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Tornado™ Long Pathlength Gas Cell Variations

The Tornado™ range of long pathlength gas cells can be provided in many variations. In essence they are fixed long pathlength gas cells designed to be used with gases at ambient temperatures. The Tornado™ gas cell range cannot be heated, unlike the Cyclone™ gas cells which have their own specific heating jacket systems.

There are three basic Tornado™ cell sizes - the T5 cell (GS24205 series) at 1.33 liters volume, the T10 cell (24210 series) at 2.6 liters volume and the T20 cell (24220 series) at 4.7 liters volume. Viton perfluoroelastomer O-ring seals are used throughout the Tornado™ range of gas cells as standard.

The largest pathlength obtainable for each cell increases with the increase in cell size, but there is a certain range of overlap for pathlengths between the cells. For example a 2 meters pathlength (2.1 meters in the T10 cell) can be obtained with all three cells. For a particular concentration of gas, the smallest volume T5 cell will offer the best pathlength to concentration ratio of all the cells, if a 2 meters pathlength is sufficient. For the longest pathlength of 20.0 meters offered by the cells, the T20 cell must be used. In order to determine the pathlength of cell required for a concentration of gas to be detected, an explanation for this can be found on the Specac document Choice of Gas Cells for Pathlength/Concentration.

The bodies of the Tornado™ cells can be provided in either borosilicate glass as standard or in nickel coated aluminum as a special option. Choice of the body will be determined by the nature of the chemical to be studied. All cells can be run under vacuum conditions, but the metal bodied cells are rated to study gases at a pressure up to 125psi, whereas the glass bodied cells are only rated to 28psi (1 atmosphere above ambient pressure). There are optional pressure gauge kits for the T5, T10 and T20 cells, to monitor the pressure of gas within these gas cells if desired.

The mirrors in the Tornado™ cell are mounted on an anodised aluminum plate and stainless steel rod support frame and are in gold with a protective coating.

The windows that can be used in the Tornado™ cells are either in KBr, ZnSe or CaF₂ as standard. For metal bodied cells, KBr windows should not be used due to the increased pressure specification that is offered by the metal body. Choice of the window is dependent on the spectral frequency range offered by the material and its chemical resistance to the vapor being analyzed.