
Single serve capsule for producing coffee beverages
with and without crema

The invention relates to a single serve capsule for producing a coffee beverage, wherein the single serve capsule has a capsule base body in which a textile
5 fabric and a beverage substance are arranged, wherein the beverage substance is provided for storage in the single serve capsule and for extraction in the single serve capsule through the textile fabric by means of pressurized hot water, wherein the beverage substance
10 is substantially pulverulent and comprises roasted, ground coffee, wherein the roasted, ground coffee has a color value in the range from 50 to 150.

Beverage preparations that are divided into portions in
15 capsule or pad systems are generally known from the prior art. For example, generic single serve capsules for preparation of coffee and espresso are disclosed in documents EP 1792850 B1, EP 1344722 A1 and US 2003/0172813 A1. In addition, reference is made to
20 the documents DE 102010034206, WO 2012/010317, WO 2012/038063 and DE 102011010534.

Single serve capsules for producing a beverage are preferably frustoconical or cylindrical and are
25 produced, for example, from a deep-drawn plastic film or in a plastics injection molding process. They customarily have an open filling side having a flange, onto which a membrane (covering film) is sealed or glued, a closed or open capsule base, wherein, between the
30 beverage substance and the capsule base, one or more assembly elements, such as, for example, a particle sieve, a liquid distributor, a fleece, a felt, a shut-off film and/or the like can be present.

To prepare a coffee beverage, the single serve capsule is introduced into a brewing chamber of a preparation apparatus. After, or during, the closing process of the brewing chamber, the single serve capsule is preferably
5 opened on the closed base side thereof by means of an outlet spike arranged in the brewing chamber. Single serve capsules having partially open capsule bases already have one opening on the base side thereof. After the brewing chamber is sealed off, the filling
10 side of the single serve capsule that is closed by a membrane or covering film is pierced by piercing means. Subsequently, preparation liquid, preferably hot water, is transported under pressure into the single serve capsule. The preparation liquid flows through the
15 beverage substance and extracts and/or dissolves from the beverage substance the substances that are required for beverage production.

In the preparation of an espresso, for example a
20 brewing water pressure of up to 20 bar acts on the coffee powder to extract the essential oils. This pressure, in addition, also acts on the filter medium which is situated between the coffee powder and the pierced capsule outlet of the capsule base. The sudden
25 pressure drop on the bottom side of the filter medium leads to foam formation in the beverage, for example in the form of a crema of a coffee beverage.

Crema is obtained through the fineness of the particles, the filter system and a high pressure in the
30 extraction volume. If the system is unpressurized, no crema is formed.

For certain beverages, for example the classic filter
35 coffee without crema, which is consumed, in particular in the USA and Scandinavia, foam formation, however, is unwanted.

The amount of ground coffee required to obtain the desired beverage volume, which amount is present in a single serve capsule, increases virtually linearly with the beverage volume when the further charge material characteristics such as degree of roasting and degree of grinding correspond to the standard.

It is known that, particularly in the case of beverage amounts of greater than 150 ml, the additional extraction of the coffee grounds leads to washing-out of unwanted taste components which give the end product a bitter, acidic, stale taste. Obvious correction measures could be to increase the weighed portion or to grind the coffee beans finer. Increasing the weighed portion, however, leads to a poorer extraction, since the extraction medium can no longer wash around the particles uniformly. The reduction of the medium particle size increases the pressure in the extraction space. This leads to an additional extraction of unwanted components.

In the prior art, there are already system solutions which offer absolutely differing beverage productivities with an unchangeable fixed volume of the single serve packaging. However, these systems provide a disproportional volume store of the single serve packaging.

There is a need for single serve capsules for producing coffee beverages which have a uniform size and therefore can be part of a system solution. The single serve capsules should have a high productivity for coffee beverages of different volumes that are faultless in sensory quality.

There is especially a need for single serve capsules which, by changing individual, defined parameters,

permit the production of different coffee beverages of good sensory quality.

The object of the present invention was to provide
5 single serve capsules for producing coffee beverages which have advantages over single serve capsules of the prior art.

In particular, beverage preparations that are divided
10 into portions having variable, market-specific beverage productivities should be provided in a predetermined, small-volume unchangeable packaging or storage volume. The variable, market-specific beverage productivities to be achieved should be in this case preferably
15 between 20 ml and 170 ml. In addition, the beverage preparations obtained should be equivalent or enhanced in sensory quality to the beverages prepared in the previously customary preparation apparatuses.

20 In particular, coffee beverages of good sensory quality should be provided with different degrees of roast in the medium volume range (preferably 20 to 170 ml). In addition, these coffee beverages should be able to be produced optionally with crema or crema-free, wherein
25 crema-free coffee beverages should correspond to the beverages which are prepared with apparatuses of unpressurized filtration.

These objects are achieved by the present invention,
30 i.e. a single serve capsule for producing a coffee beverage,

wherein the single serve capsule has a capsule base body in which a textile fabric and a beverage substance
35 are arranged,

wherein the beverage substance is provided for storage in the single serve capsule and for extraction in the

single serve capsule through the textile fabric by means of pressurized hot water,

wherein the beverage substance is present in the single
5 serve capsule in an amount in the range from 1 to 20 g;

wherein the beverage substance is substantially pulverulent, comprises roasted, ground coffee which in the dry state has a D[4,3] value in the range from 150
10 to 550 μm ; and

wherein the roasted, ground coffee has a color value in the range from 50 to 150.

15 The D[4,3] value is the median volume D[4,3] which is a measured parameter known to those skilled in the art and can be used for describing the medium particle size.

20 It has surprisingly been found that by the special combination of single serve capsule configuration, filter medium, roasting curve of the roast coffee, median particle size of the ground roast coffee and amount of the coffee situated in the extraction volume,
25 the beverage respectively to be achieved and also the desired beverage volume can be set.

According to the invention, the characteristics degree of roasting, degree of grinding and amount of coffee
30 situated in the extraction volume (weighed portion) are varied and matched to one another in such a manner that even with very low weighed portions, high beverage volumes can be achieved, which correspond in sensory quality to the specifications. The yield of beverage
35 volume per amount of coffee situated in the extraction volume can thus be improved.

In addition, it has surprisingly been found that not only the combination of a higher degree of grinding and a lower degree of roasting, and also the combination of a smaller degree of grinding and a higher degree of roasting yield beverages of good sensory quality. In addition, by targeted modification of the textile fabric, optionally a coffee beverage with or without crema can be obtained.

10 The volume of the single serve capsule according to the invention is preferably in the range from 20 to 35 ml.

In a preferred embodiment, the volume of the single serve capsule according to the invention is 25 ± 10 ml, more preferably 25 ± 8 ml, still more preferably 25 ± 6 ml, most preferably 25 ± 4 ml, and in particular 25 ± 2 ml.

