Foam - Current Research Work for Industry Applications

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Research Work

Overall intent:

To provide a firm basis for future cost effective long term policies regarding the selection and use of fire fighting foam based on rational, relevant and independent test programmes.

Research Work

Key Criteria

- Working with suppliers
- BUT! Maintaining independent control and end user interest
- Anonymous samples
- Working with regulators
- True relevance to end users
- No histrionics – recognising the true risks!
- Recognising current standards ….but are they still relevant for the future!!!!
- Working within budgets
- Full information within LASTFIRE only initially

The ideal fire test!

Tends to be expensive!
The industry is good at preventing them!

Research Work

Key Objectives

- Snapshot of current capability – C6 and FF
  - Tank and Bund
- Revalidation/Revision (if required) of the LASTFIRE test protocol
- Validating sectional bund strategy
- Radiation measurements
- Environmental data (PERF)
- Preferred Partners list

Research Work

Protocols

- LASTFIRE Test – Heptane
- Small Bund – Gasoline
- Large Bund Gasoline
- Other small fire scale tests
- Tank Test (11m) – October 2017
- 2 Reference Foams, 4 FF, 2 C6
- Different Application Methods
  - Semi-aspirating, Aspirating, Medex, System, CAFs

Research Work

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Research Work

Sectional approach tests

Research Work – Initial Points to Note

- LASTFIRE Test – correlation good, but next tests critical

LASTFIRE Test Validation

- Is the test too critical? (Initially validated against a proven foam)
  - What is proven now? – Applies to both FF and C6
  - Some foams still pass with GOOD ratings!
- Is the test relevant to new formulations
  - E.g. Does it really assess true flow capability?
- Some proposals from results regarding modification of test includes design of burnback pot and addition of different application methods, possibly new foam pourer (less forceful)
- Convinced that batch testing is even more important at the moment

Research Work – Initial Points to Note Slide 1

- LASTFIRE Test – correlation good
- Some C6 equivalent to C8 performance
- Physical properties – FF and C6
- Section by section possible – but!!!
- Optimising application method/foam type etc.
- A GOOD CAFs very forgiving
- Premix, Dry Chemical compatibility etc!

Research Work – Initial Points to Note slide 2

- Small scale testing – conventional application
  - Kerosene performance!
  - Ethanol/IPA/Acetone performance
  - Accelerated ageing
- No specific absolute drop in replacement
  - Performance/system issues etc
- Probably all issues can be overcome with system modifications, optimum equipment/application rate/application method/foam!!
- But this takes time – and money!

Section by Section Approach

- Principle proven
- Depends on foam quality
- Might be site issues re edge flickers, etc and constant need for monitoring
- Can be accommodated by training/ top up equipment

General Observations/Opinions

NEXT PHASE IS CRITICAL – these observations are only preliminary based on the work to date and details currently confidential to LASTFIRE

- No absolute drop in replacement
  i. Physical properties, ageing, dry chemical compatibility, flow, edge flickers etc as well as performance
- Varied performance with different FF foams, (cf earlier development of AFFF-ARs)
- CAFs application very forgiving
  i. Good and bad CAFs systems! – sensitive to equipment
- Combination of foam/application rate/application technique is critical
  i. We have already known this but insufficient concentration on this in current standards
- Hazard specific solutions?
- We do not want to discourage further development

Research Work

Phase 2 – Large Scale tank Test

- Tests to be carried out October/November 2017
- Tank area – 100 m^2, 11m diameter, 11m high
- Testing at close to actual rates e.g. 6.5 lpm/m^2 for monitors (note produce 8 lpm/m^2 at ground monitors) and 4 lpm/m^2 for system nozzle
- 2-3 minute preburn and 7 minutes foam application as per LASTFIRE test and previous bund test protocols

This will not be the end of the story!!

We are getting there but more work to do!
A closer look at the optimum combination of equipment, foam concentrate, rate and technique!
A radical rethink?
Not really – just proper assurance

An opportunity, not a crisis!