EXPLOSION SUPPRESSION METHOD BY THE USE OF WATER MIST AND KEY PHYSICAL PARAMETERS

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The increasing threat of terrorist and accidental explosions requires the development of modern protective structurers. This demand itself increases the importance of development explosion protection methods. The negative statistics describing the fatal outcomes of terrorist and incidental explosions confirm that the existing protective systems do not adequately comply with the modern safety requirements and their application areas are quite limited. The creation and designing fast, reliable and high-efficient protection systems requires multi-direction preliminary research activities. Today, various scientific centers are implementing the investigations for the study of explosive energy suppression processes and creating effective protective methods.

The explosion protection methods are basically based on the creation of explosive energy suppressing barrier between the explosion place and the area that has to be protected. Studies have shown that water mist, when the mist properties are correctly selected, can effectively reduce shock wave overpressure. Main factors defining shock wave attenuation in mist are droplet size distribution, concentration of liquid phase in mist, speed of water disharge, geometric dimensions of mist and the mist location.

This paper deals with the process of attenuation of shock waves in mist with droplets ranging from 25 to 400 microns in size under different conditions of liquid phase concentration and location of mist.

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