20 In another preferred embodiment, the volume of the single serve capsule according to the invention is 30 ± 10 ml, more preferably 30 ± 8 ml, still more preferably 30 ± 6 ml, most preferably 30 ± 4 ml, and in particular 30 ± 2 ml.

25 The beverage substance present in the single serve capsule according to the invention is substantially pulverulent and comprises roasted ground coffee.

30 The coffee can be of a single variety, or consist of a mixture of two or more of any desired coffee varieties.

In a preferred embodiment, the beverage substance present in the single serve capsule comprises one or more coffee varieties selected from Arabica, Robusta, and Liberica.

In a particularly preferred embodiment, the beverage substance present in the single serve capsule comprises

roasted, ground coffee, wherein the coffee is a mixture of the coffee varieties Arabica and Robusta.

- 5 In a further particularly preferred embodiment, the beverage substance present in the single serve capsule consists of roasted, ground coffee, wherein the coffee is a mixture of the coffee varieties Arabica and Robusta.
- 10 In a preferred embodiment, the beverage substance present in the single serve capsule comprises roasted, ground coffee, wherein the coffee is exclusively Arabica coffee.
- 15 In a further preferred embodiment, the beverage substance present in the single serve capsule comprises roasted, ground coffee, wherein the coffee is exclusively Robusta coffee.
- 20 The coffee can be decaffeinated.

The coffee can be flavored. Flavored coffee is preferably obtained in that the coffee beans, after the roasting, are treated with natural or synthetic
25 flavorings or oils.

The bulk weight of the roasted, ground coffee, depending on variety and degree of grinding, is 250 g/l to 400 g/l. The bulk weight is determined by means of
30 the Hag instrument. For this purpose, the ground coffee is placed into a container of known volume (250 ml) which, before filling, is tared on the balance. The coffee is filled into the container to overflowing and is skimmed off level on the upper container rim using a
35 flat item. The full container is weighed against the tare weight and converted to g/l by means of a factor known to those skilled in the art.

The roasted, ground coffee preferably has a specific surface area in the range from 5 to 90 m²/kg.

Preferably, the specific surface area of the coffee is
5 5 ± 3 m²/kg, 10 ± 5 m²/kg, 15 ± 1 m²/kg, 32 ± 1 m²/kg,
45 ± 1 m²/kg, 55 ± 1 m²/kg, 58 ± 1 m²/kg, or 60 ± 5
m²/kg.

The roasted, ground coffee preferably has a water
10 content in the range from 1 to 5%.

In order to achieve beverages having different beverage
volumes - with or without crema - the roasting of the
individual varieties is an important element. In this
15 operation, taste and color are affected.

The degree of roasting can be determined using a color
measuring instrument (e.g. Colorette 3b from Probat,
Emmerich, Germany).

20

In a particularly preferred embodiment, the total
amount of the ground coffee which is present in the
beverage substance is roasted.

25 The beverage substance comprises roasted, ground
coffee, wherein the roasted, ground coffee has a color
value in the range from 50 to 150.

The color value of roasted, ground coffee is a
30 generally recognized factor for quantifying the degree
of roasting. The color value is determined according to
the invention using a color measuring instrument of the
Colorette 3b type from Probat; constructed 2011. The
principle of measurement is based on a reflection
35 measurement. In this case the coffee sample that is to
be measured is illuminated with light of two wave-
lengths (red light and infrared). The sum of the

reflected light is evaluated electronically and is displayed as a color value.

The roasted, ground coffee has a degree of roasting which, expressed via the color value (measured with Colorette 3b from Probat; constructed 2011), is in the range from 50 to 150, preferably 50 to 130, and more preferably 50 to 120.

In a further embodiment, the roasted, ground coffee has a degree of roasting which, expressed via the color value (measured with Colorette 3b from Probat; constructed 2011), is in a range from 50 to 150, preferably 50 to 120, more preferably 50 to 100, or 50 to 80, most preferably 50 to 95, or 50 to 75, and in particular 50 to 90 or 50 to 70.

The roasted, ground coffee has a degree of roasting which, expressed via the color value (measured with Colorette 3b from Probat; constructed 2011), is in a range from 50 to 150, preferably 60 to 130, more preferably 65 to 135, and in particular 70 to 120.

The color values (measured with Colorette 3b from Probat; constructed 2011) of particularly preferred degrees of roasting A¹ to A⁶ are listed in the table hereinbelow:

	A ¹	A ²	A ³	A ⁴	A ⁵	A ⁶
Colorette color value	50-100	50-80	50-90	50-70	60-130	70-120

Embodiment A⁶ is very particularly preferred.

The beverage substance is substantially pulverulent and comprises roasted, ground coffee which in the dry state has a D[4,3] value in the range from 150 to 550 μm .

The D[4,3] value is the median volume D[4,3], which is a measured parameter known to those skilled in the art and can be used for describing the medium particle size.

Preferably, the beverage substance makes up all of the contents of the single serve capsule. If the beverage substance, in addition to the roasted, ground coffee, contains other solid components, in particular further pulverulent components, according to the invention the D[4,3] value relates to the totality of all particles. This also applies to blends of roasted, ground coffee, the components of which have independent, i.e. in the separated state, different D[4,3] values; in this case, according to the invention the D[4,3] value likewise relates to the totality of all coffee particles including any further pulverulent components present.

In a preferred embodiment, the beverage substance is substantially pulverulent, and comprises roasted, ground coffee which in the dry state has a D[4,3] value in the range from 200 to 500 μm .

In a further preferred embodiment, the beverage substance is substantially pulverulent, and comprises roasted, ground coffee which in the dry state has a D[4,3] value in the range from 300 to 400 μm , or 350 to 550 μm .

By selecting a defined degree of grinding (expressed as D[4,3] value) in combination with the textile fabric and the amount of weighed portion, the respective beverage may be prepared in the desired sensory quality. Methods for determining the particle size distribution and also the medium particle size are known to those skilled in the art. The D[4,3] value gives the median volume which according to the

invention is preferably determined by laser measurement, for example using a *Malvern Mastersizer 3000* and the dispersion unit *Malvern AeroS*. In this case, in a dry measurement, preferably approximately 7 g of ground
5 roast coffee are transferred into the measuring cell at a dispersion pressure of 4 bar. With laser diffraction, the particle size distribution and the $D[4,3]$ value may be determined by means of determining the scattered light and the resultant angle of diffraction according
10 to the Fraunhofer theory.

The particle size, or the particle size distribution, of the ground coffee influences the brewing pressure, the formation of a crema and the taste of the coffee
15 beverage.

