UV RAYS EFFECT ON EPDM RUBBER

When a thermoset/thermoplastic part is exposed to the atmosphere, it is generally agreed upon that in addition to heat, oxygen and moisture, light of wavelength 200 to 250 nm (2000 to 2500 Angstroms) and ozone in dilute concentration are the major contributing factors for deterioration.

Light of wave-lengths in ultra violet spectral band may deteriorate part made out of white or light color to an objectionable degree or developing a brittle surface layer which shatters in all directions upon flexing. Light susceptible parts will undergo these alterations when exposed in an unstressed condition.

The need to protect rubber against UV damage is why tires are black and why the Elastimold Switchgear Product Line uses a semi-conducted black rubber outer shield. For this purpose, a common type of UV stabilizer called a "competitive absorber" is used. Competitive absorbers work by capturing and absorbing harmful UV light wave energy (instead of the adjacent molecule of the rubber polymer. that's why it's called "competitive"). Competitive absorbers have the added ability to convert harmful UV light wave energy into heat so it can dissipate harmlessly. Tire manufactures and Elastimold use the same competitive absorber, carbon black.

Usually, HAF black in conjunction with naphthenic process oil with low aromatic content show no surface crazing or loss of gloss even when examined under a microscope. Low concentrations (e.g. 3 to 5 parts) of carbon black provide very good weather protection even in mineral filled parts.

In conclusion, carbon black mixed in a thermoset material like Elastimold's EPDM rubber is known to impart excellent UV protection.

References: