Patented Apr. 24, 1934 1,955,891

UNITED STATES PATENT OFFICE

1,955,891

PARASITICIDES AND METHOD OF MOTHPROOFING

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No Drawing. Application December 6, 1930, Serial No. 500,667

4 Claims. (Cl. 167—37)

This invention relates to a process and to new agents for protecting materials from parasite attack, and more particularly to an improved process for moth-proofing materials susceptible to attack by moth larvæ.

Inorganic fluorides, such as sodium fluoride, sodium silicofluoride, and also boron trifluoride addition products of organic compounds are known in the art as moth-proofing agents. The recognition of the marked advantages attending the use of organic fluorine compounds as parasiticides, and particularly as moth-proofing agents is, however, believed to be new.

This invention has as an object an improved process for destroying parasites and the utilization of new compounds for this purpose. Another object is to effectively render materials or fabrics such as wool, fur, hair, feathers, and the like, immune to attack by moth larvæ. A still further object is the moth-proofing of closed containers.

These objects are accomplished by the following invention in which materials subject to parasite attack, particularly those subject to attack by parasites such as moth or carpet beetle larvæ, are treated with an organic fluorine compound, the treatment being preferably effected thru impregnation of the material by immersion in a solution of the organic fluorine compound and then drying the material.

The material to be moth-proofed is steeped in a solution of an organic fluorine compound of the general type formula RF in which R designates an organic residue directly attached to fluorine thru carbon. The organic residue R may be a straight hydrocarbon group or it may be a hydrocarbon group modified by organic or inorganic substituents such as carboxy, amino, nitro or sulfonic acid radicals.

Among the suitable compounds, effective for the purpose of the present invention and falling within the class mentioned are the following:

	Centigrade
Alpha-fluoronaphthalene	b. p. 216°
Beta-fluoronaphthalene	m. p. 59°
O-fluorodiphenyl	m. p. 73.5°
P-fluorodiphenyl	m. p. 74.2°
P, p'-difluorodiphenyl	m. p 94°
4-fluoroacetanilide	m. p. 150°
4-fluorobenzoic acid	m. p. 182°
2-fluorobenzoic acid	m. p. 120°
4-fluorophenetol	b. p. 197°
3-fluoro, 4-methoxybenzoic acid	m.p. 204°
Phenyl fluoroform	b. p. 103.5°
Monofluoroacetic acid	b. p. 165°
1-fluoro, 1.2-dibromoethane	b. p. 122.5°

These compounds may be applied in solution or emulsion in any suitable solvent such as benzene, benzin, alcohol or water. The reference to solution in the claims is intended, therefore, to include emulsions as well as true solutions. We prefer to use an emulsion or solution containing at least one percent of the organic fluorine compound. In the practice of our invention on a large scale it is preferred to centrifuge the material treated with the solution or emulsion and then allow it to dry. The treated material may, however, be dried without centrifuging by any suitable means to remove the solvent. The solutions or emulsions of our new moth-proofing agents comprised of organic fluorine compounds may also be applied as a spray for rendering materials moth-proof.

It is to be understood that the practice of our invention is not limited to the use of organic fluorine compounds in solution but includes the use of the compounds in solid form, in which form they are applicable in closed containers such as clothes closets, cedar chests, trunks, containers for shipping, and the like, because the vapors of these compounds are toxic to moths and render such containers moth-proof. The association of the type of compounds disclosed herein with the materials to be protected is not, therefore, limited to actual contact between the materials and the solid or liquid compounds.

Textile and similar materials are, by means of the present invention, protected against attack by moth larvæ to a remarkable degree. The use of these compounds for moth-proofing is advantageous because the toxic element, fluorine, is present in a form soluble in organic solvents. These compounds can, therefore, be introduced in the solvents used in the ordinary dry-cleaning process. A further advantage resides in the fact that these materials are stable toward water, whereas many of the other moth-proofing agents such as the boron trifluoride addition

products referred to in the prior art decompose with water. A still further advantage is found in the fact that organic fluorine compounds have an appreciable vapor pressure and hence disseminate rapidly thruout the materials to be protected, a property which is not associated with inorganic fluorides.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that we do not limit ourselves to the specific embodiments thereof except as defined in the appended claims.

We claim:

1. Material subject to parasite attack treated with an organic fluorine compound selected from the class consisting of fluoronaphthalenes, fluorodiphenyls, fluoranilides, fluorophenols, fluoroacetic acid and phenyl fluoroform.

2. A parasiticide comprising an organic fluorine compound selected from the class consisting of fluoronaphthalenes, fluorodiphenyls, fluoroanilides, fluorophenols, fluoroacetic acid and phenyl fluoroform.

3. Material subject to parasite attack treated with an organic fluorine compound selected from the class consisting of fluoronaphthalenes, fluorodiphenyls, fluoroanilides, fluorobenzoic acid, fluorophenols, fluoroacetic acid and phenyl fluoroform.

4. A parasiticide comprising an organic fluorine compound selected from the class consisting of fluoronaphthalenes, fluorodiphenyls, fluoroanilides, fluorobenzoic acid, fluorophenols, fluoroacetic acid and phenyl fluoroform.

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