

# FPD - Flame Photometric Detector

## FPD, Dual FPD, FPD/FID, FID/Dual FPD

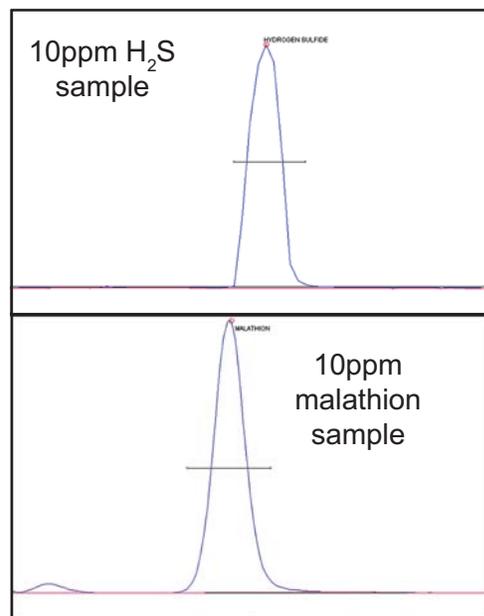


- Bandpass Filters for Sulfur or Phosphorus
- Use the Dual FPD for Simultaneous Sulfur and Phosphorus Detection
- Detects Sulfur Compounds to 200ppb, Phosphorus Compounds down to 10ppb
- Use the FPD/FID or Dual FPD/FID for Simultaneous Hydrocarbon Speciation

The Flame Photometric Detector can detect sulfur compounds, such as  $H_2S$  or  $SO_2$ , down to about 200ppb and phosphorus compounds to 10ppb. While not 100% selective, the FPD is 100,000 times more sensitive to sulfur and phosphorus compounds than hydrocarbons. The phosphorus response is linear, and the sulfur response is exponential (twice the sulfur yields four times the peak area).

The FPD is similar to the FID except that the detector body is light tight and a second flow of hydrogen purges the optical path between the photomultiplier tube (PMT) and the hydrogen rich flame. A bandpass filter (at 393nm for sulfur and 525nm for phosphorus) mounts in front of the PMT, so only the emissions from sulfur or phosphorus are detected while other wavelengths are rejected. The Dual FPD detector is equipped with two PMTs and filters for the simultaneous detection of sulfur and phosphorus.

The two chromatograms shown at right were produced by an SRI GC equipped with an FPD detector. The top chromatogram shows the FPD response to 10ppm  $H_2S$ . The bottom chromatogram shows the FPD response to 10ppm malathion, a pesticide containing both sulfur and phosphorus.

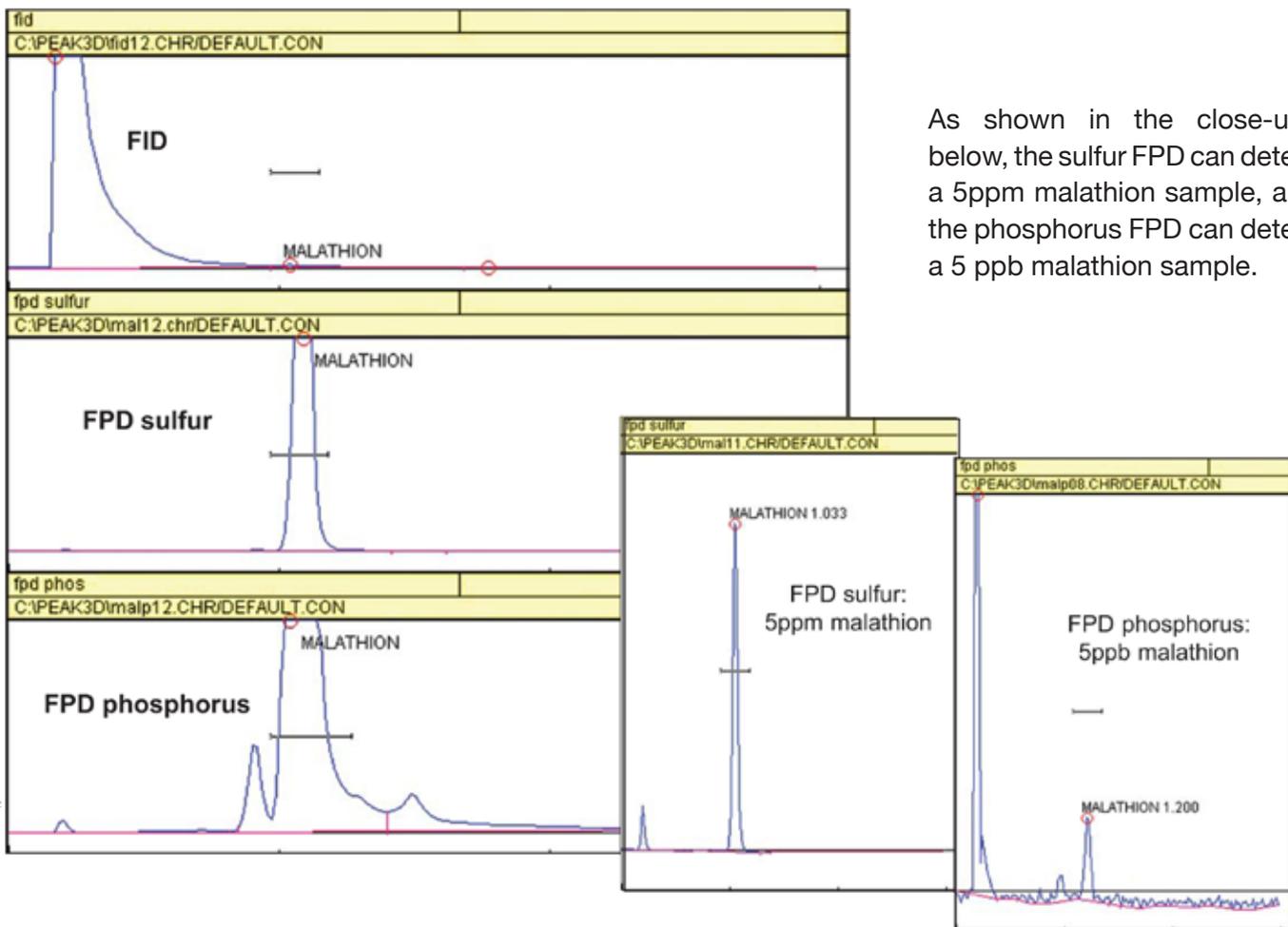


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Either the single or dual FPD can be equipped with an FID collector electrode and electrometer, which will detect the hydrocarbon peaks at the same time the PMTs are responding to the sulfur and phosphorus compounds. The FID response is not as sensitive as a pure FID because the hydrogen-rich flame is optimized for sulfur and phosphorus detection, not hydrocarbon detection. Users can easily optimize the sulfur-phosphorus response versus hydrocarbons response simply by adjusting the hydrogen/air mixture with the included EPC gas controls.

These three chromatograms are the FID/Dual FPD combination detector responses to a 50ppm malathion sample.



As shown in the close-ups below, the sulfur FPD can detect a 5ppm malathion sample, and the phosphorus FPD can detect a 5 ppb malathion sample.

8690-0080	FPD detector
8690-1080	FPD/FID combination detector
8690-0085	Dual FPD with sulfur and phosphorus filters
8690-2085	Dual FPD with sulfur and phosphorus filters, and FID collector electrode