Foam Buoyancy Calculation

The following is in regards to figuring the buoyancy of crosslinked polyethylene foam:

Thedensityofwateris62.4lb PCF, so the buoyancy of any of our XLPE foam is that density (62.4 PCF) minus the foam density PCF.

For example, buoyancy for a 4 lb XLPE would be 62.4 lbs for water, minus 4 lbs for the foam, equaling 58.4 lbs of buoyancy, assuming a static load is spread exactly evenly over the foam. For real life conditions, the suggested safety factor is 2:1. It is recommended to test in actual conditions from there before running a larger quantity. If the load is uneven, or it's moving and tipping, that may require more foam.

So to lift 100 lbs with 4lb XLPE, for example, you would need 100 lb divided by 58.4 PCF buoyancy,

equaling 1.712 cubic feet, 20.55 bd ft (one cubic foot is equal to 12 bd ft), under perfect laboratory

conditions. Adding the 2:1 engineering safety factor and the normal first design to test would be 3.422 cubic feet or 40.1 bd ft.

Over time the foam could absorb very small amount of water (typically less than 1% of its weight) so that is normally covered in the 2:1 safety factor, rather than adjusting for that specifically.

This document is for reference only, it is suggested that real world testing is done before mass production of parts.