Circulation System Components and Related Materials for Swimming Pools Spas, and Hot Tubs

13 Ultraviolet light process equipment

13.1 General
Ultraviolet light process equipment covered by this section is intended for use in circulation systems of public and residential swimming pools and spas/hot tubs with hydrogen peroxide, chlorine, or bromine residual chemical. The residual chemical shall be easily and accurately measured by a field test kit. If a system is used with hydrogen peroxide, a maximum concentration of 35% solution in water shall be continuously fed to maintain a minimum residual of 20 mg/L. Otherwise, these systems shall be used in conjunction with not less than 1 ppm free chlorine or 2 ppm bromine.

13.2 Operating temperatures
The unit and all its components shall be designed to withstand a maximum operating temperature of 39 ± 1 °C (102 ± 2 °F).

13.3 Operational protection
Units shall be equipped with an automatic mechanism for shutting off the power to the ultraviolet (UV) light source whenever the cover is removed.

13.4 Life Test
Ultraviolet units shall be capable of operating 3000 continuous hours at or above 80% of the maximum pressure recommended by the manufacturer, the minimum UV intensity for the average flow rate being utilized in the pool, based on the manufacturer’s published specifications. At least one unit shall complete 3000 h, and a minimum 8000 satisfactory hours shall be accumulated among the three units. All tests shall be carried out at 39 ± 1 °C (102 ± 2 °F) for spas or hot tubs. Maintenance according to the manufacturer’s instructions, except parts replacement, shall be carried out during the test period.

13.9 Head loss
The manufacturer shall make available a head loss claim for systems installed into the main line. The actual head loss shall not exceed the claimed head loss by more than 10%.

13.10 Hydrostatic Pressure Requirements
Ultraviolet light process equipment that normally operates under pressure shall show no evidence of rupture, leakage, burst, or permanent deformation when subjected to hydrostatic pressure of 1.5 times the manufacturer’s maximum operating pressure rating applied to all parts of the unit subject to pressure during operation. [see annex F, section F.4]