In a preferred embodiment, the ground coffee, in the dry state, has a $D[4,3]$ value in the range from 215 to 365 μm , more preferably 240 to 340 μm , most preferably
20 265 to 315 μm , and in particular 290 μm . In another preferred embodiment, the ground coffee, in the dry state, has a $D[4,3]$ value in the range from 235 to 385 μm , more preferably 260 to 360 μm , most preferably 285 to 335 μm , and in particular 310 μm . In a further
25 preferred embodiment, the ground coffee, in the dry state, has a $D[4,3]$ value in the range from 255 to 405 μm , more preferably 280 to 380 μm , most preferably 305 to 355 μm , and in particular 330 μm . In another preferred embodiment, the ground coffee, in the dry
30 state, has a $D[4,3]$ value in the range from 275 to 425 μm , more preferably 300 to 400 μm , most preferably 325 to 375 μm , and in particular 350 μm . In a further preferred embodiment, the ground coffee, in the dry state, has a $D[4,3]$ value in the range from 325 to
35 475 μm , more preferably 350 to 450 μm , most preferably 375 to 425 μm , and in particular 400 μm . In another preferred embodiment, the ground coffee, in the dry state, has a $D[4,3]$ value in the range from 375 to

525 μm , more preferably 400 to 500 μm , most preferably 425 to 475 μm , and in particular 450 μm . In a further preferred embodiment, the ground coffee, in the dry state, has a D[4,3] value in the range from 425 to 575 μm , more preferably 450 to 550 μm , most preferably 475 to 525 μm , and in particular 500 μm .

Particularly preferred embodiments B^1 to B^8 are summarized in the table hereinafter:

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	B^1	B^2	B^3	B^4	B^5	B^6	B^7	B^8
D[4,3] [μm]	290 $\pm$ 25	310 $\pm$ 25	330 $\pm$ 25	350 $\pm$ 25	400 $\pm$ 25	450 $\pm$ 25	500 $\pm$ 25	500 $\pm$ 50

Very particular preference is given to the embodiments B^2 to B^4 .

15 On the basis of the D[4,3] value, an optimum ratio between extraction efficiency and extraction rate firstly, and filtration rate, secondly, can be set.

In a preferred embodiment, the entire amount of ground coffee in the dry state has the same particle size.

In a particularly preferred embodiment, the ground coffee has a defined mixture of different particle sizes.

25

The preferred particle size distributions are summarized in the table hereinbelow (embodiments C^1 to C^7):

Particle size [μm]	C ¹	C ²	C ³	C ⁴	C ⁵	C ⁶	C ⁷
< 100	20-30	20-40	20-30	15-25	12-23	5-10	0-5
> 100	27-37	25-35	20-30	10-15	11-16	13-25	15-20
> 250	33-43	30-45	40-50	40-45	42-47	45-60	35-45
> 500	5-10	5-15	5-15	15-25	16-26	20-40	40-50
D _v 50 μm	250 $\pm$ 25	290 $\pm$ 25	310 $\pm$ 25	350 $\pm$ 25	400 $\pm$ 25	450 $\pm$ 25	500 $\pm$ 25

Particularly preferred embodiments are C² to C⁴.

The beverage substance is present in the single serve capsule in an amount in the range from 1 to 20 g.

Preferably, the beverage substance is present in the single serve capsule in an amount in the range from 2 to 11 g, more preferably 3 to 8 g, or 4 to 11 g, still more preferably 4 to 7 g, or 5 to 11 g, most preferably 4.5 to 6.5 g, or 6 to 10 g, and in particular 5 to 6 g, or 7 to 10 g.

In a preferred embodiment, the beverage substance is present in the single serve capsule in an amount in the range from 4 to 11 g.

In a particularly preferred embodiment, the beverage substance is present in the single serve capsule in an amount of 6 ± 2 g, more preferably 6 ± 1.5 g, still more preferably 6 ± 1 g, most preferably 6 ± 0.5 g, and in particular 6 ± 0.3 g.

In another preferred embodiment, the beverage substance is present in the single serve capsule in an amount of 7.7 ± 4 g, more preferably 7.7 ± 3 g, still more preferably 7.7 ± 2 g, most preferably 7.7 ± 1 g, and in particular 7.7 ± 0.5 g.

In another preferred embodiment, the beverage substance is present in the single serve capsule in an amount of

8 $\pm$ 4 g, more preferably 8 $\pm$ 3 g, still more preferably 8 $\pm$ 2 g, most preferably 8 $\pm$ 1 g, and in particular 8 $\pm$ 0.5 g.

5 In a further preferred embodiment, the beverage substance is present in the single serve capsule in an amount of 9 $\pm$ 4 g, more preferably 9 $\pm$ 3 g, still more preferably 9 $\pm$ 2 g, most preferably 9 $\pm$ 1 g, and in particular 9 $\pm$ 0.5 g.

10

The beverage substance can optionally contain additives such as chocolate powder, milk powder, tea powder, sweeteners such as sugar or sugar replacers, spices or the like.

15

In a preferred embodiment, the beverage substance does not contain any additives and consists exclusively of partially roasted and also ground coffee.

20 The single serve capsule for producing a coffee beverage has a capsule base body in which a textile fabric and a beverage substance are arranged, wherein the beverage substance is provided for storage in the single serve capsule and for extraction in the single
25 serve capsule through the textile fabric by means of pressurized hot water.

The capsule base body is preferably a deep-drawn capsule base body, which is preferably frustoconical or
30 cylindrical.

The capsule base body additionally has a wall region, wherein the wall region preferably has a plurality of grooves, and the grooves are provided running between
35 the membrane which closes the open filling side, and the base region over at least a part of the height extension of the wall region. These grooves have the effect that the single serve capsule has a higher

mechanical stability and an improved behavior during flow of the extraction liquid through the single serve capsule in the brewing chamber, whereby an improvement of the extraction process can be induced.

5

Preferably, the capsule base body, in the region of the recess, has a greater diameter than in the wall region between the recess and the base region. As a result, this advantageously yields a particularly simple and robust possibility for inducing stackability of the single serve capsules and/or stackability of the capsule base body of the single serve capsules.

In a further preferred embodiment, the ratio of the diameter of the wall region adjacent to the flange/rim region, firstly, to the diameter of the flange, secondly, is between 0.85 and 0.89, and more preferably 0.87. In addition, the diameter of the wall region adjacent to the flange is preferably 39 mm and/or the diameter of the flange is preferably 45 mm.

In a further preferred embodiment, the capsule base body in the wall region between the base region and the flange has a lower wall thickness than in the region of the recess. According to this embodiment, the single serve capsule in addition preferably has grooves in the wall region, as a result of which an improved stability is achieved. A considerable material saving is possible hereby, as a result of which costs and energy expenditure for producing the single serve capsule can be reduced.

