the SODIM PD1 bench instrument. RTD values were reported in [Table 5](#).

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These evaluations were performed with QDP trained panelists (SEC4\_QDP2) in the (b) (4) at the (b) (4)

**4.2.1.3 Data Processing and Statistical Analysis**

The data acquisition was performed on FIZZ sensory software (Biosystemes, 2011).

The statistic data treatments were carried out on XLStat software (Addinsoft, 2014).

For each product and each attribute descriptive statistics were calculated (average, standard deviation and median).

A two-way analysis of variance (product and panelist effects, type III SS, no interaction, 95% confidence level) was performed to determine if there were significant differences between the products.

Then, means multiple comparisons were calculated with Duncan test with 95% confidence level, to explain these differences.

A one-way analysis of variance (product effect, type III SS, 95% confidence level) was performed on the RTD variable to determine if there were significant differences between the products.

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## 4.2.2 Experiment 1 Results

## 4.2.2.1 Observations

No special observation was noticed

## 4.2.2.2 Deviation from Plan

No deviation was recorded

## 4.2.2.3 Data and Results

**Figure 1 : Graphical representation of the sensory profiles of the 6 evaluated products**

(b) (4)



No attribute showed significant differences with 95% and 90% confidence level.

Analysis of variance product effect p-values for each attribute were reported in [Table 3](#).

The consolidated data of the [Figure 1](#) were attached in the report as the reference [\[2\]](#) in the chapter 6 "References".

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## 4.2.2.4 Discussion

The panel perceived no significant sensory profile differences between the 6 products at 95% confidence level.

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## 5 Conclusions

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## 6 References

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[1]

Treatments  
SS\_015\_2014\_05\_2.x

[2]

Fizz questionnaire  
regular products

[3]

[4] ZRH\_EXPR000830\_RDSS\_005\_2014\_Sensory Evaluation of Dorado blends and flavor  
systems.doc

[5] ZRH\_PDev\_EXPR\_SE\_SS\_012\_2014\_04\_2\_DORADO DRY BLENDS.docx

## 7 Review and approval

This form has been reviewed and approved by:

Name	Function	Justification
(b) (4)	Sensory technician	Signed as Experimental Report Reviewer
(b) (4)	Senior Staff Scientist SI	Signed as Experimental Plan & Report Author
Schaller, Jean-Pierre	Manager SI	Signed as Experimental Report Owner/Approver

Refer to the PDIMS Workflow tab to see the names of those who have reviewed and approved this form as well as the proof of review and approval (Dates and electronic sign-off).



## 8 Abbreviations

Abbreviations		
DoE	:	Design of Experiments
EDMS	:	Electronic Data Management System
LIMS	:	Laboratory Information Management System
PDIMS	:	Product Development Information Management System
SME	:	Subject Matter Expert
SWP	:	Summary Work Package
WP	:	Work Package
ANOVA	:	Analysis Of Variance
LIMS	:	Laboratory Information Management System
QDP	:	Quantitative Descriptive Panel
RTD	:	Resistance To Draw
SS	:	Sum of Squares
FPD4.2	:	Functional Product Design 4.2

For complete definition, refer to PMI OPS Glossary and/or PMI RD Glossary



## 9 Appendix

**Table 2: Descriptive statistics**

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**Table 3 : Summary of analysis of variance product effect p-values**

A type III SS analysis of variance with product and panelist effects without interaction was performed with XL Stat Software.

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**Table 4 : Panelists free comments for each product**

*The panelists had to write at least 5 characters. A striped box signifies that the panelist had not evaluated the product.*

(b) (4)

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**Table 5 : RTD values**

*Zürich prototypes had to be evaluated between  $50 < RTD < 110$ .*

*A striped box signifies that the panelist had not evaluated the product*

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**Table 6 : Presentation plan**

*A striped box signifies that the panelist had not evaluated the product.*

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