



“Gheorghe Asachi” Technical University of Iasi, Romania



---

## CORRELATION OF EXPLOSION PARAMETERS AND EXPLOSION-TYPE EVENTS FOR PREVENTING ENVIRONMENTAL POLLUTION

Maria Prodan<sup>1,3\*</sup>, Emilian Ghicioi<sup>2</sup>, Dumitru Oancea<sup>3</sup>

<sup>1</sup>National Institute for Research and Development in the Mine Safety and Protection to Explosion - INSEMEX, 33-34 G-ral Vasile Milea str., Petrosani, Romania

<sup>2</sup>National Institute for Research and Development in the Mine Safety and Protection to Explosion - INSEMEX, 33-34 G-ral Vasile Milea str., Petrosani, Romania

<sup>3</sup>University of Bucharest, Faculty of Chemistry, 4-12 Regina Elisabeta boulevard, Bucharest, Romania

---

### Abstract

The naturally or industrially occurring flammable mixtures containing combustible gases or/and dusts represent a potential risk of explosion with major consequences on the environment and human personnel. Methane and coal dust are among the best known components able of leading to the formation of such mixtures either in coal mining activities or in different industries using coal dust as fuel. In order to assess the risk of explosion and the explosion evolution in such composite mixtures, the knowledge of the characteristic explosion parameters under standardized conditions is necessary. In this paper the maximum explosion pressure  $p_{max}$ , maximum rate of pressure rise  $(dp/dt)_{max}$  and explosion severity factor for methane-air mixtures, air - coal dust mixture and hybrid air-methane-coal dust mixture were determined in a standard 20 dm<sup>3</sup> spherical explosion vessel.

*Key words:* explosion, explosion hazard, maximum explosion pressure, maximum rate of pressure rise

*Received:* December 2013; *Revised final:* June, 2014; *Accepted:* June 2014

---

---

\* Author to whom all correspondence should be addressed: E-mail: maria.prodan@insemex.ro