

The subject matter with which this heading is primarily concerned is:

- . the production of ethanol or ethanol-containing beverages by fermentation
- . working up of the fermented solution to recover, perfect or modify the alcohol or alcoholic beverage
- . the preparation of materials used in the production of ethanol or alcoholic beverages by fermentation *for which no provision exists* in other headings
- . edible ethanolic compositions *per se*

This is also the heading for malting grain irrespective of whether the malt is intended for use in the production of an alcoholic beverage

Explanation of subject matter of heading and relationships with other headings

Energy conservation and heat balance

This is an important subject since the brewing process for example consumes great amounts of energy. It is considered to transcend all techniques and hence is not subordinated to any individual technique nor is it regarded as a unit function of general applicability since it tends to be organisational in character. Localised heating/cooling arrangements are regarded as a unit function (heating/cooling)

Associations

Classified here are inventions involving a working combination of a primary ethanolic fermentation with preparation of starting materials and/or treatment of the product to recover or purify the ethanol or to form a beverage or beverage intermediate *eg* the organisation of brewery plant. Also classified here and distinct from the latter associations are associations of ethanol or alcoholic beverage production with operations and techniques forming the subject matter of other Headings *eg* the association of a ferment with sedimentation to separate the yeast from the fermented solution, or with distillation to produce beverage spirits such as whisky, or with bottling

Individual techniques

Classified here are inventions involving the individual techniques of fermentation, preparation of starting materials, working up of the fermented product, *eg* to produce a beverage. Unit operations of general application such as filtering are not to be found in this heading but are classified in headings for the operation such as B1D, Filtering and settling. Elemental subjects peculiar to individual techniques are classified with the techniques but such subjects of wider applicability are dealt with separately (*See below*) as is also control. Methods and means for effecting unit functions such as heating/cooling of significance *per se* are also classified elsewhere where suitable headings exist. For example heating/cooling methods and means *per se* are subject matter for such headings as F4K, Direct contact heating of fluids; F4S, Indirect heating and cooling. For relationship with B1B, Distillation, evaporation and condensation, *see Working up &c, below*

Fermentation

This is the heading for the production of ethanol by fermentation irrespective of whether the product is intended to be worked up to produce an alcoholic beverage such as beer (made from the fermentation of a farinaceous extract obtained from starchy raw material such as barley) or wine (made from fermentation of juices of fruits)

Distinction is made between inventions at the level of a single fermentation operation, *eg* organisation of a fermenter, choice of fermenting conditions or procedure, material aspects such as choice of enzymes, microorganisms for the fermentation, inventions at a higher level of organisation concerned with plural fermenting operations, and inventions at a lower level of organisation concerned with unit or perfecting functions peculiar to fermentation *eg* controlling foam formation or removing yeast head. The preparation of raw materials for fermentation is treated separately, *See* malting, wort preparation, must preparation, hop treatment *below*. The preparation of pure cultures of yeast is subject matter for C6F, Microbiology &c but the cultivation of yeast in fermentation operations to produce ethanol is subject-matter for this heading. The treatment of water *eg* addition of gypsum (burtonizing), addition of acid, decarbonation, demineralizing by ion-exchange is subject matter for heading C1C, Treating water, sewage &c. Apparatus for carrying out microbiological operations of more general application can be found in such headings as C6F, Microbiology &c. The preparation of vinegar by fermentation (acetification) is subject-matter for A2B, Food preparations

Disclosure relating to micro-organisms used in preparing alcoholic beverages is recorded also by assigning terms from Heading C6Y, Indexing Schedule for micro-organism information. Details of the indexing practice are given in that schedule

Explanation of heading—contPreparation of malt

Apparatus and processes for malting grain and the products of such operations, irrespective of whether the product is to be used to produce beer, are classified here. No distinction is made here between plural, single operations or unit functions peculiar to the operation. Malting is the enzymatic conversion of starch and protein in grain to simpler water soluble compounds *ie* aminoacids, fermentable sugars and small peptides. Other treatments of grain or seed, including the preparation of grain for malting, *eg* washing, steeping wherein the product is still recognizable as grain or seed are subject matter for heading A2Q, Treating grain, seeds &c. Preparation of malt extracts and malt compositions is subject matter for A2B, Food preparations. With regard to kilns and like apparatus for malting, these are subject matter for heading F4G, Drying &c if there is interest in pure drying of the malt product *ie* in the moisture reduction stage of kiln operation without further reaction of the malt

Further excluded are:

- . comminuting apparatus of general application—B2A, Comminuting
- . malt stirrers and other travelling devices for turning over grain or malt—B1C, Mixing &c

