

MASK-INTEGRATED SURFACE PROTECTIVE TAPE

{Abstract}

A mask-integrated surface protective tape, containing a substrate film,
 5 and a radiation-curable temporary-adhesive layer and a radiation-curable mask
 material layer provided on the substrate film in this order;
 wherein the mask-integrated surface protective tape is used for a method of
 producing a semiconductor chip including the following steps (a) to (d); and
 wherein, in the step (b), peeling occurs between the temporary-adhesive layer
 10 and the mask material layer before irradiation with radiation, and peeling occurs
 between the mask material layer and the patterned surface described below after
 irradiation with radiation:

(a) a step of, in the state of having laminated the mask-integrated surface
 protective tape on the side of a patterned surface of a semiconductor wafer,
 15 grinding the backing-face of the semiconductor wafer; laminating a wafer fixing
 tape on the backing-face side of the ground semiconductor wafer; and supporting
 and fixing the wafer to a ring flame;

(b) a step of, after integrally peeling both the substrate film and the
 temporary-adhesive layer from the mask-integrated surface protective tape
 20 thereby to expose the mask material layer on top, forming an opening by cutting a
 portion of the mask material layer corresponding to a street of the semiconductor
 wafer with a laser;

(c) a plasma-dicing step of segmentalizing the semiconductor wafer on
 the street by a SF_6 plasma, and thereby for singulating the semiconductor wafer
 25 into semiconductor chips; and

(d) an ashing step of removing the mask material layer by an O_2 plasma.

(Fig. 1)