The height of the capsule base body from the base region to the flange is preferably 20 to 35 mm, more preferably 22 to 32 mm, still more preferably 25 to 29 mm, and most preferably 27 mm.

The single serve capsule consists, for example, of plastic, a natural material and/or a biodegradable material.

5 Preferably, the single serve capsule contains polyethylene; crosslinked polyethylene; polypropylene; copolymers of ethylene, propylene, butylene, vinyl esters and unsaturated aliphatic acids and also salts and esters thereof; vinylidene chloride copolymers;
10 acetyl resins; acrylic and methacrylic acid ester polymers and copolymers thereof; polyisobutylene; isobutylene copolymers; polyterephthalic acid diol esters; polyvinyl ethers; silicones; unsaturated polyester resins; polycarbonates and mixtures of polycarbonates with polymers or copolymers; polyamides;
15 polystyrene, styrene copolymers and graft polymers; polyvinyl chloride; polybutene; polyurethanes; poly-(4-methyl-1-pentene); crosslinked polyureas; acrylonitrile copolymers and graft polymers; polyacrylates;
20 starch plastics such as thermoplastic starch; polylactide copolymers or thermoplastic polyesters of polyhydroxy fatty acids.

The capsule base body can be colorless or colored in
25 any desired color. In addition, the capsule base body can be transparent, translucent or opaque.

Preferably, the capsule base body is colored and
opaque.

30

The outside of the capsule base body can be printed.

The capsule base of the single serve capsule can be partially open or closed.

35

In a preferred embodiment, the capsule base of the single serve capsule is closed.

According to this embodiment, the capsule base is first perforated in the brewing chamber by means of a perforating means acting from the outside onto the single serve capsule base for generating an outlet opening.

In a further preferred embodiment, the capsule base of the single serve capsule is partially open.

In the case of single serve capsules having a partially open capsule base, the opening, for product protection, is closed by means of a seal which, for example, is perforatable by means of the perforating means, or can be taken off manually from the capsule base. Such single serve capsules are known in the prior art.

According to this embodiment, the opening in the capsule base is preferably arranged centrally and preferably has a circular structure.

The relative ratio between the area of the opening in the capsule base and the area of the entire capsule base is preferably in the range from 0.08 to 0.13; more preferably 0.09 to 0.12; still more preferably 0.09 to 0.11, and is most preferably 0.10.

The single serve capsule is preferably hermetically tightly sealed, i.e. the beverage substance situated in the single serve capsule is substantially aroma-tightly sealed from the environment before the extraction process.

The open filling side of the capsule base body is closed by a membrane or covering film.

The membrane or covering film can be fabricated from the same material, or from another material, as the

capsule base body, and is preferably fastened to the capsule base body by sealing and/or gluing.

5 Preferably, the membrane comprises one or more layers of different plastics having the barriers necessary for product protection; inter alia optionally aluminum foil. The compositions necessary therefor are known to those skilled in the art.

10 Preferably, the outside of the membrane, i.e. the side facing away from the filling, is partly or completely printed.

15 In the capsule base body of the single serve capsule, a textile fabric is arranged which acts as filter. Textile fabrics in the meaning of the invention comprise flat, i.e. two-dimensionally extending structures which comprise fibers. The fibers themselves can form any type of textiles, in particular woven fabric, 20 fleeces, felts, sponges etc.

In single serve capsules for beverage production, different textile fabrics can be used as filters. Different embodiments comprise flat and flexible to 25 rigid and three-dimensional textile fabrics. Particular preference is given to porous-cascade-type textile fabrics according to the invention. With porous-cascade-type textile fabrics, a sufficient high brewing pressure is achieved in the extraction volume which 30 delivers a beverage of faultless sensory quality. At the same time, the beverage substance is retained to the desired extent in the extraction space and the foam formation for achieving the crema on the beverage can be prevented.

35

Porous-cascade-type textile fabrics have a markedly three-dimensional structure which contains pore-like cavities, wherein the liquid flowing through which is

to be filtered flows as in a cascade from pore level to pore level. Any foam present is broken and does not form a crema.

Flat-permeable textile fabrics have a flat paper-thin
5 form. Owing to randomly arranged fibers having few layers arranged one above the other, a textile fabric of low mesh width results. The close-fitting filter feed generates sufficient pressure to extract crema-forming substances.

10

The use of a textile fabric as filter has the advantage that a complex plastic injection process or deep-drawing or embossing process for producing plastic
15 sieves can be omitted. The product costs are thereby considerably reduced. In addition, no support structure is necessary, since the textile fabric is directly supported on the capsule base. In comparison with the plastics filters known from the prior art, the textile fabric in addition has the advantage that it has a
20 markedly larger liquid intake surface area. In addition, liquid crossflow is permitted (in parallel to the principal plane of extension of the filter plane), whereby an improved mixing and effluent behavior is achieved. Furthermore, it has been found that when a
25 textile fabric is used the risk of sieve blockages is markedly reduced or is virtually eliminated. The textile fabric is blockage-resistant not only in the case of a beverage preparation having a preparation liquid under comparatively low pressure, but also in
30 the case of a beverage preparation having a preparation liquid at comparatively high pressure. In addition, a liquid crossflow is reliably always maintained in the textile fabric, and effluent of the liquids entering into the textile fabric to an effluent opening is
35 ensured. The textile fabric is preferably constructed in a tear-resistant manner.

The textile fabric preferably comprises a fleece, felt and other textiles or structures having pores and channels such as open-pore sponges, open-pore foam or a combination thereof.

5 In a preferred embodiment of the present invention, the textile fabric is a fleece which comprises a fleece material produced from fine plastic fibers such as, for example, fine polyester fibers and which, in particular, is a random-fiber and/or fiber-oriented fleece
10 material. The fleece is preferably flat-permeable.

In another preferred embodiment of the present invention, the textile fabric has a felt structure. The textile fabric can have one or more felt structures
15 arranged one above the other. The felt is preferably of porous-cascade type and can comprise, for example, viscose, polyester, polyamide, polypropylene or combinations thereof. A plurality of fleeces and/or felts can be combined one after the other. Particularly
20 preferably, the felt has a needle felt structure. According to this embodiment, the textile fabric preferably consists of at least one felt structure and one supporting structure, in particular a woven fabric structure, wherein the felt structure particularly
25 preferably comprises the supporting structure at least in a partial section of the volume. Preferably, the textile fabric has two felt structures which are separated from one another by the supporting structure. Preferably, the two felt structures are arranged one
30 above the other in the single serve capsule and are bonded to one another. The thickness of the two felt structures can be identical or different. Preferably, a felt structure facing the beverage substance is thinner than the felt structure facing the capsule base, or
35 vice versa. Preferably, the surface of the felt structure is treated, for example heat-treated, in order to fix loose fibers, for example.

