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Blackburn et al.

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(54) **COMPOSITIONS AND METHODS FOR WATER-RESISTANT GYPSUM FIBER PRODUCTS**

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C08K 2003/3045 (2013.01)

(71) Applicant: **United States Gypsum Company**,
Chicago, IL (US)

(58) **Field of Classification Search**
CPC B05D 3/0272; C04B 41/4927; C04B
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See application file for complete search history.

(72) Inventors: **David R. Blackburn**, Barrington, IL
(US); **Yufeng Xu**, Gurnee, IL (US)

(56) **References Cited**

(73) Assignee: **UNITED STATES GYPSUM COMPANY**, Chicago, IL (US)

U.S. PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this
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2,198,775 A 4/1940 Jominy
2,791,511 A 5/1957 Lipkind

(Continued)

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FOREIGN PATENT DOCUMENTS

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CN 102010172 4/2011
DE 44 33 864 2/1995

(Continued)

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OTHER PUBLICATIONS

Related U.S. Application Data

Schildbach, Daniel, "A New Water-Repellent Agent for Gypsum-based Drymix Mortars"; Zement-Kalk-Gips-ZKG International, Bauverlag BV., Gettersloh, DE, vol. 67, No. 1, Mar. 1, 2014, pp. 64-71, XP001591813, ISSN: 0949-0205, p. 66, paragraph 3-paragraph 68.

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Primary Examiner — Timothy Kennedy

(51) **Int. Cl.**
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(74) *Attorney, Agent, or Firm* — Greer, Burns & Crain, Ltd.; Pradip Sahu; Philip T. Petti

(Continued)

(57) **ABSTRACT**

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CPC **C09D 183/04** (2013.01); **B05D 3/0272**
(2013.01); **C04B 11/02** (2013.01); **C04B 28/14**
(2013.01); **C04B 41/009** (2013.01); **C04B**
41/4927 (2013.01); **C04B 41/64** (2013.01);
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(2013.01); **C04B 2111/00629** (2013.01); **C04B**

A water-resistant gypsum fiber product comprising siloxane and coated with a coating comprising alkali metal organosilicate is provided. A method of making a gypsum fiber product in which siloxane is cross-linked at the surface of the product is also provided. A fuel-efficient method for making the product and reducing the amount of siloxane dust released is provided as well.

5 Claims, 7 Drawing Sheets

