

304 Stainless Steel

Again Salt water can Corrode Stainless Steel, meaning after time the tank will break under pressure. The material can withstand the pressure but again will be too heavy.

Pre-Pressured Carbon Fibre Composite

Will With Stand the Pressure and is Light enough. But the Cost of creating a tank will be too extreme with a density of 1.74 g/cm^3 it is by far the most light weight.

Conclusion

In conclusion, I would choose the 6061 T6 Aluminium. This is because it can handle the pressure. It is light weight enough to make a tank. Resistant to salt water and cheaper.

c)

$$t = \frac{2Pd}{\sigma_{\text{yield}}} = \frac{2 \times 20 \times 100}{45.45} = 88.90$$

$$\sigma = \frac{Pd}{4t} = 45.45$$

$$t = \frac{2Pd}{\sigma_{\text{yield}}} = \frac{2 \times 20 \times 100}{45.45 \times 2} = 0.365 \times 100 = 36.5 \text{ mm}$$

According to internet research the thickness of a soda tank wall is approximately 11mm.