A textile fabric which has a supporting structure, in particular a woven fabric structure, and a felt structure, can be produced, for example, in that a woven fabric structure consisting of longitudinal and transverse threads is provided. For the construction of a felt, in particular a needle felt, preferably fiber units are selected from 0.8 to 7 dtex. The combination of the individual fibers with one another to form a felt and/or anchoring thereof in the supporting structure takes place preferably via the production process of needling. In this case, needles having reverse barbs are stabbed at high velocity into the presented fiber package and pulled out again. Owing to the barbs, the fibers, via a multiplicity of resulting loops, are intertwined with one another and/or with the supporting woven fabric.

When the textile fabric comprises both a felt and a fleece, they are preferably bonded to one another. The felt and/or the fleece can be used as multilayers, wherein the layers can differ in the type of starting material used and/or the processing thereof.

In a further preferred embodiment of the present invention, the textile fabric is a filter woven fabric, e.g. an open-pore sponge and/or an open-pore foam which is arranged in the region of the capsule base. The sponge comprises, for example, a reticulated polyurethane foam.

In a particularly preferred embodiment, the textile fabric is flat-permeable, preferably a flat-permeable fleece.

When the textile fabric is a flat-permeable fleece, the capsule base of the single serve capsule is preferably closed.

In a further particularly preferred embodiment, the textile fabric is of porous-cascade type, preferably a porous-cascade-type felt.

- 5 When the textile fabric is a porous-cascade-type felt, the capsule base of the single serve capsule is preferably partially open.

Textile fabrics have a certain extensibility in the
10 longitudinal and transverse directions. Depending on material thickness and composition and/or structure of the material, the extensibility is determined, e.g., as specified in ISO 9073 or, e.g., as specified in ISO 13934. According to the invention, the extensibility of
15 the textile fabric is preferably determined as specified in ISO 9073 or as specified in ISO 13934.

When the textile fabric is a fleece and the material thickness is less than one millimeter, the maximum
20 tensile force in the longitudinal direction is preferably 50 N to 150 N per 5 cm and in the transverse direction preferably 30 N to 90 N per 5 cm, wherein the maximum tensile force extension in the longitudinal and transverse directions preferably comprises 20% to 40%.

25 When the textile fabric is a fleece and the material thickness is less than one millimeter, the maximum tensile force in the longitudinal direction is preferably 50 N to 150 N per 5 cm and in the transverse
30 direction preferably 30 N to 90 N per 5 cm, wherein the maximum tensile force extension in the longitudinal and transverse directions preferably comprises 20% to 40%.

If the material thickness is more than one millimeter,
35 the maximum tensile force in the longitudinal and transverse directions is preferably 40 daN to 120 daN, wherein the maximum tensile force extension in the longitudinal and transverse directions is 20% to 40%.

The textile fabric has a plurality of filter openings, wherein the filter openings preferably a medium diameter in the range from 100 to 1000 μm , more
5 preferably 200 to 700 μm , most preferably 250 to 550 μm , and in particular 300 to 500 μm . Methods for determining the medium diameter of the filter openings are known to those skilled in the art.

10 In a preferred embodiment, the textile fabric has a plurality of filter openings which are constructed in such a manner that the sum of the cross sections of the filter openings comprises between 0.1 and 10%, more preferably between 1 and 3%, and most preferably 1.4%,
15 of the total cross section of the textile fabric.

The medium diameter of the filter openings and the $D[4,3]$ value are matched to one another in such a manner that no particles of the beverage substance pass
20 into the coffee beverage and at the same time an extraction of the beverage substance that is as rapid and efficient as possible is achieved.

The air permeability of textile fabrics is determined
25 as specified in DIN ISO 9237. For this purpose, a defined area of the sample material is tensioned. Air flows through the sample perpendicularly to the surface. The measurement can proceed as vacuum or differential pressure determination. The air
30 permeability is preferably determined at a pressure of 100 pascals.

The textile fabric has an air permeability in the range from 50 to 4000 $\text{l}/(\text{m}^2\text{s})$.

35 Particularly preferred air permeabilities of the textile fabric are summarized in the table hereinafter as embodiments D^1 to D^{43} :

	D ¹	D ²	D ³	D ⁴	D ⁵	D ⁶	D ⁷	D ⁸	D ⁹	D ¹⁰
Air permeability [l/(m ² s)]	50- 150	150- 200	150- 170	160- 180	180- 200	180- 240	230- 330	250- 310	270- 290	330- 380
	D ¹¹	D ¹²	D ¹³	D ¹⁴	D ¹⁵	D ¹⁶	D ¹⁷	D ¹⁸	D ¹⁹	D ²⁰
Air permeability [l/(m ² s)]	350- 450	370- 430	390- 410	400- 500	480- 580	550- 650	630- 800	780- 900	880- 1000	1000- 1200

	D ²¹	D ²²	D ²³	D ²⁴	D ²⁵	D ²⁶	D ²⁷	D ²⁸	D ²⁹	D ³⁰
Air permeability [l/(m ² s)]	1200- 1400	1400- 1600	1600- 1800	1800- 2200	1900- 2100	1980- 2020	2200- 2500	2500- 3000	3000- 3500	3500- 4000

	D ³¹	D ³²	D ³³	D ³⁴	D ³⁵	D ³⁶	D ³⁷
Air permeability [l/(m ² s)]	160±10	170±10	193±10	281±10	400±10	600±100	800±100

	D ³⁸	D ³⁹	D ⁴⁰	D ⁴¹	D ⁴²	D ⁴³
Air permeability [l/(m ² s)]	1000±100	1500±100	1700±100	2000±50	2100±50	2500±100

5

In a preferred embodiment, the textile fabric has an air permeability in the range from 1800 to 2200 l/(m²s).

10 In another preferred embodiment, the textile fabric has an air permeability in the range from 100 to 600 l/(m²s).

15 When the textile fabric comprises fleece or consists of fleece, the embodiments D²⁴ to D²⁶ are preferred, and D⁴¹ is particularly preferred.

When the textile fabric comprises felt or consists of felt, embodiments D^2 to D^5 , D^7 to D^9 and D^{11} to D^{13} are preferred, and D^{35} is particularly preferred.

