



POREX VIRTEK® PTFE

For Increasing Effectiveness of UVC Technology Through Reflectivity

When you see this logo and statement describing your UV disinfection system, it means that the material lining the UVC reaction chamber is Porex Virtek PTFE. With a diffuse reflectivity of up to 96% in the critical UV range, every photon of energy is ensured to be doing its job when this material is used, which means your UV disinfection system is performing at its peak.

So why is this so important? In a semi-closed system such as a UV disinfection chamber, having ultra-high reflectivity is the key to maximizing the efficacy of the disinfection system.

The Porex Virtek PMR10 polytetrafluoroethylene (PTFE) sheet provides highly efficient and uniform diffuse reflectance of UV light. Featuring an average reflectance of 96% at 254 nm, the material is also chemically inert, UV resistant and heat resistant to 500°F.

Benefits:

- Dramatically improve pathogen reduction in airstream when utilized with 254 nm UVC light
- Transforms ductwork into a highly reflective disinfection chamber
- Completely hydrophobic, eliminating the possibility of moisture intrusion into insulated duct liner
- Protects materials from damaging UV exposure



Commercial



Residential

Specifications:

Dimensions	Thickness 0.75 mm	Width 33 cm	Length 13.2 m ±
	Average Reflectance 96% 254 nm		
Operating Temperature	Up to 500°F		
UL Rating	UL 94	UL 746C	

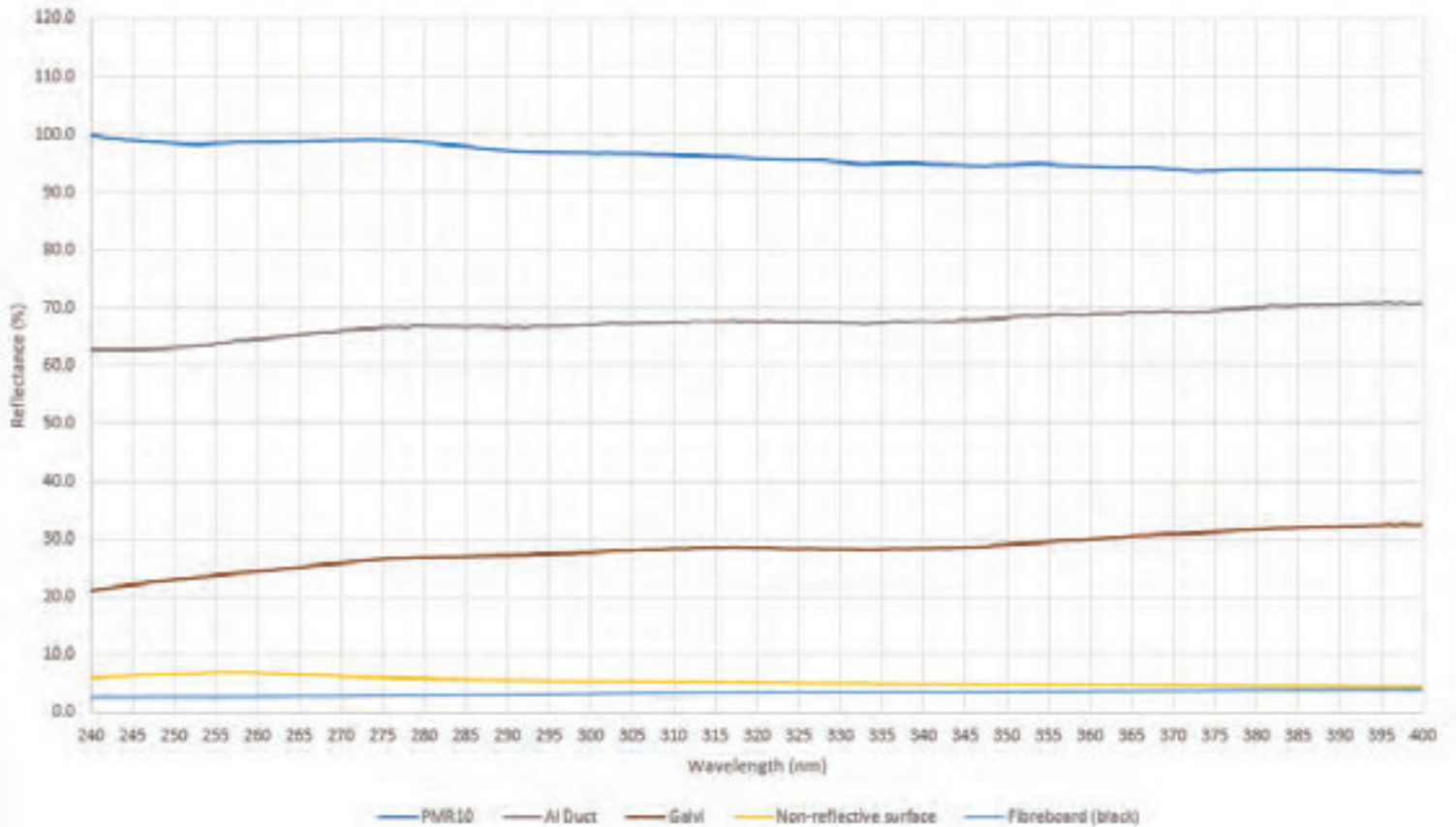
The Science Behind Reflectivity

Using Sumpner's principle – which estimates mean surface illuminance from direct and indirect components – total average irradiance (E) is the sum of the direct (ED) and indirect (ER) irradiance: **$E_{total} = ED + ER$**

The direct irradiance (ED) is simply the energy of the UV source measured at the surface, whereas the reflected irradiance ER is a function of the direct irradiance times the surface reflectivity $ER = ED \times (R/(1-R))$ – or the additional irradiance that is amplified by the reflective surfaces.

So what is the difference between a product with a reflectivity of 75% versus 97%? The obvious – but incorrect – answer is 22% ($97\% - 75\% = 22\%$ or about 1/4) but in reality, the total irradiance in closed systems becomes exponential as it approaches 100%. For example, a 75% reflective surface with an initial surface energy from the source of 1 mJ/cm² would have a total surface irradiance of **4.0 mJ/cm²** (as the system loses 25% of its energy every time it strikes the 75% reflective surface). But for a reflectivity of 97%, the surface irradiance jumps to a whopping **33.3 mJ/cm²** as the system loses just 3% per reflection. **The surface irradiance multiplies by eight when moving from a 75% reflective material to a 97% reflective material.** This is precisely why we can say that your UV disinfection system is *Intensified with Porex Virtek*.

Average Reflectance - Common HVAC Materials



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For professional installation of POREX Virtek reflective media, please visit www.VirtekHVAC.com



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