DESCRIPTION

~~ABRASIVE GRAIN-FIXED WIRE, WIRE SAW, AND METHOD FOR CUTTING WORKPIECE~~

TECHNICAL FIELD

[0001]

The present invention relates to a fixed-abrasive-grain wire, a wire saw, and a method for slicing a workpiece.

BACKGROUND ART

[0002]

A workpiece such as a 300-mm diameter silicon ingot is mainly sliced in a conventional loose-abrasive-grain manner, in which the workpiece is sliced while supplying slurry containing suspended abrasive grains composed of, for example, silicon carbide to a wire. This manner takes 20 to 25 hours for slicing when using silicon carbide abrasive grains with a grit size of #1000 to #1500 (average abrasive grain diameter: about 8 to 10 μm).

[0003]

It has been recently said that high integration of semiconductor devices such as DRAM, NAND flash memory, and MPU approaches technical limits, and cost reduction per silicon semiconductor device by miniaturization accordingly reaches its limit. In view of this, diameter enlargement to 450 mm is considered to yield more semiconductor devices from one wafer and continuously reduce the cost.

[0004]

When the 450-mm diameter silicon ingot is sliced

DESCRIPTION

FIXED-ABRASIVE-GRAIN WIRE, WIRE SAW, AND METHOD FOR SLICING WORKPIECE

TECHNICAL FIELD

[0001]

The present invention relates to a fixed-abrasive-grain wire, a wire saw, and a method for slicing a workpiece.

BACKGROUND ART

[0002]

A workpiece such as a 300-mm diameter silicon ingot is mainly sliced in a conventional loose-abrasive-grain manner, in which the workpiece is sliced while supplying slurry containing suspended abrasive grains composed of, for example, silicon carbide to a wire. This manner takes 20 to 25 hours for slicing when using silicon carbide abrasive grains with a grit size of #1000 to #1500 (average abrasive grain diameter: about 8 to 10 μm).

[0003]

It has been recently said that high integration of semiconductor devices such as DRAM, NAND flash memory, and MPU approaches technical limits, and cost reduction per silicon semiconductor device by miniaturization accordingly reaches its limit. In view of this, diameter enlargement to 450 mm is considered to yield more semiconductor devices from one wafer and continuously reduce the cost.

[0004]

When the 450-mm diameter silicon ingot is sliced