

# EXPANDED PTFE AR COATS

This report is a summary of properties reported in [Multilayer antireflection coats using ePTFE membrane for mm-wavelength plastic optics](#) and [Plastic Laminate Antireflective Coatings for Millimeter-wave Optics in BICEP Array](#).

## OVERVIEW

Layered polymer anti-reflection (AR) coats are useful to reduce spurious reflections off relatively low index polymer millimeter transmissive optics such as HDPE lenses or nylon and bulk PTFE (commercial name Teflon) filters. Expanded PTFE (ePTFE) is a useful AR coating material due to its low density and commercially available thicknesses.

I have used two different forms of ePTFE for polymer AR coats: Teadit for 30/40, 95 and 150 GHz, and DeWAL for 200–300 GHz.

## SUMMARY OF PROPERTIES

### TEADIT

Index of refraction:	1.16–1.26
Thickness range:	0.395–1.618 mm
Optical path length:	0.44–2.15 mm
Physical density:	0.85–1.3 g/cc

### DEWAL

Index of refraction:	1.10–1.20
Thickness range:	0.07–0.25 mm
Optical path length:	0.077–0.3 mm
Physical density:	0.55–1.1 g/cc

## IDEAL AR COATS

Chebyshev solutions (the lines in the plots below) are the ideal AR coats across broad bandwidths. The points in the plots below are the actual achieved AR coats on the associated instrument.

