

CARBON BLACK TANKS

A wide variety of compounded colors are available for polyethylene storage tanks. Cosmetics to match the surrounding buildings and landscape, customer preferences, and the application or the chemicals being stored are factors determining tank color selection. However, one color almost always selected for higher end storage solutions, such as storing harsh, aggressive chemicals such as sodium hypochlorite, is black. Specifically when the tank is used outdoors.

Let's explore why black, or more specifically, carbon black, is a smart color choice.



What Is Carbon Black?

Carbon Black is a form of nearly pure, elemental carbon. With its different molecular structure from other forms of elemental carbon, graphite and diamond, carbon black has different physical properties. It's softer than graphite and diamond, and intensely black in color. Carbon black is manufactured by burning hydrocarbon fuels at a reduced heat in a controlled atmosphere. Kerosene is one of the most common hydrocarbons used in manufacturing carbon black.

Why Carbon Black?

Carbon black has many applications in plastics. It's used as a pigment, conductive filler material, particulate reinforcement, and UV absorber. In crosslinked polyethylene storage tanks, carbon black is used as both a compounded pigment and UV absorber. Carbon black is the industry standard for UV absorption, when compared to other colors like forest green or white storage tanks that are pigmented with Titanium Dioxide. Many of these other pigmented colors shorten the useful life of a chemical tank due to premature breakdown of the polymer.

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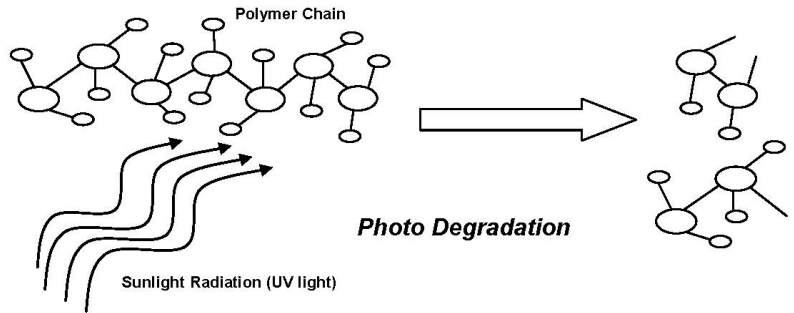


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CARBON BLACK TANKS (CONTINUED):

Carbon black offers superior weather resistance in storage tanks housed outside. Polyethylene tanks, in addition to heating when exposed to sunlight, also degrade from exposure to ultraviolet rays. UV turns plastic brittle through photodegradation. This degradation results in loss of mechanical properties, discoloration, cracking, fading, and chalking. Photodegradation weathers polyethylene.



A simple, inexpensive method to protect polyethylene from UV degradation is adding carbon black as an internal stabilizer material. Carbon black, added as a stabilizer, absorbs or screens out damaging UV rays. The rays are transformed into heat. The heat is harmlessly dissipated throughout the tank itself.

The UV index value or rating of carbon black, according to an Exxonmobil study conducted over a 36 month period in the Arizona desert, supports carbon black as a superior UV resistant material.

While black tanks have a slightly higher overall temperature than natural or white tanks, the UV protection the carbon black provides outweighs the effects of slightly elevated temperature levels. The useful life of the tank is extended and the potential for catastrophic failure is

reduced significantly. As a result, carbon black is the preferred compounded pigment for storing harsh chemicals such as sodium hypochlorite and other aggressive materials.

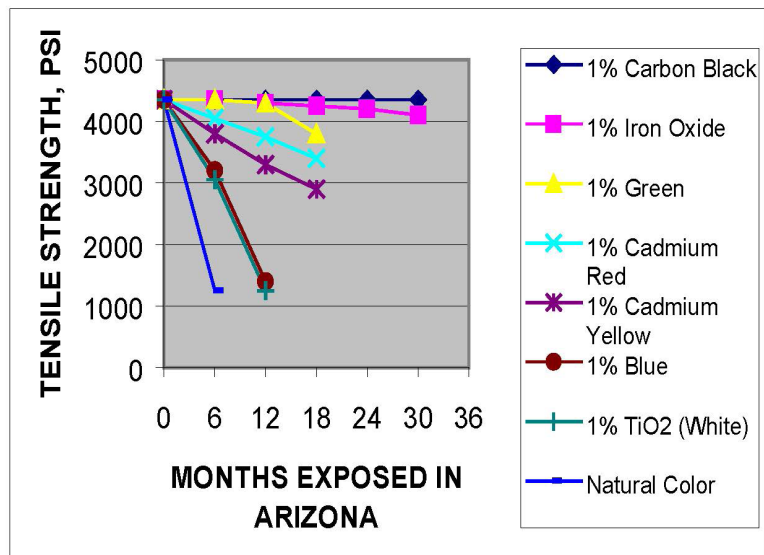


Figure 1: Effect of Pigments on UV stabilization of HDPE PE resins.
Source ExxonMobil "Tip from Technology, UV Effect on Polyethylene"