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Standard Test Method for Measurement of Creep Crack Growth Rates in Metals¹

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1. Scope

1.1 This test method covers the determination of creep crack growth rates in metals at elevated temperature using compact type, $C(T)$, (see Fig. 1) specimens subjected to static or quasi-static loading conditions. The time rate of crack growth, $\dot{a}$ (T), (see Fig. 1) specimens subjected to static loading conditions. The time rate of crack growth, $\dot{a}(t)$ or da/dt is expressed in terms of the magnitude of a crack growth rate relating p -parameters, $C^*(t)$, C , or K .

1.1.1 The use choice of this test method is restricted to those materials in which the crack growth rate relating parameter, $C^*(t)$, C , or K depends on the material behavior. Two types of material behavior are generally observed during creep crack growth tests; creep-ductile and creep-brittle. In creep ductile materials, creep crack growth is accompanied by accumulation of substantial time-dependent creep strains at the crack tip. Materials specifically excluded from this test method are ones in which tip and the crack growth rate is dominated correlated by environment caused by elevated temperature corrosion.

¹ This test method is under the jurisdiction of ASTM Committee E-8 E08 on Fracture Fatigue and is the direct responsibility of Subcommittee E08.06 on Crack Growth Behavior.

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