气化雾化细水雾特性及其灭火实验

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Characterization of an effervescent atomization water mist nozzle and its fire suppression tests

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Abstract

A gas-outside-liquid-inside water mist nozzle based on effervescent atomization technology is designed,characterized and tested in this paper. The droplets size distribution, velocity under different operation pressures and gas-liquid-ratios (GLR) are measured with a Phase Doppler Analyser (PDA). The gas flow rate, liquid flow rate of the nozzle with one or seven orifices are also characterized under different operation pressures and GLR conditions, respectively. The results show that all of above parameters are mainly influenced by GLR, i.e., the larger the GLR is, the smaller the droplet size will be, and the liquid mass flow rate is exponentially increased with the increasing of GLR. The test results of fire suppression show that this gas-outside-liquid-inside effervescent atomizer works well for fire extinguishment except the cases where the liquid flow rate is less than about 70 kg/h and the gas pressure is lower than 0.3 MPa.

Keywords: Effervescent atomization; Two-phase flow; Water mist; Fire suppression

附件：Characterization of an Effervescent Atomization Water Mist Nozzle and Its Fire Suppression Tests.pdf

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