7 Summary

Insensitive Munitions have come of age in the new millennium. Technology is now available, in fielded systems, which allows for the improvement in IM response of almost any munition type or system. The ultimate goal of attaining UN HD1.6 still requires more research and development activity, particularly to allow the mitigation of the threat of shaped charge jet impact. The use of new materials, better materials science and enhanced computational efforts will provide the opportunity for incremental advances in munition safety along with fulfilling the ever-increasing demand for higher performance.

References:

[1] Marchandin P. Camp Doha Accident[R]. MSIAC Report O-101, 2005.

[2] www.nato.int/related/msiac for more information[OL].

[3] United Nations. Transport of Dangerous Goods - Model Regulations [M]. 10th Edition, Geneva, Switzerland, 1997.

[4] Deschambault E. Relationships Between UN Transportation Tests and NATO Storage Sub-Division (SSD) 1.2.3 and Insensitive Munitions (IM) Tests[M]. IMEMTS, Bristol, England, April, 2006.

[5] Staubs E, Parsons G, Hayles D, et al. Hazard Classification Reduction Assessment[A]. Insensitive Munitions and Energetic Materials Technology Symposium[C], San Antonio, Texas, 2000.

[6] Swierk T. Insensitive Munitions Maturity - A Systems Perspective, IMEMTS, Bristol, UK, April, 2006.

[7] Doherty R M, Simpson R L. A Comparative Evaluation of Several Insensitive High Explosives[A]. 28th International Annual Conference of ICT[C], Karlsruhe, Germany, 1997.

[8] Doherty R, Nock L, Watt D. Reduced Sensitivity RDX, Round robin Program[A]. 37th International Conference of ICT[C], Karlsruhe, Germany, 2006.

[9] Freche A, Lecume S, Spyckerelle C, et al. Insensitive Nitramines [A]. EUROPYRO 2003 - 30th International Pyrotechnics Seminar [C], Saint Malo, France, 2003.

[10] Bouma R, van der Heijden A. Evaluation of Crystal Defects by the Shock Sensitivity of Energetic Crystals Suspended in a Density-matched Liquid[A]. 32nd Annual Conference of ICT Karlsruhe[C], Germany, 2001.

[11] Borne L. Influence of the Morphology of HMX Grains on the Sensitivity of Inert Binder Cast Explosives[A]. Cinquièmes Journées Détonique - Centre d'Etudes de Gramat[C], France, 1997.

[12] Halvorsen T, Kristiansen J D, Johansen O, et al. RS-RDX and RS-HMX: Ageing and Shock Sensitivity[A]. 36th Annual Conference of ICT[C], Karlsruhe, Germany, 2005.

[13] Hoffman D M. Voids and Density Distributions in 2,4,6,8,10,12-Hexanitro-2,4,6,8,10,12-hexaazaisowurtzitane (CL-20) Prepared Under Various Conditions[J]. *Propellants, Explosives and Pyrotechnics*, 2003,28: 194.

[14] Mathieu J, Folly P, Bircher H R. New Preparation Method for Compact, Rounded NTO Crystals[A]. NDIA/IMEMTS 2001 Insensitive Munitions & Energetic Materials Technology Symposium Bordeaux [C], France, October 8-11, 2001.

读者·作者·编者

第九届全国爆炸与安全技术学术会议召开

由中国兵工学会爆炸与安全技术专业委员会、东北大学、北京理工大学爆炸灾害预防控制国家重点实验室主办的第九届全国爆炸与安全技术学术会议于 2006 年 9 月 22 日～24 日在沈阳召开。来自航天集团的一院和四院,中科大、国防科大、北理工、南理工、中国矿业、中国石油、中北等大学,中国工程物理研究院、西北核技术、兵器 213 所、204 所等研究机构约 60 位专家学者参加了会议。会议约收到论文 70 篇。

会上,中国兵工学会爆炸与安全技术专业委员会主任委员冯顺山教授、煤炭科学研究总院重庆分院张延松教授、南阳防爆电气研究所王云生教授等 10 位专家分别作了《高价值设施的终端防卫——近程/超近程反导途径研究》、《气体粉尘爆炸的研究与应用》、《我国防爆电气产品的现状及发展趋势》等大会报告,并有 28 人进行了分组报告。

这次学术会议突出了工业粉尘爆炸防护技术和爆炸安全控制技术成果交流,在爆炸过程数值计算方面呈现出百家争鸣景象,达到了学术上沟通、交流、共享的效果。

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