

## Dual Rated Cables From 5 - 40kV

A dual rated cable is a cable that lists two different voltage ratings on its jacket. For instance, a cable with 115 mils insulation thickness may have a jacket with a print legend that lists both 5kV and 8kV voltages at 133% and 100% insulation levels respectively on it. Therefore, this cable may be used on both 5kV and 8kV systems.

UL does not allow dual rated cables at voltage levels higher than 8kV even if the insulation thickness meets the minimums of the two rated voltages. Take for instance a 330 mil insulated cable (minimum point) UL 1072 Table 15.1 below shows this cable can be rated at 28kV 133% level or at 35kV 100% level. However, UL 1072 Section 70.1(b)(1) states that UL only allows dual voltage ratings on 5kV and 8kV. The full paragraph is provided below for reference.

In summary dual rated cables only apply to 5kV and 8 kV cables. Cables higher than 8kV are always single voltage rated.

**UL 1072 Table 15.1**

| Voltage rating of cable (phase-to-phase circuit voltage) | Conductor size (AWG or kcmil) | Insulation thickness (mils) |                      |                      |                      |                      |                      |
|--|-------------------------------|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|  |                               | 100 percent levels          |                      | 133 percent levels   |                      | 173 percent levels   |                      |
|  |                               | Minimum at any point        | Maximum at any point | Minimum at any point | Maximum at any point | Minimum at any point | Maximum at any point |
| 2400   | 8 - 1000                      | 85                          | 120                  | -                    | -                    | -                    | -                    |
|  | 1001 - 2000                   | 135                         | 170                  | -                    | -                    | -                    | -                    |
| 5000   | 8 - 1000                      | 85                          | 120                  | 85                   | 120                  | 135                  | 170                  |
|  | 1001 - 2000                   | 135                         | 170                  | 135                  | 170                  | 135                  | 170                  |
| 5001 - 8000  | 6 - 1000                      | 110                         | 145                  | 1135                 | 170                  | 165                  | 205                  |
|  | 1001 - 2000                   | 165                         | 205                  | 165                  | 205                  | 210                  | 250                  |
| 8001 - 15000   | 2 - 1000                      | 165                         | 205                  | 210                  | 250                  | 245                  | 290                  |
|  | 1001 - 2000                   | 210                         | 250                  | 210                  | 250                  | 245                  | 290                  |
| 15001 - 25000  | 1 - 2000                      | 245                         | 290                  | 305                  | 350                  | 400                  | 450                  |
| 25001 - 28000  | 1 - 2000                      | 265                         | 310                  | 330                  | 375                  | 425                  | 475                  |
| 28001 - 35000  | 1/0 - 2000                    | 330                         | 375                  | 400                  | 450                  | 555                  | 610                  |

a The selection of the cable insulation level to be used is made on the basis of the fault current clearing times and other information as explained in the National Electrical Code (NEC) Table 310.64.

**UL 1072 Section 70.1(b)(1)**

1) SHIELDED SINGLE- AND MULTIPLE-CONDUCTOR CABLE – Maximum working voltage of the cable (“X000 volts” or “XKV”) followed by “100% insulation level”, 133% insulation level, or 173% insulation level, whichever is applicable. The following marking is appropriate on cables rated 5000 V that comply with the requirements for the 133 percent insulation level: “100 or 133% insulation level”. Cables that comply with the requirements for 8 kV 100% may be marked “5 kV 133% / 8 kV 100%”. It is acceptable to abbreviate the word insulation as insul in the above markings.

