



INSECTICIDAL SENKO

The present invention relates to an insecticidal Senko and a composition for producing the Senko.

The Senko contains active ingredient(s) and
5 has a shape such as stick or coil, and refers to a substance for volatilizing an active ingredient in the air by incomplete combustion.

Hitherto, various Senkos are known. Although an insecticidal Senko for controlling
10 mosquitoes, flies and the like possesses good insecticidal efficacy, the smoke emitted at combustion, especially its irritating nature would be disliked, accordingly Senko having little emission of smoke has been sought.

15 The object of the present invention is to find a Senko in which emission of smoke at combustion and irritant action due to smoke are decreased and a binder therefor. The present inventors have discovered that such Senko may be obtained by using a starch and
20 bentonite in combination as a binder used at the production of Senko and by using a carbon powder as a main ingredient.

That is, the present invention relates to Senko comprising one or more insecticidal active
25 ingredients, one or more starches, bentonite and one or

more carbon powders.

Furthermore, the present invention relates to a composition comprising one or more insecticidal active ingredients, one or more starches, bentonite and
5 one or more carbon powders for producing Senko.

The Senko of the present invention has less emission of smoke at combustion, and lower irritant action and irritant odor due to smoke. Moreover, the Senko of the present invention has an excellent
10 volatilization ratio of the active ingredient, and igniting property and combustion durability thereof are substantially same as those of the known Senko.

The insecticidal active ingredient(s) used in the present invention are not particularly limited,
15 if they are ones usable for the Senko, and include preferably pyrethroid compounds such as pyrethrin, allethrin, prallethrin, transfluthrin, resmethrin, furamethrin and empenethrin. The active ingredient(s) may be used solely or in mixture. The content of these
20 active ingredients is generally about 0.01 to 3% by weight, preferably about 0.01 to 1% by weight in the Senko or the composition for producing the Senko of the present invention.

The starch(es) used in the present invention
25 are not particularly limited and various starches obtained from corn, potatoes, rice, wheat, cassava and the like may be used solely or in mixture. Said starch(es) may be contained in an amount of about 3 to

45% by weight, preferably about 5 to 40% by weight in the Senko or the composition for producing the Senko of the present invention.

The bentonite used in the present invention
5 may be contained in an amount of about 1 to 30% by weight, preferably about 2 to 25% by weight in the Senko or the composition for producing the Senko of the present invention.

The carbon powder(s) used in the present
10 invention include powders of charcoal, active carbon, coal, carbon black and the like, and one containing at least 90% by weight of particles having a particle size of 100 μ m or less may be preferably used. Said carbon powder(s) may be used in an amount of about 40 to 90%
15 by weight in the Senko or the composition for producing the Senko of the present invention.

The Senko and the composition for producing the Senko of the present invention may comprise suitably other components such as one or more fillers,
20 one or more combustion enhancers, one or more neutralizers and one or more fungistats. The fillers used in the present invention include dry powders of woody parts of for example, juniper, sandal wood, camphor tree, fir tree, Japanese cedar, willow,
25 *Kalopanax pictus*, *Magnolia hypoleuca*, lime tree, orange peel, yellow poplar, Japanese Judas-tree, acacia, poplar, *Tilia Miqueliana*, *Toisusu Urbaniana*, wing nut, Japanese arborvitae, paulownia, *Fraxinus Spaethiana*,

lauan, white birch, citrus fruits, woods for shiitake fungus, dry powders of plants such as Oenanthe javanica, Japanese bead tree, tree of Daphne family, mulberry, tree of Oleaceae family, plant of Perilla family, tree of Rubiaceae family, or Japanese honeysuckle and are usually contained in an amount of 0 to about 40% by weight in the Senko or the composition for producing the Senko of the present invention.

The combustion enhancers used in the present invention include, for example, nitrates such as potassium nitrate and sodium nitrate, percarbonates such as sodium percarbonate, perhalogenates such as potassium perchlorate, or peroxides such as sodium peroxide.

The neutralizers include, for example, citric acid, succinic acid, maleic acid, fumaric acid, tartaric acid, oxalic acid, malonic acid, malic acid, adipic acid, boric acid, benzoic acid, nicotinic acid, salicylic acid, ascorbic acid, glutamic acid, aspartic acid, sorbic acid, phenylacetic acid, sodium dihydrogenphosphate, or potassium dihydrogenphosphate.

