SAFETY CANS

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Part 1 of 2

Safety cans, as their name suggests, provide a safe means to store and dispense small quantities of flammable and combustible liquids. In the college or university setting, they are most likely to be found in science laboratories. But, they are also used to store solvents and cleaning agents in the maintenance shop and to store fuels for small powered equipment, such as lawn mowers and leaf blowers used by the grounds keeping crew.

NFPA 30, *Flammable and Combustible Liquids Code*, defines a safety can as "a listed container of not more than 5.3 gal (20 L) capacity having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure." In the U. S., safety cans are listed under the following standards:

- FM Global Approval Standard for Safety Containers and Filling, Supply, and Disposal Containers — Class Number 6051 and 6052
- ANSI/UL 30, Standard for Metal Safety Cans
- ANSI/UL 1313, Standard for Nonmetallic Safety Cans for Petroleum Products

Maximum capacity is limited to 5 gallons (18.9 L), except for nonmetal safety cans listed under UL 1313. These can be up to 5 Imperial gallons (22.7 L or 6 gal). Safety cans are available as small as one pint, but the most common are 1, 2, 2½, 3, and 5 gallons. Metal safety cans are typically powder-coated galvanized steel or stainless steel. Nonmetallic safety cans are High-density Polyethylene (HDPE).

Safety cans come in a variety of styles, as shown in Figure 1, and are of two types. Type I has a single, short, stubby spout used for both filling the can and for pouring from it. Type II has separate filling and pouring spouts, the latter fitted with a flexible or rigid nozzle, two of which appear in Figure 1. There are also some special purpose safety cans, such as the plunger can shown in Figure 1. These are used to pump a measured amount of liquid up through a perforated dish to soak a wipe rag.

Figure 1. Selection of typical safety cans.

The main feature of a safety can is its spring-loaded, self-closing spout cover, held open with a handle. This spout cover serves three purposes: it ensures that the can is kept closed when not in use (The cover cannot be left off, allowing the release of ignitable vapors.); it snaps shut as soon as the handle is released, so dropping the can will not result in a spill; and it releases internal pressure if the can is exposed to the heat of a fire so that internal pressure can't rise to the point where the can will rupture. The spring holding the spout cover closed is rather strong, as evidenced by the stringent leak test a safety can must pass to be listed. For example, UL 30's leak test limits leakage from an inverted safety can to not more than 4 drops per minute, one drop being 1/100th of a fluid ounce (0.3 ml).

One frequent question about safety cans: Are they required to have a flame arrester? Not by NFPA 30. As

stated, the spout cover is held firmly closed by the spring. Even if vapors coming past the cover are in the flammable range, their velocity, because of the pressure inside the can, would be greater than the intrinsic velocity of the flame through the vapors. So, a flashback into the safety can would be highly unlikely. Nevertheless, most safety cans are provided with screen in the spout to meet listing requirements. See the cutaway photo in Figure 2. Interestingly, FM Global's standard refers to this screen as a flame arrester, while UL 30 refers to it as "a screen to trap and permit removal of dirt or other foreign material."

Figure 2. Cutaway safety can showing flame arrester.

Another feature that is not required, but frequently provided, is a grounding point for safety cans that are painted. This is typically accomplished by taping a convenient spot on the handle before the can is painted. The user removes the tape, exposing a bare metal spot that can be used to attach a ground clamp. If this ground point is not provided, the user must ensure that any ground clamp used "bites" through the paint to establish a good metal-to-metal contact.

The safety can is not designed nor is it intended for use in areas where the periodic release of vapors might create a hazardous atmosphere, such as in the trunk of an automobile or in an outbuilding that will experience wide swings in temperature. A safety can placed in such a location can "burp" vapors as temperatures increase, leading to a build-up in the enclosed space of vapors that could easily be ignited.

While most safety cans are painted red, other colors are available: blue, for kerosene; yellow, for diesel fuel; and green, for oils.

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