NACE Panel Confirms ToughMet® Alloys Meet Standard for Sour Oilfield Environments

CLEVELAND - October 30, 2003 - The Maintenance Panel for NACE standard MR0175/ISO 15156 has approved two ToughMet® alloys from Brush Wellman Inc., for unrestricted application in sour oil well service as described in Section 4 (Paragraph 4.20) of the standard.

The two ToughMet 3 materials - UNSC96900 and UNSC72900 - are spinodal copper-nickel-tin alloys that are cast and wrought in tempers CX (C96900) and AT (C72900). The panel's decision was confirmed earlier this month in a letter to Brush Wellman.

"The action of the Maintenance Panel clears the way for general use of ToughMet 3 alloy where NACE-approved materials are required," said Bill Nielsen, market manager for industrial components at Brush Wellman.

"We now have confirmation from NACE that says these materials are included in Section Four," Nielsen continued. "Having ToughMet 3 alloy included in this demanding NACE specification is expected to significantly increase demand for the product from companies making hardware for oil wells."

Nielsen said the NACE panel reviewed results of tests conducted by Sourtest Laboratories Inc., Tomball, Texas, in which the alloys were exposed at high stress levels to NACE standard Level I, IV, and V environments. ToughMet 3 alloys survived for 30 days without sulfide stress cracking. Tests also confirmed the alloy's very low level of general weight-loss corrosion in sour solutions.

"Low weight-loss corrosion in this sour environment -- particularly at elevated temperature -- is a ToughMet 3 quality which we believe to be unique among copper-based alloys," added Nielsen. "Copper alloys are known not to crack in sour well environments but they can corrode and quite literally disappear quickly. That's not true for ToughMet alloy. The rate of weight-loss corrosion for ToughMet alloy is very low."

ToughMet 3 CX, a cast product, has a minimum yield strength as high as 105 ksi, depending on the specific temper selected. The highest-hardness C96900 alloy tested in NACE standard sour service environments was HRC 33.

The ToughMet 3 AT alloy, which is a wrought product, has minimum yield strength as high as 120 ksi, depending on the temper selected. The highest hardness C72900 alloy tested in NACE standard sour service environments was HRC 33.

Both ToughMet CX and AT are non-magnetic, non-galling, low friction and easy to machine, providing a valuable combination for oilfield components.

With more than 60 years of experience developing corrosion prevention and control standards, the National Association of Corrosion Engineers (NACE International) has become the largest organization in the world committed to the study of corrosion.

Brush Wellman Inc. is a wholly owned subsidiary of Brush Engineered Materials Inc. (NYSE: BW). Through its subsidiaries, Brush Engineered Materials supplies worldwide markets with beryllium products, alloy products, electronic products, precious metal products, and engineered material systems. Around the world, the company's engineered materials can be found in technically demanding end-use products with the telecommunications and computer, automotive electronics, industrial components, optical media, aerospace and defense, and appliance markets.

For more information about the technology and availability of Brush Wellman's ToughMet 3 alloys, contact the Brush Wellman Customer Technical Service Group in the United States at 800-443-7731, or 216-486-4200.

The company's website is at www.brushwellman.com.