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(71) Applicant: **BASF SE** [DE/DE]; Carl-Bosch-Straße 38,
67056 Ludwigshafen am Rhein (DE).

(72) Inventors: **HOOGBOOM, Joannes Theodorus Valentinus**; Veldmaarschalk Montgomerylaan 669E, 5612 BP Eindhoven (NL). **KLIPP, Andreas**; Carl-Bosch-Straße 38, 67056 Ludwigshafen (DE). **KE, Jhih Jheng**; No. 33, Chien Chien 1st Road, Taoyuan, 32853 (TW). **WANG, Che Wei**; No. 31, Ching Chien 2nd Road, Taoyuan, 32853 (TW). **TING, Chia Ching**; No. 31, Ching Chien 2nd Road, Taoyuan, 32853 (TW).

(74) Agent: **EISENFÜHR SPEISER PATENTANWÄLTE RECHTSANWÄLTE PARTGMBB**; Postfach 10 60 78, 28060 Bremen (DE).

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(54) Title: COMPOSITION AND PROCESS FOR SELECTIVELY ETCHING A HARD MASK AND/OR AN ETCH-STOP LAYER IN THE PRESENCE OF LAYERS OF LOW-K MATERIALS, COPPER, COBALT AND/OR TUNGSTEN

(57) Abstract: The use of a cleaning composition in combination with one or more oxidants is described for removing post-etch or post-ash residue from the surface of a semiconductor substrate and/or for oxidative etching or partially oxidative etching of a layer or mask comprising or consisting of a material selected from the group consisting of TiN, Ta, TaN, Al and HfO_x and/or a layer or mask comprising or consisting of a material selected from the group consisting of tungsten carbide (WC_x) and tungsten nitride (WN_x), and/or for removing from the surface of a semiconductor substrate a layer comprising an aluminium compound. Further is described said cleaning composition and a use of said cleaning composition for removing post-etch or post-ash residue from the surface of a semiconductor substrate. Under a further aspect, it is described a wet-etch composition comprising said cleaning composition and one or more oxidants as well as the use of said wet-etch composition. A process for the manufacture of a semiconductor device from a semiconductor substrate and a kit comprising said cleaning composition and one or more oxidants are also described.



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