



THE FIRE PROTECTION RESEARCH FOUNDATION

Sprinkler Protection Criteria for Exposed Expanded Group A Plastics Project Summary

Background

NFPA 13, Standard for the Installation of Sprinkler Systems, has limited information regarding protection criteria for Expanded Exposed Group A plastic commodity. There is an increasing trend in warehouses and retail facilities toward storage of contents which are classified at this hazard level.

At the 2008 meeting of the Foundation's Automatic Sprinkler Research Planning Council, this topic was identified as an area where additional research is needed to inform provisions of NFPA 13. At the Council's 2011 meeting, the topic was identified at or near the top of the priority list of projects with a particular focus on results needed for the next edition of the Standard.

Although there is a broad range of criteria needed, the particular focus of this project is rack storage of this commodity. In particular, there is an industry interest in exploring innovative protection solutions to improve the flexibility of this storage protection configuration.

Research Objective

To develop sprinkler protection criteria for rack storage of expanded exposed Group A plastic commodity.

Tasks

- 1) Literature review of both domestic and international studies on this topic. This will include current FM data sheets; flammable and combustible liquid fire test data, oxidizer fire test data; and others.
- 2) Based on Task 1) develop candidate protection methods which will explore the following: vertical barriers (considering large aisle widths); horizontal barriers in combination with in rack sprinklers; enhanced ceiling sprinkler protection in various configurations; and others.¹
- 3) Develop and implement a full scale fire test plan to investigate the effectiveness of these methods for selected storage arrays including up to 35 foot storage and 45 foot ceiling heights, large aisle widths, K-22-25 sprinklers, etc. These arrays will be designed to provide the most useful guidance for inclusion in NFPA 13; priority consideration will be given to the specific storage protection configurations of the sponsors of the program.
- 4) Provide recommendations for consideration by the NFPA 13 Discharge Committee.

¹ Existing protection criteria outlined in FM data sheets will not be explored in this research program.