

Table of Contents

Preface to the New Edition	3
Information about the MEBAK Website	5
Contributors	6
Definition of Terms	9
Table of Contents	11
Sensory Analysis	15
1 Basic Requirements for Sensory Analysis and Conducting Tests	17
1.1 Tasting Room, Preparation Area	17
1.2 Tasting Glasses	25
1.3 Sample Temperature	28
1.4 Number of Samples and Sequence	28
1.5 Duration of the Sensory Evaluation	28
1.6 The Tasting Panel	29
1.7 Sample Preparation	29
1.8 Evaluation Forms	30

2	Selecting, Training and Motivating Tasting Panel Members	31
2.1	Requirements for Tasting Panel Members	31
2.2	Selecting Tasting Panel Members	32
2.3	Creating a Tasting Panel	35
2.4	Training Goals for Creating a Sensory Analysis Panel	37
2.5	Tests for Training the Tasting Panel	38
2.5.1	Differentiation among the Basic Kinds of Taste	38
2.5.2	Determining the Sensory Threshold for Taste.....	40
2.5.3	Recognizing Differences in Intensity (Flavor).....	41
2.5.4	Recognizing Aromas	42
2.5.5	Recognizing Differences in Color Intensity.....	45
2.6	Motivating the Testers	48
2.7	Measures against Blindness to Flaws in One's Own Products	49
3	Methods of Sensory Analysis	50
3.1	Discriminative Testing	50
3.1.1	Paired Comparison Test (According to DIN EN ISO 5495:2007).....	50
3.1.2	Duo-Trio Test (According to DIN EN ISO 10399:2010-06)	59
3.1.3	Triangle Test (According to DIN EN ISO 4120:2007-10)	62
3.1.4	Ranking Test (According to DIN ISO 8587:2010-08)	68
3.2	Descriptive Test.....	77
3.2.1	Simple Descriptive Test.....	77
3.2.2	Profile Test	94
3.3	Acceptance Test.....	100
3.3.1	Quantification of Acceptance.....	100
3.3.2	Just About Right Scale (JAR).....	101

3.4	Drinkability	105
4	Material/Sample	106
4.1	Raw Materials	106
4.1.1	Water	106
4.1.2	Adjuncts and Malt	109
4.1.2.1	Sample Collection	109
4.1.2.2	Barley	111
4.1.2.3	Barley Malt/Malt	112
4.1.3	Hops	113
4.2	Processing Aids, Operating Supplies and Additives	116
4.2.1	Filter Aids and Stabilizing Agents	116
4.2.1.1	Collection and Division of Samples	116
4.2.1.2	Sensory Test	117
4.2.1.2.1	Aroma	117
4.2.1.2.2	Flavor	118
4.2.1.2.3	Filtration Test under Standard Operating Conditions	118
4.2.2	Additives	119
4.2.2.1	Calcium Chloride, Calcium Sulfate	119
4.2.2.2	Lactic Acid (Food Grade Lactic Acid)	120
4.2.3	Activated Charcoal	120
4.3	Gases	122
4.3.1	General Requirements for Compressed Gases	123
4.3.2	Aroma/Odor and Flavor	123
4.4	Auxiliary Equipment	125
4.4.1	Beer Hoses	125
4.4.2	Containers	126
4.4.2.1	Beverage Cans	126
4.4.2.2	Mini Kegs	127
4.4.2.3	PET Bottles	129
4.4.2.3.1	Sensory Test for Migration from PET Containers with Acetaldehyde as an Indicator	129
4.4.2.3.2	Aroma Transfer in Returnable PET Containers – the “Carry Over” Effect	131
4.4.3	Closures	133
4.4.3.1	Crown Caps and Pull-off Closures	133

4.4.3.2	Aluminum Roll-on Closures and Plastic Screw Caps.....	137
4.5	Quality Control Testing for Intermediate and Final Products	141
4.5.1	Intermediate Products	141
4.5.1.1	Wort.....	141
4.5.1.2	Lactic Acid from Natural Fermentation	144
4.5.1.3	Green Beer.....	146
4.5.2	Evaluation of Individual Beer Samples in Quality Control	149
4.5.2.1	DLG Quality Assessment for Beer	149
4.5.2.2	VLB Score Sheet.....	151
4.5.2.3	Doemens Score Sheet	153
4.5.2.4	Labor Veritas Score Sheet	154
4.5.2.5	Score Sheet for Hop-accentuated Beer (Pilsner) According to Kaltner	156
4.5.2.6	Score Sheet for Tasting Hop-aromatic Beer (CMA)	158
4.5.2.7	Tasting Scheme for Wheat Beers According to HERRMANN and SACHER	160
4.5.2.8	Tasting Scheme for Determining Aging in Beer According to Eichhorn	163
4.5.2.9	Modified "Trueness-to-type" Score Sheet	165
4.5.3	Beer-based Beverages.....	167
4.5.3.1	Stress Test for Beer-based Beverages	168
4.5.3.2	Profile Analysis.....	169
4.5.3.3	DLG Quality Assessment for Beer-based Beverages	172
4.5.4	Water, Table Water, Mineral Water, Water with Added Aroma	174
4.5.4.1	Stress Test for Water with Added Aroma	175
4.5.4.2	Profile Analysis.....	176
4.5.4.3	DLG Score Sheet for Water	179
4.5.5	Non-alcoholic Beverages (Soft Drinks, Fruit Juice Drinks).....	181
4.5.5.1	Stress Test for Non-alcoholic Beverages	181
4.5.5.2	Profile Analysis for Non-alcoholic Beverages.....	181
4.5.5.3	DLG Tasting Scheme for Non-alcoholic Soft Drinks	184
Index.....		188
List of Advertisers.....		191