
From: Fletcher, Steven G CIV NAVSEA HQ, SEA 05
To: Willey, Janice L CIV SEA04X, LQAO
Sent: 2/8/2017 4:42:45 PM
Subject: RE: GAO Question Response on AFFF
Attachments: GAO 100947 - AFFF Questions Rev1 sgf (3).docx

Janice,

Thank you so much in advance.

v/r,

Steve Fletcher, P.E.
Fire Protection Engineer
NAVSEA HQ, SEA 05P5
202-781-0932

-----Original Message-----

From: Willey, Janice L CIV SEA04X, LQAO
Sent: Wednesday, February 08, 2017 10:50 AM
To: Fletcher, Steven G CIV NAVSEA HQ, SEA 05; Katherine M. Hinnant
Cc: Berkoski, Daniel T CIV NAVSEA, SEA 05
Subject: RE: GAO Question Response on AFFF

Steve,
Yes, fluorocarbon surfactants are perfluorinated (PFC). They do not include polyfluorinated (PFAS) like 8:2FTS.

Fluorosurfactants would cover all PFAS, including PFCs.

So, you can see that the formulations are going toward fluorosurfactants and away from fluorocarbon surfactants.

v/r,
Janice

Janice Willey

Chemist
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-----Original Message-----

From: Fletcher, Steven G CIV NAVSEA HQ, SEA 05
Sent: Wednesday, February 08, 2017 9:23 AM
To: Katherine M. Hinnant; Willey, Janice L CIV SEA04X, LQAO
Cc: Berkoski, Daniel T CIV NAVSEA, SEA 05
Subject: RE: GAO Question Response on AFFF

Katie,

The Milspec does require fluorocarbon surfactants...

Section 3.2 Materials, "Concentrates shall consist of fluorocarbon surfactants plus other compounds as required to conform to the requirements specified herein".

I'm a little confused, so let me ask this...

Are fluorocarbon surfactants made up 100% by PFCs, or are there other ingredients?

v/r,

Steve Fletcher, P.E.
Fire Protection Engineer

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-----Original Message-----

From: Katherine M. Hinnant [mailto:katherine.hinnant@nrl.navy.mil]
Sent: Wednesday, February 08, 2017 9:13 AM
To: Fletcher, Steven G CIV NAVSEA HQ, SEA 05; Willey, Janice L CIV SEA04X, LQAO
Cc: Berkoski, Daniel T CIV NAVSEA, SEA 05
Subject: RE: GAO Question Response on AFFF

From my understanding, PFC and fluorocarbon surfactant are interchangeable because all fluorocarbon surfactants are PFC's, but not all PFC's are surfactants.

PFC refers to the formula C_xF_y which is a fluorinated carbon chain length of any size.

A fluorocarbon surfactant is any size PFC with a polar head group attached to the tail ($C_xF_yO_3S$). However, it is more appropriate to use fluorocarbon surfactant to better specify what is in the foam even though it is a PFC with a polar head group.

In the MilSpec language, fluorocarbon surfactants are not required. But specific requirements such as film formation and surface tension have only been met by fluorocarbon surfactants thus far.

Katherine Hinnant
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-----Original Message-----

From: Fletcher, Steven G CIV NAVSEA HQ, SEA 05
[mailto:steven.g.fletcher@navy.mil]
Sent: Wednesday, February 8, 2017 9:06 AM
To: Willey, Janice L CIV SEA04X, LQAO <janice.willey@navy.mil>; Katherine M. Hinnant <katherine.hinnant@nrl.navy.mil>
Cc: Berkoski, Daniel T CIV NAVSEA, SEA 05 <daniel.berkoski@navy.mil>
Subject: GAO Question Response on AFFF

Janice/Katie,

We have to respond to the GAO questions regarding AFFF. I need your expertise to make sure my response is correct.

Their Question:

Is the term "fluorocarbon surfactants" in the MILSPEC interpreted as synonymous with PFCs? If not, how is the term interpreted, and where in the MILSPEC does it require AFFF to contain PFCs?

My proposed response:

"Fluorocarbon surfactants" and "PFCs" are not interchangeable terms. PFCs are ingredients in fluorocarbon surfactants.

v/r,

Steve Fletcher, P.E.
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