ODS Ferritic / Martensitic 강의 고온강도 특성

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High Temperature Strength Properties of ODS Ferritic / Martensitic Steel

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Key Words: High temperature mechanical properties(고온기계적성질) Elastic modulus(탄성계수), Oxide dispersion strengthened (ODS) Fusion reactor(핵융합로)

Abstract : Oxide dispersion strengthened(ODS) materials for structural application in fusion reactors world allow to increase the operating temperature to approximately 650oC. A micro-structural analysis and tensile test were performed on three ODS ferritic/martensitic steels between R.T. and 600oC. Dispersion hardening represents an interesting approach to improve the mechanical properties at elevated temperature, as they are foreseen in the future fusion reactor. Three ODS variants of the 10Cr-ODS(K1), 13Cr-Al-ODS(K2) and 19 Cr-Al-ODS(K3) with Y2O3 content of 0.3% and 0.5 wt% have been produced. The micro-structure of compacted material has been characterized by means of optical and electron microscope(SEM). It has been successfully demonstrated that it is possible to expan the temperature range for the application of fusion reactor.

FORM을 이용한 솔더조인트의 신뢰성 평가

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Reliability Estimation of Solder Joint Using FORM

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Key Words: Reliability(신뢰성), Failure Probability(파손확률), Solder Joint(땜납 접합부), FORM (일차 신뢰성 방법)

Abstract : The chip and FR-4 board in electronic goods are generally connected by solder joint. In this case, the difference in coefficients of thermal expansion (CTE) in the chip and FR-4 board generates the shear strains the solder joint and finally makes the solder joint fail when the chip and FR-4 are heated. The magnitude of shear strain and the final failure are influenced by boundary conditions such as the difference of CTE, the height of solder and the distance of the solder joint from the neutral point (DNP). In this paper, the effects of boundary conditions on the failure probability of solder joint arestudied by using the failure probability model with the help of the first order reliability method (FORM). Furthermore, the sensitivity of boundary conditions has been estimated by change of Coefficient of Variation (C.O.V).