Preparation and treatment of wort

Classified here are disclosures concerned with the unit operation of mashing (*ie* extraction of malted or unmalted cereals or mixtures thereof or other vegetable materials with water to produce a dissolved product (wort) and the various unit operations involved in working up the wort to produce a product suitable for fermentation, *eg* separating the wort from mashed grains *eg* by filtration, boiling to stabilize the composition of the wort, concentrating, drying, fractionating or reconstituting the wort. Associations of such operations are also to be found here and provision is made separately for these. Plural operations and unit functions peculiar to the individual operations are classified with the operation. Hopping the wort is treated separately below. Making extracts in general is subject matter for heading B1Q, Making extracts, solutions &c. Further, mashing has some affinity with making infusions of tea, coffee &c, which is subject, matter for heading A4E, Infusing. These headings should therefore be taken into consideration when searching

Preparation and treatment of must of grapes or other fruits

Classified here are inventions concerned with the preparation of must by crushing the grapes or other fruits, treatment of the must *eg* separating the residues (stems, skins) *eg* by pressing, settling prior to the fermentation

Treatment of hops: hopping wort or beer intermediate

In the production of beer, hops are added *inter alia* to compensate for the sweet taste of unhopped beer, to increase the biological stability of beer and to improve the head retention and body of the beer. Inventions concerned with treating hops *eg* to make hop extracts and hop preparations are found here

Single chemical compounds derived from hop extracts and their production is subject matter for headings for the compounds *eg* hop acids—C2C, Organic compounds

The addition of hops (hopping) to the beer is also classified here. Hopping may be achieved by boiling hops with the wort or by adding directly to the finished beer

Explanation of heading—contWorking up of ethanol and of ethanol-containing liquors to produce alcoholic beverages

After fermentation, the fermented solution is separated by sedimentation or other removal of yeast &c. The resulting products are generally lacking in taste and stability and further operations (loosely identified as working up) are required to produce a satisfactory beverage *eg* ageing and maturing, secondary fermentation *eg* for “lagering” or preparing sparkling wine, fining, clarifying, compounding with additives, *eg* flavouring, colouring agents, stabilizers &c, concentrating, drying, fractionating, reconstituting by the addition of water and carbon dioxide. Inventions concerned with such operations are classified here. Provision is made for associations of such operations but plural operations and unit functions peculiar to the operations are classified with the operation. Purifying merely by decanting, filtering, settling or straining is subject matter for B1D, Filtering and settling. Fining and clarifying of beverages in general which may be alcoholic beverages are subject matter for A2B, Food preparations. Distilling *eg* to increase alcohol content to produce spirits, concentrating by freeze separation of water are subject matter for B1B, Distillation; evaporation; condensation and B1G, Crystallizing from a liquid &c respectively, but processes not characterised by any apparatus features and which are specific to alcoholic beverages or beverages intermediates can be found here. This subject matter also has some affinity with working up operations performed on alcohol made by other techniques which are to be found in heading C2C, Organic compounds

Further excluded are:

- . aerating—B1C, Mixing &c
- . bottling *i.e.* filling and emptying containers such as barrels, bottles, cans, casks—B8T, Bottling; stoppers &c
- . electrolytic operations—C7B, Electrolysis
- . pasteurising, preserving alcoholic beverages—A2D, Preserving food animal and vegetable substances &c
- . removing froth from beverages—B1M, De-gassing

Subjects of general applicability (*i.e.* to any of the techniques described above)

Classified here are *eg* choice of specific kinds of apparatus units *eg* type of pump, or heating/cooling device, choice of constructional materials, servicing arrangements *eg* cleaning corrosion-prevention, indicators, alarms. Often these are not essentially associated with any particular technique

Excluded are:

- . saccharometers—G1S, Measuring and testing physical properties
- . specific gravity estimating apparatus—G1S, Measuring and testing physical properties
- . testing colour—G2J, Optical apparatus &c

Control

Classified here are disclosures of methods and the associated apparatus dependent upon the monitoring of particular parameters in a technique of this heading with the subsequent adjustment (if necessary) of the operating heading with the subsequent adjustment (if necessary) of the operating conditions

Ethanol compositions

Classified here are disclosures concerned with edible ethanol compositions *e.g.* the choice of additives such as flavouring, colourants and artificial sweeteners, stabilizers &c. or an edible ethanol-based composition such as an alcoholic beverage *per se*. In practise, flavourings, colourants and artificial sweeteners tend to have a general application so that a single disclosure in these subjects may be classified in more than one heading depending on the specific applications disclosed, *See* headings for compounds and compositions which are flavoured, coloured or sweetened. Additives having a general food application which may be an alcoholic beverage are not to be found here but are classified in heading A2B, Food preparations. Materials of significance *per se* are classified elsewhere if suitable material headings exist *eg* C2C, Organic compounds, and are not additionally classified in this heading for the mere disclosure of utility as an additive for an alcoholic beverage. Methods and apparatus for compounding are treated above under working up operations

