

# Flavor Testing

## (Joint Working Group with Master Brewers Association of the Americas)

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### RECOMMENDATIONS

The system of flavor terminology, now in its final stages of revision, should remain valid for a few years. For determination of the threshold of added substances, Guadagni's Multiple Pairs Test and the Difference Rating Test of Mahoney *et al.* are recommended for further testing. Subject to approval by individual breweries, six to ten compounds will be tested as flavor reference standards during the coming year.

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The Subcommittee (formerly Subcommittee on Flavor Terminology) was renamed last year as a result of added duties (see below). The Subcommittee was established as a Joint Working Group with the MBAA, and it acts as a unit with the Flavour Terminology Working Group of the EBC, and with the Subcommittee on Flavour Thresholds of the EBC Analysis Committee. Under these arrangements, all brewers and brewing chemists in the Western world are represented, and discussions have started with Eastern countries. Ultimately, it is hoped that the results of the Subcommittee's work will have international application.

### SYSTEM OF FLAVOR TERMINOLOGY

Meetings to discuss the proposed system (*MBAA Tech. Quart. 12: 273 [1975]*) were held at the ASBC Annual Meeting at Milwaukee and again at the 5th International Fermentation

Symposium at Berlin, June, 1976. The resulting revisions were incorporated into a chapter on Systematic Beer Flavor Terminology for *The Practical Brewer*, which is being published by the MBAA.

More controversial suggestions were discussed at the Open Seminar of the Subcommittee at St. Louis and at a meeting held at Amsterdam on May 22, 1977. Only minor revisions were made, and it is now hoped that the recommended terminology will remain valid for awhile. But as terminology should never be static, future reconsideration will be needed from time to time, perhaps by a future subcommittee.

### FLAVOR THRESHOLDS

A paper presented at the 1977 Annual Meeting gives the results of preliminary studies by three laboratories, together with a literature review, and the outcome of discussions with experts on sensory evaluation in various countries. Two methods were selected for further study, namely 1) as standard reference method against which other procedures can be evaluated, Guadagni's Multiple Pairs Test (*J. Sci. Food Agr.* 24: 1277 [1973]), requiring 25 tasters and 100 sample pairs at each of five concentrations; and 2) as a method adequate for normal requirements, a Difference Rating Test based on Mahoney *et al.* (*Food Technol. Symp.*, p. 37, Sept. 1957. Supplement to *Food Technol.*; Vol. 11 [1957]) and requiring 16 participants tasting once only. These two preferred methods are now recommended for Subcommittee evaluation during the coming year.

### FLAVOR STANDARDS

It would be desirable to have Flavor Standards for each of the 130 terms in the Terminology System, but the Subcommittee has

found that the task of finding and testing such a number far exceeds its capacity. The purification and testing of a single substance require months of work, the success or failure of which can only be measured by long series of threshold determinations by large panels. The following compounds have been selected for study: 1) Sucrose (sweet); 2) sodium chloride (salty); 3) acetic acid (acetic); 4) Kalsec's isolone (bitter); 5) ferrous ammonium sulfate (metallic); 6) quercetin, catechin, or rutin (astringent); 7) eugenol (spicy); 8) ethanol (alcoholic); 9) isoamyl acetate (isoamyl acetate); 10) ethyl hexanoate (ethyl hexanoate); 11) ethyl acetate (ethyl acetate); 12) 2-phenylethanol (phenylethanol); 13) vanillin (vanilla); 14) acetaldehyde (acetaldehyde); 15) *cis*-3-hexenal (fresh-cut grass); 16) guaiacol (smoky or carbolic); 17) trichlorophenol (chlorophenol); 18) diacetyl (diacetyl); 19) caprylic acid (caprylic); 20) isovaleric acid (isovaleric); 21) butyric acid (butyric); 22) disodium sulfide (H<sub>2</sub>S); 23) ethyl mercaptan (mercaptan); 24) sunlight treatment (lightstruck); 25) autolyzed yeast (autolyzed); 26) DMS (DMS); 27) heated thiamine (yeasty); 28) furfural (papery); and 29) geosmin, 2-methylisoborneol or other triaxially substituted *trans*-decalin compound (musty, moldy). It is hoped that six to ten compounds can be tested during 1977/78 and that our European counterparts may be able to evaluate a similar number.

### METHODS OF FLAVOR TESTING

Work on the section on Flavor Testing for the *ASBC Methods of Analysis* is underway but will not be completed until methods for determining thresholds have been accepted and a number of reference substances suitable for panel training have been selected (see above).