The combustion enhancers and the neutralizers are usually contained in an amount of 0 to about 5% by weight and 0 to about 5% by weight in the Senko or the composition for producing the Senko of the present invention.

Moreover, the fungistats used in the present invention include, for example, benzoic acid, sorbic

acid, dehydroacetic acid, p-hydroxybenzoic acid, and o-phenylphenol, salts thereof or esters thereof, and may be usually contained in an amount of 0 to about 2% by weight in the Senko or the composition for producing
5 the Senko of the present invention.

The composition for producing the Senko of the present invention may be prepared by heating starch with an appropriate amount of water, adding to the resultant slurry bentonite, carbon powder(s) and
10 insecticidal active ingredient(s), and if necessary filler(s), combustion enhancer(s), neutralizer(s), fungistat(s) etc. and kneading the resultant mixture with water. The Senko of the present invention may be prepared by extruding and stamping the said composition
15 with extruding or stamping machines, or applying it on a fire-resistant sheet such as non-combustible paper and moulding the applied one, and then drying. When the insecticidal active ingredient is blended, the active ingredient may be added as it is, or it may be
20 added in the form of various formulations such as emulsifiable concentrate, oil solution, suspension concentrate and microcapsulated formulation.

The Senko of the present invention is shaped to such as a stick and a coil. The dimensions of the
25 Senko are not limited, but are, for example, about 3 mm to 20 mm in diameter, about 10 cm to 200 cm in length for the stick and about 3 cm to 30 cm in outer diameter, about 2 mm to 10 mm in thickness for the

coil. The Senko having such dimensions are manageable.

The Senko of the present invention is used for controlling mosquitoes, flies and the like. The insecticidal active ingredient contained in the Senko
5 of the present invention is volatilized by ignition of an end of the Senko and combustion of the Senko, whereby mosquitoes, flies etc. may be controlled.

The present invention will be illustrated more specifically with reference to the following
10 examples, but it is not to be interpreted as being limited thereto.

Example 1

To 0.1 part by weight of emulsifiable concentrate comprising 0.08 part by weight of
15 prallethrin, 0.01 part by weight of Hymal BLZ which is a surface active agent produced by Matsumoto Yushi-Seiyaku, 0.001 part by weight of Hymal 1002Z which is a surface active agent produced by Matsumoto Yushi-Seiyaku and 0.009 part by weight of Solvesso 150 which
20 is a solvent produced by Exxon Chemical C. were added a paste slurry obtained by mixing and heating 20.0 parts by weight of wheat starch and an appropriate amount of water, 5.0 parts by weight of bentonite, 2.0 parts by weight of potassium nitrate, 2.0 parts by weight of
25 citric acid, 0.2 part by weight of sodium dehydroacetic acid and 70.7 parts by weight of charcoal powder. An appropriate amount of water was added to the mixture,

and the resultant mixture was thoroughly kneaded, extruded and dried to obtain an insecticidal Senko in stick form.

Example 2

5 The combustion of the Senko obtained in Example 1 was effected in a glass-cylinder of 20 cm in diameter and 80 cm in height, and emission and irritating nature of smoke were observed. As a result, the smoke was substantially not emitted and irritant
10 odor was little detected. Moreover, the Senko obtained in Example 1 had good ignitability and combustion durability.



CLAIMS:

1. An insecticidal Senko which comprises containing 0.01 to 3% by weight of one or more insecticidal active ingredients, 3 to 45% by weight of one or more starches, 1 to 30% by weight of bentonite and 40 to 90% by weight of one or more carbon powders.
2. An insecticidal Senko according to claim 1, wherein the insecticidal active ingredient is a pyrethroid compound.
3. An insecticidal Senko according to claim 1, wherein the insecticidal active ingredient is pyrethrin, allethrin, prallethrin, transfluthrin, resmethrin, furamethrin or empenthrin.
4. A composition for producing the Senko, which comprises containing 0.01 to 3% by weight of one or more insecticidal active ingredients, 3 to 45% by weight of one or more starches, 1 to 30% by weight of bentonite and 40 to 90% by weight of one or more carbon powders.