**Flammability Requirements for Electrical and Electronic Products**

There is a potential risk for electrical and electronic products to catch fire due to the short circuits, which can generate excessive current flow in the low resistance connection and cause extreme temperature conditions. Thus, the electrical and electronic products should own the ability to retard fire and comply with industry flammability standards for safety concern. Flame retardants are added into electronic products to reduce the risks of catching fire because they can stop or slow the spread of fire by increasing the threshold of fire ignition. Underwriters Laboratories (UL) 94 is a common standard to evaluate the flammability of plastic materials used in devices and appliances. UL 94 defines the flammability tests and assigns ratings based on the results. These results can serve as a preliminary indication for part manufacturers to select the right materials with corresponding flame retardance. The following table [8] lists the requirements for UL 94 V-0, V-1, and V-2 ratings. V-0 is stricter than V-1, and V-1 is stricter than V-2. In UL 94 test, the high V-0 rating means a piece of plastic material would exhibit slow flame spread and quick burning cease after removing the igniting flame. On the contrary, a specimen would ignite quickly and keep burning if the specimen could not achieve the V-0 rating.

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| **Flammability rating UL 94** | **V-0** | **V-1** | **V-2** |
| Burning time after flame application (s) | ≤ 10 | ≤ 30 | ≤ 30 |
| Total burning time (s) (10 flame applications) | ≤ 50 | ≤ 250 | ≤ 250 |
| Burning and afterglow time of specimens after second flame application (s) | ≤ 30 | ≤ 60 | ≤ 60 |
| Dripping of burning specimens (ignition of cotton batting) | No | No | Yes |
| Specimens completely burned | No | No | No |