Patent claims

1. Compositions, comprising

a) penflufen and its salts or acid addition compounds

and

b) at least one compound selected from the group of

phenols, boron compounds, compounds of the formula (II)

$$((R^1R^2R^3R^4)N)_nX \qquad (II)$$

where

R^1 and R^2 may be identical or different and independently of one another represent C_1-C_6-alkyl and

R^3 and R^4 may be identical or different and independently of one another are selected from the group consisting of C_6-C_{22}-alkyl, C_6-C_{22}-alkenyl, C_6-C_{24}-aryl, C_5-C_{20}-cycloalkyl and radicals of the formula (IV)

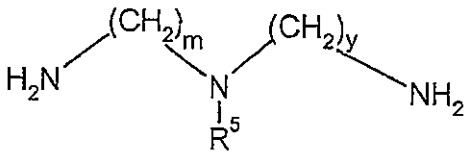
$$-[CH_2-CH_2-O]_z-CH_2-CH_2-OH \qquad (IV)$$

where z = 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 and

X represents an anion carrying a charge of n and

n is an integer greater than zero,

isothiazolinones, 3-iodo-2-propynyl alkylcarbamates, 3-iodo-2-propynyl cycloalkylcarbamates, 3-iodo-2-propynyl arylcarbamates and compounds of the formula (III)



(III)

in which

R^5 represents C_8-C_{18}-alkyl, C_8-C_{18}-alkenyl or C_5-C_{20}-cycloalkyl and

m and y may be identical or different and represent a number 1, 2, 3, 4, 5 or 6, and their acid addition compounds.

2. Composition according to Claim 1, characterized in that the boron compound is selected from the group consisting of disodium tetraborate decahydrate (borax), boric acid, boric esters, boron oxide and disodium octaborate tetrahydrate.

3. Composition according to at least one of Claims 1 and 2, characterized in that the isothiazolinone is selected from the group consisting of N-methylisothiazolin-3-one, 5-chloro-N-methylisothiazolin-3-one, 4,5-dichloro-N-octylisothiazolin-3-one, 5-chloro-N-octylisothiazolinone, N-octylisothiazolin-3-one, 4,5-trimethyleneisothiazolinone and 4,5-benzisothiazolinone.

4. Composition according to at least one of Claims 1 to 3, characterized in that R^3 and R^4 in compounds of the formula (II) may be identical or different and independently of one another are selected from the group consisting of benzyl, $-CH_2-CH_2-O-CH_2-CH_2-OH$, $-[CH_2-CH_2-O]_2-CH_2-CH_2-OH$, $-[CH_2-CH_2-O]_3-CH_2-CH_2-OH$, $-[CH_2-CH_2-O]_4-CH_2-CH_2-OH$, dichlorobenzyl, n-, isononyl, n-, isodecyl, n-, isododecyl, n-, isohexadecyl n-, isooctenyl, n-, isononenyl and n-, isodecenyl and R^1 and R^2 represent methyl.

5. Composition according to at least one of Claims 1 to 4, characterized in that the compounds of the formula (III) are selected from the group consisting of N-(3-aminopropyl)-N-dodecyl-1,3-propanediamine, N-(3-aminopropyl)-N-decyl-1,3-propanediamine, N-(3-aminopropyl)-N-tetradecyl-1,3-propanediamine and their acid addition compounds.

6. Composition according to at least one of Claims 1 to 5, characterized in that the phenols are selected from the group consisting of tribromophenol, tetrachlorophenol, 3-methyl-4-chlorophenol, 3,5-dimethyl-4-chlorophenol, dichlorophen, 2-benzyl-4-chlorophenol, triclosan, diclosan, hexachlorophene, p-hydroxybenzoic ester, o-phenylphenol, m-phenylphenol, p-phenylphenol, 4-(2-tert-butyl-4-methylphenoxy)phenol, 4-(2-isopropyl-4-methylphenoxy)phenol, 4-(2,4-dimethylphenoxy)phenol and their alkali metal and alkaline earth metal salts.

7. Composition according to at least one of Claims 1 to 6, characterized in that at least 75% by weight – 85% by weight of penflufen and 15% by weight - 25% by weight of 3-iodo-2-propynyl N-butylcarbamate are present.

8. Composition according to at least one of Claims 1 to 7, characterized in that at least 50% by weight of penflufen and at least 10% by weight of 4,5-dichloro-N-octylisothiazolin-3-one are present.

