



THE FIRE PROTECTION RESEARCH FOUNDATION

“EVALUATION OF WATER ADDITIVES FOR FIRE CONTROL AND VAPOR MITIGATION”

Background: Various water additives are available in today’s marketplace that claim to provide advantageous performance characteristics for fire control and vapor mitigation. Of particular interest are additives that report to provide superior fire suppression capabilities through emulsification or encapsulation. However, a scientific assessment of these various additives is lacking, and the fire protection community would benefit from an evaluation of the various available water additives for fire control and vapor mitigation.

Research Goal: The goal of this project is to provide a comprehensive evaluation of water additives used for fire control and vapor mitigation, with the intent to clarify the fire protection benefit of using water with additives for fire suppression versus water without additives. The project objectives to achieve this goal include providing a comprehensive review of the literature, identification of key performance characteristics, review of candidate test agents, and formulation of a detailed test plan that would be implemented in a potential second phase (not included in the scope of this effort).

Affected NFPA Documents: This project directly relates to the requirements of NFPA 18A, *Standard on Water Additive for Fire Control and Vapor Mitigation* (2007 edition).

Project Scope and Tasks:

Task 1 – Literature Review: Conduct a comprehensive review of the published literature, and collect and summarize data on previous evaluation efforts and test methods. Provide baseline definitions of water additives whose performance is based on the fire control concepts of emulsification and encapsulation, and utilize these definitions to clarify the additives included within the scope of this study.

Task 2 – Identification of Protection Scenarios, Key Performance Characteristics and Test Candidates: working with the project technical panel and sponsors, identify the key protection scenarios and water additives of interest (e.g. external hydrocarbon fires, equipment fires, ARFF, etc) and whether manual or fixed fire suppression systems are the delivery mechanism. Based on the information gathered in the literature review, identify and summarize the factors impacting performance characteristics that should be considered for water additives in these scenarios. Recommend the key performance characteristics that will be the baseline for further evaluation testing. Based on the definitions established to clarify the water additives within the scope of this study, identify with the assistance of the Project Technical Panel the candidate water additives to be evaluated in a proposed test plan.

Task 3 – Development of a Preliminary Test Plan: Analyze and summarize the information from Tasks 1 and 2 to generate a preliminary test plan that when implemented will provide a comprehensive evaluation of water additive for fire control and vapor mitigation.