- 5 Preferably, the textile fabric has a weight per unit area in the range from 10 to 2500 g/m². Alternative names for weight per unit area are area density or grammage.
- 10 Methods for determining the weight per unit area of a textile fabric are known to those skilled in the art. The weight per unit area is preferably determined as specified in DIN EN 12127.
- 15 Preferred embodiments E^1 to E^{24} are summarized in the table hereinafter:

	E^1	E^2	E^3	E^4	E^5	E^6	E^7	E^8	E^9	E^{10}
Weight per unit area [g/m ²]	10-150	30-120	50-100	60-80	150-300	300-1100	500-950	550-850	600-800	600-700

	E^{11}	E^{12}	E^{13}	E^{14}	E^{15}	E^{16}	E^{17}
Weight per unit area [g/m ²]	900-1400	950-1350	1000-1300	1050-1250	1100-1200	1200-1400	1250-1350

	E^{18}	E^{19}	E^{20}	E^{21}	E^{22}	E^{23}	E^{24}
Weight per unit area [g/m ²]	70±10	650±10	760±10	900±10	1000±10	1150±10	1300±10 (2·650±10)

20

In a particularly preferred embodiment, the textile fabric has a weight per unit area in the range from 20 to 120 g/m².

In another particularly preferred embodiment, the textile fabric has a weight per unit area in the range from 400 to 1500 g/m².

- 5 When the textile fabric comprises fleece or consists of fleece, embodiments E³ and E⁴ are preferred, and E¹⁸ is particularly preferred.

- 10 When the textile fabric comprises felt or consists of felt, embodiments E⁸, E¹⁰, E¹¹, E¹⁵ and E¹⁷ are preferred, and E¹⁹ is particularly preferred.

- 15 In a further preferred embodiment, the textile fabric has a weight per unit area of 1150 ± 10 g/m², more preferably 1150 ± 8 g/m², still more preferably 1150 ± 6 g/m², most preferably 1150 ± 4 g/m², and in particular 1150 ± 2 g/m². According to this embodiment, the textile fabric comprises preferably felt or consists preferably of felt.

- 20 Preferred combinations of features are D²E¹¹, D¹¹E⁸, D⁴E¹⁴, D²⁴E³, D²⁶E⁴, D³²E²³, D³⁵E¹⁹ and D¹¹E¹⁸.

- 25 Preferably, the quotient of the weight per unit area in g/m² and the air permeability in l/(m²s) of the textile fabric is in the range from 0.01 to 10 (gs)/l.

- 30 In a preferred embodiment, the quotient of the weight per unit area in g/m² and the air permeability in l/(m²s) of the textile fabric is in the range from 0.01 to 1, more preferably 0.02 to 0.5, still more preferably 0.025 to 0.1, most preferably 0.03 to 0.06, and in particular 0.03 to 0.04 (gs)/l.

- 35 In another preferred embodiment, the quotient of the weight per unit area in g/m² and the air permeability in l/(m²s) of the textile fabric is at least 1 (gs)/l, more preferably at least 2 (gs)/l, still more preferably at

least 3 (gs)/l, or 4 (gs)/l, most preferably at least 5 (gs)/l, and in particular at least 6 (gs)/l.

5 In a particularly preferred embodiment, the quotient of the weight per unit area in g/m^2 and the air permeability in $\text{l}/(\text{m}^2\text{s})$ of the textile fabric is 6.76 ± 0.2 (gs)/l.

10 In another particularly preferred embodiment, the quotient of the weight per unit area in g/m^2 and the air permeability in $\text{l}/(\text{m}^2\text{s})$ of the textile fabric is 1.63 ± 0.2 (gs)/l.

15 In a further particularly preferred embodiment, the quotient of the weight per unit area in g/m^2 and the air permeability in $\text{l}/(\text{m}^2\text{s})$ of the textile fabric is 0.035 ± 0.01 (gs)/l.

20 The textile fabric preferably has a thickness in the range from 0.20 and 5 mm.

When the textile fabric comprises fleece or consists of fleece, the thickness thereof is preferably in the range from 0.20 to 0.8 mm, more preferably 0.25 to 0.39 mm, and most preferably is 0.32 mm.

25 When the textile fabric comprises felt or consists of felt, the thickness thereof is preferably in the range from 0.20 to 5 mm, more preferably 1.5 to 3.5 mm, and most preferably is 3.2 mm.

30 In a particularly preferred embodiment, when the textile fabric comprises felt or consists of felt, the thickness thereof is in the range from 2 to 6 mm, more preferably 3 to 5 mm, and most preferably 3.8 to 4.2 mm. According to this embodiment, the textile fabric preferably has a weight per unit area of $1150 \pm 10 \text{ g/m}^2$.

35

The diameter of the textile fabric can correspond to the internal diameter of the capsule base, but can be larger or smaller.

5 When the diameter of the textile fabric is larger than the internal diameter of the capsule base, when the single serve capsule is being filled with beverage substance, the textile fabric is pressed onto the bottom region, wherein the projecting rim region is
10 forced to cling to a side wall region of the single serve capsule and protrudes in the direction of the filling side, or is bent in the direction of the filling side. This has the advantage that when a central region of the textile fabric, owing to a
15 mechanical contact with the perforating means penetrating from the outside into the bottom region, is lifted from the bottom, the rim region slides concomitantly in the direction of the capsule base and in the direction of the central region, in such a
20 manner that no beverage substance flows unfiltered past the rim of the textile fabric in the direction of the outlet opening. This permits, in particular, a lifting of the textile fabric from the capsule base, even in the case of a nonelastic textile fabric, without the
25 filter action being impaired. In the case of an elastic textile fabric, the lifting of the central region without impairment of the filter action is at least favored by the concomitantly sliding rim region of the textile fabric, since a combination of extension and
30 concomitantly sliding is also conceivable in the case of perforation of the capsule base.

In a preferred embodiment, the diameter of the textile fabric is 1 to 15% larger than the internal diameter of
35 the capsule base.

The textile fabric can be fastened on the capsule base, or merely lie on the capsule base.

In a preferred embodiment, the textile fabric is simply placed into the capsule base body and is thus arranged on the base of the single serve capsule in such a manner that as large an area as possible is adjacent. Then, the beverage substance can be charged into the capsule base body. Preferably, in this case, the textile fabric is fixed to the capsule base by the overlying beverage substance.

10

In another preferred embodiment, the textile fabric is connected to the capsule base, for example by gluing or sealing. Sealing is preferably performed by means of ultrasound.

15

Particularly preferably, the textile fabric having a felt structure is sealed to the capsule base, in particular by ultrasound.

20 If the textile fabric has one or more felt structures and a supporting structure, the structures are arranged one above the other in the single serve capsule and optionally connected to one another.

25 If the textile fabric comprises fleece or consists of fleece, the fleece is particularly preferably sealed to the capsule base, in particular by ultrasound.

30 Additionally preferably, the fleece, before the fixing thereof to the capsule, in particular the capsule base, is tensioned, in order to improve the arrangement onto the base.

The weight of the empty capsule base body including the textile fabric is 1.00 to 2.50 g.

35

In a preferred embodiment, the weight of the empty capsule base body including the textile fabric is in

the range from 1.00 to 1.80 g, more preferably 1.10 to 1.70 g, still more preferably 1.20 to 1.60 g, most preferably 1.30 to 1.50, and in particular 1.35 to 1.41 g.

