# Flammable Liquids

Flammable liquids are a part of everyday life — from gasoline to the many flammable solvents that are common in the workplace. The following terms are associated with flammable liquids:

- **Flammable Liquid:** Has a flash point below 100 degrees Fahrenheit.
- **Flash Point:** The lowest temperature at which a flammable liquid gives off vapors. The vaporized liquid can form an ignitable mixture when combined with air, near the surface of the liquid.
- **Ignition Source:** Examples include a spark, an open flame, static electricity and an electric arc.
- **Lower Explosive Limit (LEL):** The lowest concentration of flammable liquid vapor in air, at which an explosion could occur.
- **Upper Explosive Limit (UEL):** The highest concentration of flammable liquid vapor in air, at which an explosion could occur.
- **Explosive Range:** The concentration of flammable liquid vapor, in air, between the LEL and UEL.

Flammable liquids should be handled with care and stored in proper containers. When handling a flammable liquid, all sources of ignition should be eliminated. Gasoline has a **flash point** of 45 degrees below zero Fahrenheit. At room temperature (70 to 80 degrees), it is easy to recognize that gasoline gives off significant vapors. As temperatures increase, flammable liquid vapors increase.

Containers of flammable liquids should be properly labeled and handled accordingly. The National Fire Protection Association (NFPA) has designated diamond-shaped color-coded labels for containers of hazardous materials. The small red diamond, within the larger multi-colored diamond, represents the hazard potential the material has for an explosion or fire. The number within the red diamond is based on the flash point of that class of flammable liquid. For instance, since gasoline has a flash point below 73 degrees Fahrenheit, a proper label would have a number “4” in the red diamond.

**NFPA Hazard Label**

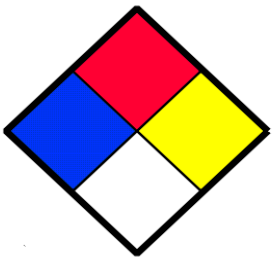
4: Below 73 degrees Fahrenheit (severe hazard)

3: Below 100 degrees Fahrenheit (serious hazard)

2: Between 100 to 200 degrees Fahrenheit (moderate hazard)

1: Above 200 Fahrenheit (slight hazard)

0: Will not burn (no hazard)



A number “4,” in the red diamond, indicates the greatest potential for an explosion or fire. Therefore, the greatest caution should be used when handling the material. Conversely, a number “1” indicates a lesser potential for fire or explosion. Remember, it is not the liquid that burns, it is the vapor emitted from the surface of the flammable liquid, at or above the flash point that will ignite and burn. The flammable liquid continues to feed these vapors, and fuels a fire. A full container of a flammable liquid is less likely to explode than a partially full container. A partially full container, with vapors, can be explosive.

Flammable liquid vapors may not burn under all conditions — the vapors may be too lean or too rich to burn. When the vapor concentration is below the LEL, the mixture is “too lean” to burn. When the vapor concentration is above the UEL, the mixture is “too rich” to burn. In other words, both of these conditions are outside of the explosive range.

Personal monitors and instruments are available to measure the LEL. An LEL reading of 100% on such an instrument indicates that the mixture has reached a percentage in the atmosphere within the explosive range and an ignition source will cause an explosion.

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