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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MICRONIZED WOOD PRESERVATIVE FORMULATIONS

(57) Abstract: The present invention provides wood preservative compositions comprising micronized particles. In one embodiment, the composition comprises dispersions of micronized metal or metal compounds. In another embodiment, the wood preservative composition comprises an inorganic component comprising a metal or metal compound and organic biocide. When the composition comprises an inorganic component and an organic biocide, the inorganic component or the organic biocide or both are present as micronized particles. When compositions of the present invention are used for preservation of wood, there is minimal leaching of the metal and biocide from the wood.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/11065

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A01N 55/02,25/00,33/00,43/00

US CL : 424/617,405,489,630,634,635,638; 514/383,499,500,642,643,951,952,975

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/617,405,489,630,634,635,638; 514/383,499,500,642,643,951,952,975

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,667,795 A (FRALEY et al.) 16 September 1997 (16.09.1997), column 2, lines 13-68, columns 3-12, claims 1-19.	1-5, 8-12, 19, 20
X	US 4,897,427 A (BARNAVON et al.) 30 January 1990 (30.01.1990), columns 1-4, Column 6, lines 31-68, Column 7, lines 1-27.	1-12, 17-20, 23, 25-27, 32-35, 38-46, 49-54
X	US 2002/0051892 A (LAKS et al.) 02 May 2002 (02.05.2002), figure 1, paragraphs 0020-0046.	1-6, 8-12, 17, 19, 20, 23-27, 32, 34, 35, 38-46, 49-54
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Y		7, 13-16, 18, 21, 22, 28-31, 33, 36, 37, 47, 48, 55, 56
Y	US 5,527,384 A (WILLIAMS et al.) 18 June 1996, column 2, lines 26-68, column 3, column 4, lines 64-68, columns 5-12.	7, 13-16, 18, 28-31, 33,
Y	US 5,833,741 A (WALKER) 10 November 1998 (10.11.1998), column 3, lines 54-68, column 4, lines 1-49, columns 5-12, claims 1-16.	13-15, 21, 28-30, 36, 47, 55
Y	US 5,426,121 A (BELL) 20 June 1995 (20.06.1995), column 1, lines 60-68, column 2, lines 1-60, column 3, lines 14-68, column 4, column 5, lines 1-30, 57-68, column 6.	7, 13-16, 18, 22, 28-31, 33, 37, 48, 56



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/11065

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

Group I, claim(s) 1-37, drawn to a wood preservative and method of wood preservation comprising an inorganic component and one or more organic biocides wherein the inorganic component and/or the organic biocides is(are) micronized particles.

Group II, claim(s) 38-56, drawn to a wood preservative containing micronized particles of copper and/or copper compounds and method of wood preservation comprising micronized particles of metal and/or metal compounds.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I requires the presence of an organic biocide whereas Group II does not require the presence of an organic biocide.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

In the genus inorganic biocides - copper, cobalt, cadmium, nickel, tin, silver, zinc and compounds thereof.

In the genus organic biocides - quaternary ammonium biocides, azoles, TCMTB, Chlorothalonil, Dichlofluanid, Isothiazolones, Imidacloprid, IPBC, pyrethroids, chitin, chitosan, clorpyrifos, cumylphenol, fipronil, carbendazim, cyfluthrin.

In the genus enhancing agents - trialkylamine oxides and alkoxyated diamines.

The claims are deemed to correspond to the species listed above in the following manner:

Claims 5-7, 13-18, 26-31, 33, 39, 40, 49-56 correspond to the species of inorganic biocides.

Claim 13-15, 28-30 correspond to the species of organic biocides.

Claims 21, 22, 36, 37, 47, 48, 55, 56 correspond to the species of enhancing agents.

The following claim(s) are generic: 1-4, 8-12, 19-25, 32, 34-38, 41-48 with respect to the inorganic biocides; 1-12, 16-27, 30-37 with respect to the organic biocides; 20, 35, 46, 54 with respect to the enhancing agents.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: The expression "special technical features" means those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. As indicated in the search report and written opinion micronized inorganic biocides and/or micronized organic biocides and trialkylamine oxides and alkoxyated diamine are disclosed in the art for the use of wood preservation. As such, since one or more of the

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INTERNATIONAL SEARCH REPORT

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species of the genus do not define a contribution when considered as a whole over the prior art, the species lack the same or corresponding special technical features.

Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms:micronized,biocide,inorganic,organic,copper,cobalt,cadmium,nickel,tin,silver,zinc,quaternary ammonium,alkyldimethylbenzylammonium, dimethyldidecylammonium,tebuconazole,trialkylamine oxide,alkoxylated diamine