

ABSTRACT

A straight, thin, monolithic abrasive wheel formed of hard and rigid abrasive grains and a sintered metal bond including a stiffness enhancing metal component exhibits superior stiffness. The metals can be selected from among many sinterable metal compositions. Blends of nickel and tin are preferred. The stiffness enhancing metal is a metal capable of providing substantially increased rigidity to the bond without significantly increasing bond hardness. Molybdenum, rhenium, tungsten and blends of these are favored. The sintered bond is generally formed from powders. A diamond abrasive, nickel/tin/molybdenum sintered bond abrasive wheel is preferred. Such a wheel is useful for abrading operations in the electronics industry, such as cutting silicon wafers and alumina-titanium carbide pucks. The stiffness of the novel abrasive wheels is higher than conventional straight monolithic wheels and therefore improved cutting precision and less chipping can be attained without increase of wheel thickness and concomitant increased kerf loss.

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