9. Compositions according to one or more of Claims 1 to 8, characterized in that the composition comprises

a) penflufen and its salts or acid addition compounds

and

b) at least one compound selected from the group consisting of o-phenylphenol and its alkali metal and alkaline earth metal salts

sodium borate, boric acid, boron oxide,

benzalkonium chloride, didecyldimethylammonium chloride, didecylmethylpoly(oxyethyl)ammonium propionate, didecyldimethylammonium carbonate, didecyldimethylammonium bicarbonate or a mixture of didecyldimethylammonium carbonate and didecyldimethylammonium bicarbonate

4,5-dichloro-N-octylisothiazolin-3-one,

3-iodo-2-propynyl N-butylcarbamate,

N-(3-aminopropyl)-N-dodecyl-1,3-propanediamine.

10. Use of compositions according to at least one of Claims 1 to 9 for protecting industrial materials against attack and/or destruction by microorganisms.

11. Use according to Claim 10, characterized in that the industrial material is wood, a timber product or a wood-plastic composite.

12. Use according to Claim 11 for the protection of wood, a timber product or a wood/plastic composite against wood-destroying basidiomycetes, in particular holobasidiomycetes.

13. Use according to Claim 12 for the protection of wood, a timber product or a wood/plastic composite by wood-destroying basidiomycetes, characterized in that the wood-destroying basidiomycetes are species of the genera Gloeophyllum, Coniophora, Coriolus, Stereum or Poria.

14. Industrial materials, in particular wood, a timber product or a wood-plastic composite, comprising

a) penflufen and its salts or acid addition compounds

and

b) at least one compound selected from the group of

phenols, boron compounds, compounds of the formula (II)

$$((R^1R^2R^3R^4)N)_nX \qquad (II)$$

where

R^1 and R^2 may be identical or different and independently of one another represent C_1-C_6-alkyl and

R^3 and R^4 may be identical or different and independently of one another are selected from the group consisting of C_6-C_{22}-alkyl, C_6-C_{22}-alkenyl, C_6-C_{24}-aryl, C_5-C_{20}-cycloalkyl and radicals of the formula (IV)

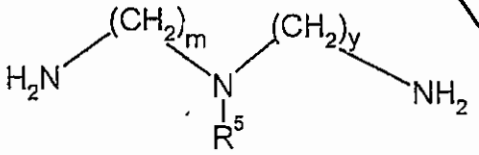
$$-[CH_2\text{-}CH_2\text{-}O]_z\text{-}CH_2\text{-}CH_2\text{-}OH \qquad (IV)$$

where z = 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 and

X represents an anion carrying a charge of n and

n is an integer greater than zero,

isothiazolinones, 3-iodo-2-propynyl alkylcarbamates, 3-iodo-2-propynyl cycloalkylcarbamates, 3-iodo-2-propynyl arylcarbamate and compounds of the formula (III)



(III)

in which

R^5 represents C_8-C_{18}-alkyl, C_8-C_{18}-alkenyl or C_5-C_{20}-cycloalkyl and

m and y may be identical or different and represent a number 1, 2, 3, 4, 5 or 6, and their acid addition compounds.

15. Process for protecting industrial materials against attack and/or destruction by microorganisms, characterized in that at least one composition comprising

a) penflufen and its salts or acid addition compounds

and

b) at least one compound selected from the group of

phenols, boron compounds, compounds of the formula (II)

$$((R^1R^2R^3R^4)N)_nX \qquad (II)$$

where

R^1 and R^2 may be identical or different and independently of one another represent C_1-C_6-alkyl and

R^3 and R^4 may be identical or different and independently of one another are selected from the group consisting of C_6-C_{22}-alkyl, C_6-C_{22}-alkenyl, C_6-C_{24}-aryl, C_5-C_{20}-cycloalkyl and radicals of the formula (IV)

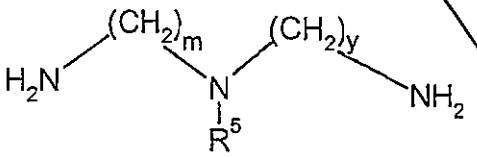
$$-[CH_2\text{-}CH_2\text{-}O]_z\text{-}CH_2\text{-}CH_2\text{-}OH \qquad (IV)$$

where z = 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 and

X represents an anion carrying a charge of n and

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isothiazolinones, 3-iodo-2-propynyl alkylcarbamates, 3-iodo-2-propynyl cycloalkylcarbamates, 3-iodo-2-propynyl arylcarbamate and compounds of the formula (III)



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m and y may be identical or different and represent a number 1, 2, 3, 4, 5 or 6, and their acid addition compounds,

is allowed to act on the microorganism or its habitat.