5

In another preferred embodiment, the weight of the empty capsule base body including the textile fabric is in the range from 1.70 to 2.50 g, more preferably 1.80 to 2.40 g, still more preferably 1.90 to 2.30 g, most preferably 2.00 to 2.20, and in particular 2.08 to 2.14 g.

To protect the beverage substance from moisture and oxygen and to increase the storage stability of the single serve capsules, the single serve capsules are preferably charged with inert gas, in such a manner that a slight overpressure is formed in the interior of the capsules.

20 The inert gas is preferably nitrogen.

The single serve capsule can be provided with an identifier. Thus, for example, a mechanical identifier or a mechanical matching of the single serve capsule with a matching element of the device for producing the coffee beverage can be achieved via the above-described grooves in the wall region of the capsule base body. Furthermore, identifiers based on electrical conductivity or magnetism can also be used.

30

The brewing pressure is affected under standardized conditions by the D[4,3] value of the ground coffee, and also by the amount of beverage substance present in the single serve capsule.

35

The brewing pressure is preferably in the range from 1 to 18 bar, more preferably 3 to 11 bar.

The brewing pressure preferably designates the measured pressure which the pump must apply in order to pump water in and through the single serve capsule which is situated in the brewing chamber.

5

Preferred embodiments F^1 to F^{10} are summarized in the table hereinafter:

	F^1	F^2	F^3	F^4	F^5	F^6	F^7	F^8	F^9	F^{10}
Brewing pressure [bar]	2-5	3-6	4-6	4-8	6-8	6.5- 10	8-10	9-12	11-13	13-15

Particular preference is given to embodiments F^2 to F^{10} and in particular F^2 and F^9 .

10

Using the single serve capsule according to the invention, various coffee beverages can be produced.

Preferred coffee beverages are espresso and filter coffee.

Preferably, the expression "filter coffee" designates a coffee beverage having a volume of greater than 80 ml which corresponds to a coffee beverage which can be prepared using unpressurized filtration apparatuses.

The achievable beverage volume can be in the range from 20 to 400 ml.

The achievable beverage volume is preferably in the range from 20 to 170 ml.

Particularly preferably, the achievable beverage volume is between 30 and 50 ml, 30 and 120 ml, 100 and 150 ml, or 180 and 300 ml.

If the coffee beverage is espresso, the achievable beverage volume is preferably between 20 and 70 ml, and in particular between 30 and 50 ml.

If the coffee beverage is filter coffee, the achievable beverage volume is preferably between 20 and 150 ml, 80 and 180 ml, or 150 and 330 ml.

5

In a preferred embodiment, the achievable beverage volume is between 150 and 330 ml, and in particular between 180 and 300 ml.

10 In a particularly preferred embodiment, the achievable beverage volume is between 80 and 180 ml, and in particular between 100 and 150 ml.

In a further particularly preferred embodiment, the
15 achievable beverage volume is between 20 and 150 ml, and in particular between 30 and 120 ml.

The coffee beverage that is to be produced can have a crema.

20

In a preferred embodiment, the coffee beverage has a crema. According to this embodiment, the coffee beverage is preferably espresso or coffee, wherein the coffee has a volume between preferably 30 and 120 ml.

25

In another preferred embodiment, the coffee beverage does not have a crema. According to this embodiment, the coffee beverage is preferably filter coffee.

30 In a particularly preferred embodiment, the coffee beverage has a crema, wherein the textile fabric has an air permeability in the range from 1800 to 2200 l/(m²s), and/or the textile fabric has a weight per unit area in the range from 20 to 120 g/m², and/or the capsule base
35 is closed.

In another particularly preferred embodiment, the coffee beverage does not have a crema, wherein the

textile fabric has an air permeability in the range from 100 to 600 l/(m²s), and/or the textile fabric has a weight per unit area in the range from 400 to 1500 g/m², and/or the capsule base is partially open.

5

Preferred combinations of particularly preferred embodiments are summarized in the following table:

D[4,3] value	Color value	Textile fabric		Brewing pressure	Achievable volume [ml]
		Weight per unit area	Air permeability		
200-500 μm	60-130	10-2500 g/m ²	50-4000 l/(m ² s)	3-11 bar	20-170
B ⁴	A ⁶	E ²	D ²⁴	η_1^6	30-120
B ⁴	A ⁶	E ¹⁸	D ⁴¹	η_1^6	30-120
B ⁴	A ⁶	E ¹⁰	D ¹¹	η_1^3	100-150
B ⁴	A ⁶	E ¹⁹	D ³⁵	η_1^3	100-150

10

Exemplary embodiments

The degree of roasting was determined using the color measuring instrument Colorette 3b from Probat; constructed 2011. The principle of measurement is based on reflection measurement. In this case the coffee sample that is to be measured is illuminated with light of two wavelengths (red light and infrared). The sum of the reflected light is evaluated electronically and displayed as a color value. Very dark roasted raw coffee gives measured values between 50 and 70. Coffee beans roasted in a medium-strength to light manner have values above 70.

The particle size distribution and D[4,3] value were determined in a dry measurement using the Malvern Mastersizer 3000 measuring instrument and the Malvern AeroS dispersion unit. For this purpose, approximately 7 g of ground roast coffee were transferred into the measuring cell at a dispersion pressure of 4 bar. The

particle size distribution may be determined using laser diffraction and the $D[4,3]$ value may be determined by detecting the scattered light and the diffraction angle resulting therefrom in accordance
5 with the Fraunhofer theory.

The air permeability of the textile fabric was determined as specified in DIN ISO 9237. For this purpose, a defined area of the sample material was tensioned. Air
10 flowed through the sample perpendicularly to the surface. The measurement can proceed as vacuum or differential pressure determination. The air permeability was determined at a pressure of 100 pascals.

15

The weight per unit area of the textile fabric was determined as specified in DIN EN 12127.

The brewing pressure designates the measured pressure
20 which the pump must apply to pump water in and through the single serve capsule which is situated in the brewing chamber.

As evaluation criterion, the sensory evaluation of the
25 beverage was used, both with respect to visual properties, based on the freedom from crema, and also with respect to taste properties. With an open capsule base, little or even no crema is formed. Samples were designated crema-free when the small amount of foam or
30 bubbles had disappeared within 10 seconds. In the taste testing, on a point scale from 0 to 6, a value between 5.0 and 6.0 had to be achieved (0 = displeasing, 3 = neither pleasing nor displeasing, 6 = extremely pleasing).

35

Substantially the criteria roastiness, bitterness, acidity, sweetness and possibly body were substantially

used. The testing was performed by trained sensory testers.

Exemplary embodiment 1

5

Various coffee beverages were produced using a porous-cascade-like textile fabric, with differing roasting values and differing D[4,3] values of the coffee (table 1).

