

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0179851 A1 BELOVA-MAGRI et al.

May 30, 2024 (43) **Pub. Date:**

(54) MODIFIED COPPER SURFACE, HETEROAROMATIC SILANE COMPOUNDS AND THEIR USAGE FOR INCREASING ADHESION STRENGTH BETWEEN COPPER AND AN ORGANIC MATERIAL AND REDUCING HALO AND WEDGE VOID **FORMATION**

(71) Applicant: Atotech Deutschland GmbH & Co. KG, Berlin (DE)

(72) Inventors: Valentina BELOVA-MAGRI, Berlin (DE); Stefanie ACKERMANN, Berlin (DE); Fabian MICHALIK, Berlin (DE); Philipp HAARMANN, Berlin (DE); Martin THOMS, Berlin (DE); Norbert LÜTZOW, Berlin (DE); Jan KNAUP, Berlin (DE); Tatjana KÖNIGSMANN, Berlin (DE)

(73) Assignee: Atotech Deutschland GmbH & Co. KG, Berlin (DE)

(21) Appl. No.: 18/550,145

(22) PCT Filed: Mar. 11, 2022 (86) PCT No.: PCT/EP2022/056360 § 371 (c)(1), (2) Date: Sep. 12, 2023

(30)Foreign Application Priority Data

Mar. 12, 2021 (EP) 21162439.0

Publication Classification

(51) Int. Cl. H05K 3/38 (2006.01)H05K 3/00 (2006.01)H05K 3/22 (2006.01)H05K 3/26 (2006.01)(52) U.S. Cl.

CPC H05K 3/389 (2013.01); H05K 3/0064 (2013.01); H05K 3/227 (2013.01); H05K 3/26 (2013.01); H05K 3/385 (2013.01); H05K 2203/0315 (2013.01); H05K 2203/0766 (2013.01)

ABSTRACT (57)

The present invention relates to a method for increasing adhesion strength between a surface of a copper, a copper alloy or a copper oxide and a surface of an organic material.

