



US 20080131723A1

(19) **United States**

(12) **Patent Application Publication**

Tucker et al.

(10) **Pub. No.: US 2008/0131723 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **BRAZE SYSTEM WITH MATCHED COEFFICIENTS OF THERMAL EXPANSION**

(75) Inventors: **Michael C. Tucker**, Oakland, CA (US); **Craig P. Jacobson**, Moraga, CA (US); **Lutgard C. Jonghe**, Lafayette, CA (US)

Correspondence Address:
BEYER WEAVER LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

(73) Assignee: **The Regents Of The University Of California**, Oakland, CA (US)

(21) Appl. No.: **11/791,269**

(22) PCT Filed: **Nov. 23, 2005**

(86) PCT No.: **PCT/US05/42572**

§ 371 (c)(1),
(2), (4) Date: **Jan. 23, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/632,014, filed on Nov. 30, 2004.

Publication Classification

(51) **Int. Cl.**
B32B 18/00 (2006.01)
C09K 3/00 (2006.01)
B23K 1/00 (2006.01)
B23K 1/20 (2006.01)

(52) **U.S. Cl.** **428/623**; 252/182.33; 428/630;
228/101; 228/121; 228/122.1; 228/176; 228/208;
228/249

(57) **ABSTRACT**

A CTE modified braze composition that can be utilized to manufacture a strong, gastight joint where at least one of the joining members comprises a ceramic (e.g., a ceramic or a cermet). The braze composition is formulated so as to reduce the thermal stress that results from the mismatch of thermal expansion coefficients between a ceramic joining member and the braze or other joining members. The braze composition comprises a braze alloy in powder, paste or bulk form mixed with one or more particulate or fibrous fillers that exhibit a low (i.e., no more than 6 ppm/K) or negative coefficient of thermal expansion. The braze composition can be used to join members, at least one of which comprises ceramic, and to a composite member produced by joining the two or more members.

