



US010968371B2

(12) **United States Patent**
Mosanu et al.

(10) **Patent No.:** **US 10,968,371 B2**
(45) **Date of Patent:** **Apr. 6, 2021**

(54) **MOISTURE CURABLE HOT MELT SEALANT COMPOSITION INCLUDING SILANE FUNCTIONAL POLYURETHANE**

(71) Applicant: **H.B. Fuller Company**, St. Paul, MN (US)

(72) Inventors: **Claudia Mosanu**, Blaine, MN (US); **Marietta B. Helmeke**, Little Canada, MN (US)

(73) Assignee: **H.B. Fuller Company**, St. Paul, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/672,140**

(22) Filed: **Nov. 1, 2019**

(65) **Prior Publication Data**

US 2020/0140726 A1 May 7, 2020

Related U.S. Application Data

(60) Provisional application No. 62/755,053, filed on Nov. 2, 2018.

(51) **Int. Cl.**

- C09J 123/22** (2006.01)
- C03C 27/10** (2006.01)
- C09J 5/06** (2006.01)
- C09J 11/04** (2006.01)
- C09J 11/08** (2006.01)
- C09J 123/02** (2006.01)
- C09J 123/26** (2006.01)
- E06B 3/663** (2006.01)

(52) **U.S. Cl.**

CPC **C09J 123/22** (2013.01); **C03C 27/10** (2013.01); **C09J 5/06** (2013.01); **C09J 11/04** (2013.01); **C09J 11/08** (2013.01); **C09J 123/02** (2013.01); **C09J 123/26** (2013.01); **E06B 3/66333** (2013.01); **E06B 3/66357** (2013.01); **C09J 2423/00** (2013.01); **C09J 2493/00** (2013.01)

(58) **Field of Classification Search**

CPC **E06B 3/66357**; **E06B 3/66333**; **E06B 3/66**; **C09J 123/22**; **C09J 123/26**; **C09J 123/02**; **C09J 11/08**; **C09J 11/04**; **C09J 27/10**; **C09J 5/06**; **C09J 2493/00**; **C09J 2423/00**; **C08L 75/04**; **C08L 23/22**
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 6,355,317 B1* 3/2002 Reid C08G 18/10 156/109
- 6,457,294 B1* 10/2002 Virnelson C03C 27/10 52/786.13

- 6,803,412 B2 10/2004 Nguyen-Misra et al.
- 8,637,605 B1 1/2014 Mosanu et al.
- 9,023,946 B2 5/2015 Suen et al.
- 2011/0042004 A1 2/2011 Schubert et al.
- 2013/0237676 A1 9/2013 Ferenz et al.
- 2016/0311963 A1 10/2016 Lobert et al.
- 2017/0226285 A1 8/2017 Lobert et al.

FOREIGN PATENT DOCUMENTS

WO WO 2004-085565 10/2004

OTHER PUBLICATIONS

- Oppanol product literature, Sep. 21, 2018, BASF, <https://products.basf.com/en/Oppanol.html> (6 pages).
- Oppanol B Types product literature Apr. 1999, BASF Aktiengesellschaft, Ludwigshafen, Germany (14 pages).
- Ineos Oligomers product literature, Indopol Polybutenes, Sep. 28, 2018, (3 pages).
- Sylvalite RE 110L rosin ester product literature, Aug. 22, 2017, Kraton Corp., (2 pages).
- Dynasytan Product Range product literature, Jun. 1, 2018, (16 pages) Evonik Resources Efficiency GmbH, Hanau, Germany.
- Dynasytan 1146 product literature, Dec. 2011, (3 pages) Evonik Industries AG, Hanau, Germany.
- Vestoplast 508 product information, Sep. 14, 2018, (2 pages) MatWeb.
- Butyl Polymers Grade Slate product literature, 2017, (2 pages), ExxonMobil Chemical.
- Vistalon EPDM Rubber product literature, 2017, (2 pages), ExxonMobil Chemical.

* cited by examiner

Primary Examiner — Donald J Loney

(74) *Attorney, Agent, or Firm* — Kirsten Stone; Allison Johnson

(57) **ABSTRACT**

A moisture curable hot melt sealant composition that includes a silane-functional polyurethane that is free of isocyanate groups, a thermoplastic elastomer having a weight average molecular weight of at least 100,000 grams per mole and being derived from 0% by weight to no greater than 30% by weight styrene, based on the weight of the thermoplastic elastomer, the thermoplastic elastomer being selected from the group consisting of butyl rubber, ethylene-propylene rubber, ethylene-propylene diene rubber, thermoplastic polyolefin elastomer, styrene block copolymer, and combinations thereof, a first tackifying agent that includes from 0% by weight to less than 15% by weight aromaticity based on the weight of the tackifying agent, the first tackifying agent being selected from the group consisting of aliphatic tackifying agent, aromatic-modified aliphatic tackifying agent, cycloaliphatic tackifying agent, aromatic-modified cycloaliphatic tackifying agent, and combinations thereof, a liquid butene component selected from the group consisting of polyisobutylene, polyisobutene, polybutene, and combinations thereof, and optionally a second rosin-based tackifying agent.

20 Claims, No Drawings