According to Chapter 4 of the 2016 edition of NFPA 11 Standard for Low-, Medium-, and High-Expansion Foam, the components of a foam system, including the foam concentrate itself, shall be listed. Where listings for a component do not exist, the components shall be approved.

What does NFPA mean when it states a component needs to be listed or approved?

NFPA defines the term listed as follows:

Equipment, materials or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, materials or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

Simply put, a listed product or service is one that has been evaluated by a third party to do what it claims. Furthermore, this third party is also tasked with periodically ensuring continued compliance to ensure no shortcuts in production or service are taken after achieving the listing.

Note that not all products or services are able to be listed. To be listed, a standard of acceptance, a document that establishes minimum requirements, must be available to evaluate the product against. If a standard has not been developed for the specific product or service in question, NFPA states that the product or service must at least be approved. NFPA defines approved simply as “acceptable to the authority have jurisdiction.” Therefore, the authority having jurisdiction (AHJ), has the ability to approve unlisted products or services for use when needed. The AHJ can come to a conclusion on acceptance by understanding the acceptance criteria of NFPA or other appropriate standards, the manufacturer’s definitions for proper installation and use, and/or the listing or labeling practices of organizations concerned with product evaluations.

Why does the 2016 edition of NFPA 11 require listed or approved components?

The 2016 edition of NFPA 11 requires listed or approved components to help ensure adequate performance of components in the fire protection system. The listing process involves a plethora of testing to come to the conclusion on acceptable performance. These tests can include but are not limited to the following: hydrostatic testing, corrosion resistance, and fire test performance. The tests results as a whole help to answer the question, “Will it work?”

How to find the UL listing details?

Underwriters Laboratory (UL) is an example of an organization that is concerned with the evaluation of products or services. Products or services that are listed by UL can be found using their free online portal, Product IQ™. Once logged on, there are a variety of ways to search for a product or service on this portal as shown in Figure 1.
What does the information on a UL listing for a foam concentrate mean?

To answer this question, let’s consider an example – the foam liquid concentrate products listed by Ansul (Figure 2).

At the top of the listing page (Figure 3), the company information and general information about the qualifications for the listing (Figure 4) can be reviewed.
Figure 4: Some of the general requirements for foam liquid concentrates.

Note that the general information for foam liquid concentrates states that UL 162 is the standard used for listing evaluation (Figure 5). In other words, any foam concentrate that is listed at UL under this category must meet the requirements set by UL 162.

Figure 5: The requirements section for foam liquid concentrates stating UL 162 is used for the evaluation.

Getting back to the Ansul foam liquid concentrate listing specifically, the products that are listed by Ansul can be found right below the company information (Figure 6). Note that the product’s nominal usage percent, minimum storage temperature and the fuels it can be used to protect against is stated as well.
After the all the foam liquid concentrates that are listed, the UL listing page for foam liquid concentrates then specifies the equipment that can be used with those concentrates. For example, Figure 7 details some of the equipment that can be used for Ansul’s Ansulite 1 Percent product.

![Figure 7](image)

Note this product can be used with a variety of devices including in line inductors, nozzles, and sprinklers. Various details about how this product can be used with those devices, including the orifice size, flow GPM, inlet pressure, etc. can also be found as part of the listing.

The foam concentrate and proportioning/discharge device are always listed together at UL. Together they have been proven to meet UL 162. Devices not listed with the foam liquid concentrate have not been evaluated.

How does this relate to the inspection, testing, and maintenance (ITM) of foam systems?

It is important to note the foam concentrate/proportioner and discharge device used. One cannot simply change out the foam concentrate if it fails the periodical foam quality tests without considering the hardware. It is possible that a foam concentrate switch may also require some devices being switched as well.
Furthermore, it is possible that such a scenario may have already occurred. If you are on site completing the flow testing to ensure the proportioning equipment is working as designed and you are having trouble getting the required percent concentration of foam in the foam-water solution, it could be that the equipment is not designed for use with the concentrate on site.

If you have any questions regarding this article or would just like more information, please contact Dyne Fire Protection Labs at lab@dyneusa.com or (800) 632-2304.