

Friction and Wear Behaviour of 42CrMo4 Steel Treated by Tenifer, Hard Chrome and Plasma Nitriding Technologies

Thanh Van Doan¹, David Kusmíř¹, Miroslav Pospíchal¹, Quang Dung Tran², Van Thuan Nguyen²

¹University of Defence in Brno, Kounicova 65, Brno 662 00. Email: thanhvan.doan@unob.cz, david.kusmic@unob.cz, miroslav.pospichal@unob.cz

²Academy of Military Technology, Hoang Quoc Viet 236, Hanoi, Vietnam. Email: quangdung.tran@gmail.com, thuanvatlieu@gmail.com

Concerning with effort to replace hard chrome plating cause of its ecological issues, this paper investigates the effects of surface technologies to wear resistance of ISO 42CrMo4 steel, which is popularly used in weapon production. After quenching and tempering, the experimental samples were treated by nitrocarburizing (tenifer), hard chrome plating and plasma nitriding technologies. Plasma nitriding was carried out with different gas mixture at 500°C (plasma nitriding process) for 15h. The wear test based on principle “pin on disc” was performed to evaluate the coefficient of friction and the wear rate. The results were supplemented with surface hardness test and metallographical evaluation. The experiment results point out that nitrocarburizing and plasma nitriding improve wear resistance better than hard chrome plating.

Keywords: nitrocarburizing, hard chrome plating, plasma nitriding, pin on disc, wear resistance

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