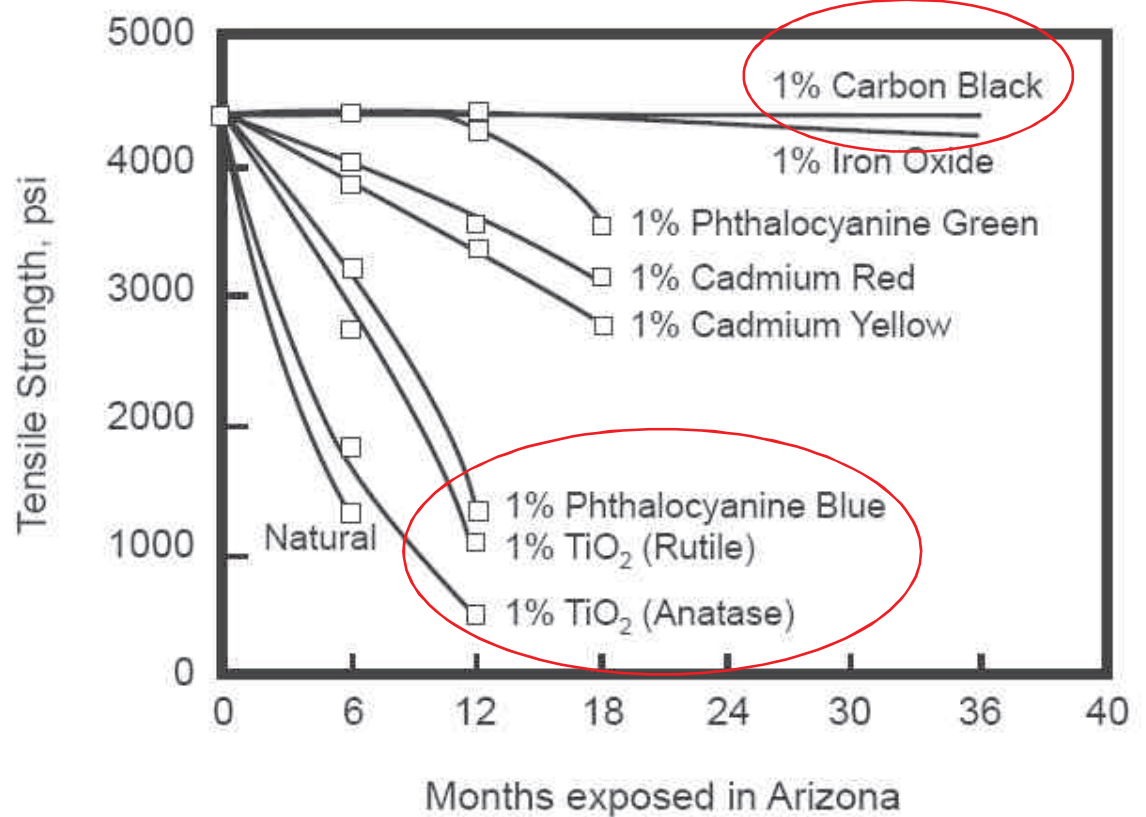


- Most polymers require stabilization for exposure
- Carbon black is effective & economical for black colored products
- TiO_2 (titanium dioxide) commonly used for white or colored products but...
- Supplemental UV protection may be required for longer term exposure
- UV inhibitors and absorbers are used in clear, white and colored products to improve stability
- Antioxidants may also be used with UV stabilizers to provide thermal stability

Effect of pigments on UV stabilization of .96 density unstabilized polyethylene resins



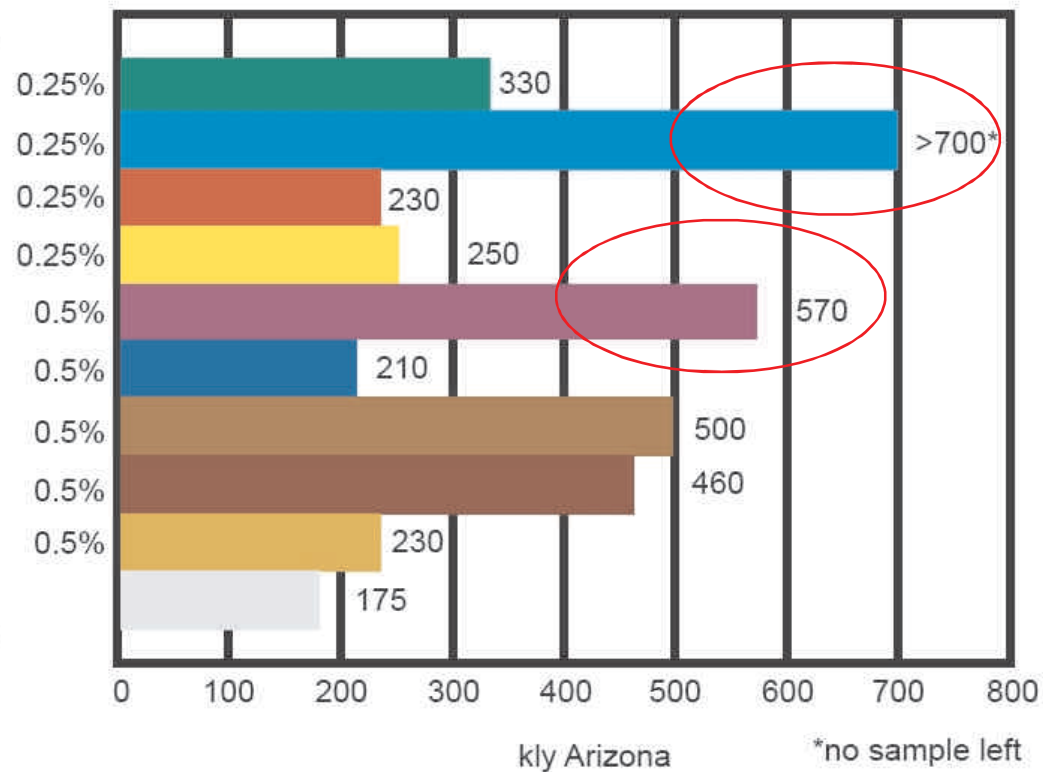
Source: *Right figure:*
Marlex HDPE Product Brochure,
Phillips Petroleum,
R.J. Martinovich for Plastic Technology
November 63.

Figure 7: Color pigment affect of UV performance

Failure Criteria: 50% retained tensile impact strength.




Arizona exposure of pigmented HDPE plaques (1mm)



Source: *Left figure:*
Ciba: Stabilization of Polyolefins – Part 2.

Polyolefin Thick Sections,
Arizona 45° south
(start November)

Polymer – HDPE (Ziegler)
Basic Stabilization: 0.03% IRGANOX 1076 + 0.05% Ca-stearate
Light Stabilization: 0.15% TINUVIN 770

- 
- Cross-linked polyethylene backings
 - Some adhesives on backings
 - Film type “carriers”
 - Highly stable adhesives