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## Test Method

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**Abstract**

In this work, a short time test method to determine the slow crack growth behaviour of samples made out of pipes was evaluated. The cracked round bar (CRB) method used provides results below 48 h with brittle fracture surfaces, which indicates the type of slow crack growth failure. To evaluate the usability of the method, the results were compared with well-known tests such as notch pipe test, 2 notch creep test and instrumented Charpy impact tests. The results indicate that the CRB test can be used to predict long term slow crack growth behaviour of PE pipes.

**Keywords:** slow crack growth (SCG), polyethylene (PE), cracked round bar test (CRB), notch pipe test (NPT), 2 notch creep test, instrumented Charpy impact test

**1. Introduction**

Pipes made of polyethylene (PE) have been successfully used for the transportation of fluids such as gas or water for many decades [1,2]. With the objective of ensuring sufficient lifetimes of such pressurized pipes, ISO 9080 classifies the materials by internal pipe pressure tests [3]. Based on such tests, the minimum required strength (MRS) to ensure pipe lifetimes of at least 50 years is determined and results in a classification of the materials as PE 63 (MRS=6,3 MPa), PE 80 (MRS=8,0 MPa) or PE 100 (MRS=10,0 MPa). Recent

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