Further excluded are:

- . preservatives for beer—A2D, Preserving food animal and vegetable substances &c

The exclusion references in this heading are not exhaustive. Reference should be made to the appropriate general heading/s for processes, elements or devices which may be more widely applicable than can appropriately be classified in this heading

Relationship with the Universal Indexing Schedules (heading UIS)

As classification in this heading inherently connotes use or application, UIS will rarely, if ever, be applied to specifications classified here

Operative date for Key entries

The operative date for the terms in this heading is that of Edition B

Classifying Schedule

- EA concerned with heat or energy balance or conservation arrangements
 . *See also* Indexing schedule
 . localised heating/cooling arrangements *See* term EKA *below*
- EBA associations of ethanol or alcoholic beverage production with an operation or technique forming the subject matter of another heading
 . *See also* Indexing Schedule
- EC associations of ethanolic fermentation with preparation of starting materials and/or treatment of the product to recover or purify the ethanol or to form an alcoholic beverage
 . *See also* Indexing Schedule
 primary fermentation—
 . *See* Indexing schedule
 . secondary fermentation *See* term EJE *below*
- EDA . plural fermenting operations
 . single fermenting operation—
- EDBA . . organisation of a fermenter, methods of operating a fermenter
 . . process characteristics—
- EDBB . . . choice of materials used in the process *e.g.* choice of mashing composition, enzymes or micro-organisms
 techniques for preparation of starting materials *See* terms EE-, EF-, EG *below*
- EDBC . . . choice of process conditions and/or procedure to obtain an alcoholic beverage of reduced alcohol content
- EDBD . . . choice of other process conditions or procedures
- EDBE . . . combination of material aspect with process conditions and/or procedure
- EDC . unit or perfecting functions peculiar to fermentation

Classifying Schedule—cont

- malting—
- EEA . apparatus for malting grain, methods of operating such apparatus, unit or perfecting functions
- EEB . process characteristics, and products thereof
- preparation and treatment of wort—
- EFA . grinding the malt
- . mashing—
- EFBA . . apparatus, methods of using apparatus, unit or perfecting functions thereof
- . . processes, *including* choice of material to be mashed—
- EFBB . . . mashing malt or mixtures of malt with cereal
- EFBC . . . mashing unmalted cereals using enzyme preparations generally excluding malt
- EFBX . . . other
- EFC . separating wort from mashed grains
- EFD . heating or cooling treatment of wort
- . hopping the wort *See* term EHC *below*
- EFE . separating hops from boiled wort; clarifying the wort
- EFF . concentrating, drying, fractionating, or reconstituting wort
- EFX . other after-treatment
- EFY . associations of functionally different operations above, *including* association with hopping the wort
- EG preparation and treatment of must of grapes or other fruit
- treating hops, hop extracts and preparations; hopping—
- . treating hops—
- . . making hop extracts
- . . other
- EHAA . hop preparations
- EHAX . hopping wort or beer
- EHB . working up of ethanol and ethanol-containing liquors to produce alcoholic beverages—
- EHC . *See also* Indexing schedule
- EJA . recovery of alcohol from fermentation stage
- EJB . recovery of alcohol from waste material *e.g.* press residues
- . fining, clarifying—
- . . with the aid of ion-exchange or other adsorption material
- EJCA . . precipitation by physical means *e.g.* by irradiation, vibration
- EJCB . . precipitation by chemical means
- EJCC . . other
- EJCD . . other
- EJD . compounding with additives and other ingredients
- EJE . secondary fermentation
- EJF . operations for varying the composition of fermented solutions *e.g.* concentrating, drying, fractionating or reconstituting
- EJG . aging or maturing
- EJH . recovery of by-products; regeneration of materials
- EJX . other unit operations
- EJY . associations of functionally different working up operations
- subjects of general applicability—
- . *See also* Indexing schedule
- EKA . choice of specific kinds of component apparatus
- EKB . choice of specific constructional or surface materials for apparatus
- EKC . servicing arrangements *e.g.* cleaning, corrosion-prevention, indicators, alarms
- EL control
- . *See also* Indexing schedule
- ethanol compositions—
- . *See also* Indexing schedule
- . methods of compounding *See* term EJD *above*
- EMA . choice of additives therefor
- EMX . other compositional subject matter
- EX other subjects
- . *See also* Indexing schedule

Indexing Schedule

The terms of this schedule are assignable with any of terms EA, EBA, EC, ED—, EJ—, EK, EL, EM—, and EX from the classifying schedule

- type of beverage produced or treated—
- E101 . beer
- E102 . whisky
- E103 . wine from grapes
- E110 . other beverages of relatively high alcoholic content *including* purified beverages
- E111 . other beverages *e.g.* cider