Structural and Wear and Characteristic of Low Temperature Nitrided Stainless Steel

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Abstrak

An investigation to structural and wear behaviour of nitrided AISI 316 L stainless steel resulting from low temperature fluidized bed nitriding has been made in the present work It was found that the wear resistance of nitrided specimens was related to the formation of a preetpitation-free hardened layer on the austenitic surface. In the present laboratory experiments, the precipitation-free or S phase layer with a surface hardness of ~1350 H Va 5 was produced at a nitriding condition of 450'C for 6h. The formation of this S phase layer significantly improved wear resistance of the stainless steel. Wear track observation by SEM revealed that the specimens without formation of S phase layer produced heavy scars due to tearing and local plastic deformation. The present work also suggests that fluidized bed heat treatment furnace can be utilised for nitriding the austenitic stainless steels at low temperatures below 5 00 ?C to produce S' phase nitrdid layer without losing the stainless feature of this material.