10

Proceeding from test series 1 (D[4,3] value 550 μm , color value 50-90), by varying the degree of roasting (expressed via the color value), coffee beverages that are different, possibly even improved in sensory properties were to be produced.

15

By a reduction of the D[4,3] value to 350 μm , however, a crema-free coffee beverage that was faultless in sensory properties and had a color value of 70-120 was able to be achieved (test series 2). At a D[4,3] value of 350 μm , in combination with lower color values (50-70), coffee beverages with good sensory properties were not able to be obtained (test series 3).

20

The results summarized in table 1 show that the combination of particle distributions having larger D[4,3] values (550 μm) and a lower color value (50-90) (test series 1) and the combination of a smaller D[4,3] value (350 μm) and a higher color value (70-120) (test series 2) result in crema-free beverages of good sensory quality.

30

Combinations of greater D[4,3] values (400-550 μm) and higher color values (70-120) or else of smaller D[4,3] values (350 μm) and lower color values (50-70), in contrast, do not yield good beverages.

35

Exemplary embodiment 2

Various coffee beverages were produced using a flat-permeable textile fabric, with differing roasting values and differing D[4,3] values of the coffee
5 (table 2).

In the case of D[4,3] values of 350 μm and 310 μm , in combination with color values of 70-120, coffee beverages with good sensory properties were able to be
10 obtained (test series 4 and 5).

Test series 5, 6 and 7 show that changing the degree of grinding (expressed via the D[4,3] value) and the degree of roasting (expressed via the color value), for
15 a constant extraction pressure - test series 5 vs. 7 - produces a better sensory result. Increasing the coarse fraction - test series 6 - cannot provide this, since the extraction pressure falls. By changing the degree of grinding (expressed via the D[4,3] value) and
20 changing the degree of roasting (expressed via the color value), in addition, the achievable beverage yield was able to be increased and the necessary weighed portion decreased - test series 5.

25 Changing the degree of roasting to 50-70 in test series 6 and 7, in contrast, did not yield a satisfactory and comparable result to that of test series 4 and 5.

The results summarized in table 2 show the same trend
30 as the results from table 1. It can be seen that by combining a smaller D[4,3] value (350 μm , 310 μm) with a higher color value (70-120) (test series 4 and 5), beverages with good sensory properties with crema are achieved.

35

In contrast, combinations of smaller D[4,3] values (330 μm , 290 μm) and lower color values (50-70) do not yield good beverages (test series 6 and 7).

Table 1: Use of a porous-cascade-type textile fabric with differing degrees of roasting and differing D[4,3] values.

		Properties of the coffee powder				Properties of the textile fabric at the base of the capsule				Properties of the hot drink obtained				
Test series	Degree of grinding D _{4,3} [μm]	from - to	preferably	Color Colorette	Weighted portion [g]	Textile fabric	a) weight per unit area [g/m ²]	b) air permeability [l/m ² s]	Capsule base	Brewing pressure [bar]	Achievable beverage volume [ml]	Crema	Taste	Ranking
1	550	500-600	525-575	50-90	8.5-9.4	porous-cascade-type	650	400	open	4.0-6.0	180-300	flat	aromatic, full body, pleasant acidity, slightly sweet	4.0-5.0
2	350	300-400	325-375	70-120	7.5-8.5	porous-cascade-type	650	400	open	4.0-6.0	100-150	none	strong, full body with fruity acidity, slight sweetness	5.5-6.0
3	350	300-400	325-375	50-70	7.5-8.5	porous-cascade-type	650	400	open	4.0-6.0	100-150	none	acid, bitter, very powerful, astringent	3.0-4.0

Table 2: Use of a flat-permeable textile fabric with differing degrees of roasting and differing D[4,3] values.

	Properties of the coffee powder					Properties of the textile fabric at the base of the capsule				Properties of the hot drink obtained				
Test series	Degree of grinding D4,3 [µm]	from - to	preferably	Color Colorette	Weighted portion [g]	Textile fabric	a) weight per unit area [g/m²]	b) air permeability [l/m²s]	Capsule base	Brewing pressure [bar]	Achievable beverage volume [ml]	Crema	Taste	Ranking
4	350	300-400	325-375	70-120	7.5-8.5	flat-permeable	70	2000	closed	6.5-10.0	30-120	yes	fruity - acidic, aromatic roast note, harmonic sweetness	5.0-6.0
5	310	260-360	285-335	70-120	7.2-8.2	flat-permeable	70	2000	closed	11.0-13.0	30-120	yes	pleasant acidity, balanced bitterness, slight sweetness	5.0-6.0
6	330	280-380	305-355	50-70	7.5-8.5	flat-permeable	70	2000	closed	8.0-10.0	30-50	yes	very acid, sharply roasted, lack of sweetness	2.0-2.5
7	290	240-340	265-315	50-70	7.5-8.5	flat-permeable	70	2000	closed	11.0-13.0	30-50	yes	over-extracted, many bitter substances	2.0-3.0

Claims

[Claim 1]

A single serve capsule for producing a coffee beverage,
the single serve capsule having a capsule base in which
5 a textile fabric and a beverage substance are arranged,
wherein the beverage substance is provided for storage
in the single serve capsule and for extraction in the
single serve capsule through the textile fabric by
means of pressurized hot water;
10 wherein the beverage substance is present in the single
serve capsule in an amount in the range from 1 to 20 g;
wherein the beverage substance comprises roasted,
ground coffee which in the pulverulent dry state has a
D[4,3] value in the range from 150 to 550 μm ;
15 wherein the roasted, ground coffee has a color value in
the range from 50 to 150;
wherein the textile fabric has a weight per unit area
in the range from 400 to 1500 g/m²; and
wherein the capsule base is partially open.

20

[Claim 2]

The single serve capsule as claimed in claim 1, wherein
the textile fabric has an air permeability in the range
from 100 to 600 l/(m²s).

25

[Claim 3]

A single serve capsule for producing a coffee beverage,
the single serve capsule having a capsule base in which
a textile fabric and a beverage substance are arranged,
30 wherein the beverage substance is provided for storage
in the single serve capsule and for extraction in the
single serve capsule through the textile fabric by
means of pressurized hot water,
wherein the beverage substance is present in the single
35 serve capsule in an amount in the range from 1 to 20 g;
wherein the beverage substance comprises roasted,
ground coffee which in the pulverulent dry state has a
D[4,3] value in the range from 150 to 550 μm ;

wherein the roasted, ground coffee has a color value in the range from 50 to 150;

wherein the textile fabric is a fleece which comprises a fleece material produced from fine plastic fibers;

5 and

wherein the textile fabric has an air permeability of $1000 \pm 100 \text{ l/(m}^2\text{s)}$.