



Brenco Surface Engineering Pty. Ltd.

ABN: 47 867 814 294

Innovative Coating Technology **Since 1946**



New Nano Ceramic released by Brenco.

Brenco, under license from FW Gartner of Houston, TX, have begun supplying coatings of FWG 622N nanostructured TiO₂ for items in severe service environments.

Originally designed for the use on HPAL (High Pressure Acid Leaching) ball valve sealing surfaces to overcome inherent problems of bond and wear resistance associated with conventional Cr₂O₃, TiO₂ and dual layer ceramic top coat with metallic bond coat Plasma coated ball valves and seats. The effectiveness of FWG 622N has now been proven both in the field and in the lab.

The coating is a proprietary process based around a patented material that gives the performance that is required in this and other extremely harsh environments. The density of the coating (<1%) is one factor in preventing coating/substrate interface corrosion, a main cause of coating failure. Bond strength of 11,832 psi is exceptional for a coating of this hardness. The most outstanding characteristic is the toughness of the coating. An increase in hardness to these levels usually corresponds to a decrease in toughness. FWG 622N does just the opposite by displaying exceptional toughness (only 4% of material loss compared to standard APS TiO₂ using ASTM G65 proc. E) as well as very high hardness (1,150 HV0.3). High impingement angel erosion by slurries is another cause of coating failure on sealing, mixing and blending parts, FWG 622N excels in this area as well. When compared with APS TiO₂, FWG 622N is 233% and 218% better at 30° and 90° angel impingement respectively. This coating, and others like it, mark out the transition to the real world benefits of Nano materials that give far superior life, often without the shackles of expensive and cumbersome processing equipment. This facilitates ease of on-site spraying of large vessels such as autoclaves and their component parts. The process is sprayed in such a way as to eliminate the need for a Titanium or Tantalum bond layer. This in turn eliminates the galvanic cell that is produced between Tantalum bond coat and Titanium substrate which has been shown to cause Hydrogen embrittlement that leads to delamination. Although most applications and testing has been done on Titanium substrates the benefits of FWG 622N are applicable to any component that is currently being sprayed with Cr₂O₃, TiO₂, AlO₂ or similar ceramics for their wear and corrosion resistance.

FWG 622N is a unique patented material used in a proprietary process that allows great flexibility in application, measured superior performance over all competing products in bond strength, corrosion resistance, wear resistance, hardness and toughness. Components can be coated either on-site by our highly trained staff or in our state of the art facilities at both Melbourne (171 -173 Fairbairn Rd. Sunshine, Vic. 3020 Ph. 03 9310 1977) or Perth (12 Tacoma Circuit, Canning Vale, WA 6155 Ph. 08 9456 5344). More information on FWG 622N is available from the paper "Ball Valves with Nanostructured Titanium Oxide Coatings for High Pressure Acid-Leaching Service: Development and Application" found on our web site under "[Lab Facilities and Research & Development](#)" (www.brenco.com.au).



Brenco Surface Engineering Pty Ltd

171-173 Fairbairn Road, Sunshine, Victoria 3020 Australia

PO Box 584 Sunshine, Victoria 3020 Australia

Telephone: (03) 9310 1977 Facsimile: (03) 9310 1955

www.brenco.com.au



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