Patent claims

1. Compositions, comprising

a) penflufen and its salts or acid addition compounds

and

b) at least one compound selected from the group of

o-phenylphenol and its alkali and alkaline earth metal salts, boron compounds, compounds of the formula (II)

$$((R^1R^2R^3R^4)N)_nX \qquad (II)$$

where

R^1 and R^2 may be identical or different and independently of one another represent C_1-C_6-alkyl and

R^3 and R^4 may be identical or different and independently of one another are selected from the group consisting of C_6-C_{22}-alkyl, C_6-C_{22}-alkenyl, C_6-C_{24}-aryl, C_5-C_{20}-cycloalkyl, dichlorbenzyl, benzyl and radicals of the formula (IV)

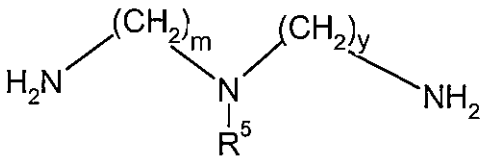
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where z = 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 and

X represents an anion carrying a charge of n and

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isothiazolinones, 3-iodo-2-propynyl butylcarbamates, 3-iodo-2-propynyl cycloalkylcarbamates, 3-iodo-2-propynyl arylcarbamates and compounds of the formula (III)



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m and y may be identical or different and represent a number 1, 2, 3, 4, 5 or 6, and their acid addition compounds.

2. Composition according to Claim 1, characterized in that the boron compound is selected from the group consisting of disodium tetraborate decahydrate (borax), boric acid, boric esters, boron oxide and disodium octaborate tetrahydrate.

3. Composition according to at least one of Claims 1 and 2, characterized in that the isothiazolinone is selected from the group consisting of N-methylisothiazolin-3-one, 5-chloro-N-methylisothiazolin-3-one, 4,5-dichloro-N-octylisothiazolin-3-one, 5-chloro-N-octylisothiazolinone, N-octylisothiazolin-3-one, 4,5-trimethyleneisothiazolinone and 4,5-benzisothiazolinone.

4. Composition according to at least one of Claims 1 to 3, characterized in that R^3 and R^4 in compounds of the formula (II) may be identical or different and independently of one another are selected from the group consisting of benzyl, $-CH_2-CH_2-O-CH_2-CH_2-OH$, $-[CH_2-CH_2-O]_2-CH_2-CH_2-OH$, $-[CH_2-CH_2-O]_3-CH_2-CH_2-OH$, $-[CH_2-CH_2-O]_4-CH_2-CH_2-OH$, dichlorobenzyl, n-, isononyl, n-, isodecyl, n-, isododecyl, n-, isohexadecyl n-, isooctenyl, n-, isononenyl and n-, isodecenyl and R^1 and R^2 represent methyl.

5. Composition according to at least one of Claims 1 to 4, characterized in that the compounds of the formula (III) are selected from the group consisting of N-(3-aminopropyl)-N-dodecyl-1,3-propanediamine, N-(3-aminopropyl)-N-decyl-1,3-propanediamine, N-(3-aminopropyl)-N-tetradecyl-1,3-propanediamine and their acid addition compounds.

6. Composition according to at least one of Claims 1 to 5, characterized in that at least 75% by weight – 85% by weight of penflufen and 15% by weight - 25% by weight of 3-iodo-2-propynyl N-butylcarbamate are present.

7. Composition according to at least one of Claims 1 to 5, characterized in that at least 50% by weight of penflufen and at least 10% by weight of 4,5-dichloro-N-octylisothiazolin-3-one are present.

8. Compositions according to one or more of Claims 1 to 5, characterized in that the composition comprises

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and

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sodium borate, boric acid, boron oxide,

benzalkonium chloride, didecyldimethylammonium chloride, didecylmethylpoly(oxyethyl)ammonium propionate, didecyldimethylammonium carbonate, didecyldimethylammonium bicarbonate or a mixture of didecyldimethylammonium carbonate and didecyldimethylammonium bicarbonate

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9. Use of compositions according to at least one of Claims 1 to 8 for protecting industrial materials against attack and/or destruction by microorganisms.

10. Use according to Claim 9, characterized in that the industrial material is wood, a timber product or a wood-plastic composite.

11. Use according to Claim 10 for the protection of wood, a timber product or a wood/plastic composite against wood-destroying basidiomycetes, in particular holobasidiomycetes.

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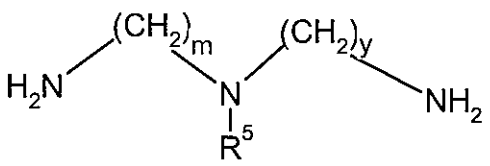
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14. Process for protecting industrial materials against attack and/or destruction by microorganisms, characterized in that at least one composition comprising

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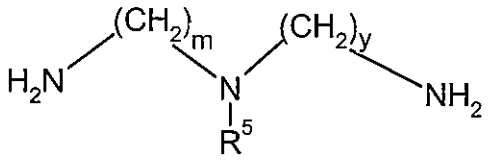
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