

# **INFLUENCE OF THE COUPLING AGENT ON THE ACOUSTIC EMISSION TESTING**

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Acoustic emission (AE) is one of the promising structural health monitoring techniques. Coupling agent, as a product placed at the interface between transducer and specimen to improve wave transmission, significantly affects the accuracy and reliability of AE testing results. To study the influence of the coupling agents on wave transmission, the surface-to-surface method is used in this paper. Four types of commonly used coupling agents were experimented and compared about their ability to improve the propagation of stress waves and function generator is applied to generate the simulated AE signals. Based on the AE parameter analysis, the influence of the coupling agent, contact condition, the parameters of the input simulated signal and the types of the transducer is discussed. Experimental results show that the coupling agent, even a not very adapted coupling agent, contributes to better transmissibility, and the hot melt adhesive maybe has a good potential for the engineering application. Based on the transfer function, the influence of the contact area and thickness of the hot melt on the AE transmission is further discussed. The contact condition also has a significant influence on the AE testing results. The choice of coupling agents should consider the different types of applications based on the stress level and the kind of recorded waves. The reported findings provide a novel angle to investigate the real information hidden behind the signal in AE and other contact types nondestructive testing, especially in concrete structure in the future work.