

System requirement-measurements for Cryogenic Tank

| | | Units | in | in | lb | atm | y/n | \$ | K | % (hours of manufacturing) | \$ | cubic cm |
|--|---|----------------------|-------------|---------------|-------------|----------------|---|--------------------------------|---------------------------|--|------------------------|----------------|
| | | Performance measures | Tank Length | Tank Diameter | Tank Weight | Burst Pressure | Evidence of microcrack | Cost of tank after development | External Tank Temperature | Percentage of tank manufactured at PSU | Cost of machined parts | Working Volume |
| Target design requirements for Cryo-Tank | | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | The Tank can hold liquid oxygen without bursting into flames | 10 | | | | x | x | | | | | x |
| 2 | The Tank is affordable | 7 | x | x | x | | | x | | x | x | |
| 3 | The Tank is reproducible | 9 | x | x | | | | x | | x | x | |
| 4 | The Tank doesn't leak | 10 | | | | x | x | | x | | | |
| 5 | The Tank weighs less than conventional aluminum tank | 9 | | | x | | | | | | | x |
| 6 | The Tank shall withstand strains resulting from temperature, pressure, and vehicle body loads | 10 | x | x | x | x | | | x | | | x |
| 7 | The Tank is scalable for larger rocket design | 10 | x | x | x | | | x | | x | x | x |
| | | | 36 | 36 | 36 | 30 | 20 | 26 | 20 | 26 | 26 | 29 |
| Lower Acceptable | | | 8.75 | 4 | 1 | 3 | Composite material microcracks but doesn't cause tank failure during flight | - | 274 | 50 | - | 72 |
| Ideal | | | - | - | 2 | 4.5 | Composite material doesn't microcrack at cryogenic temperature | 0 | 300 | 100 | 0 | - |
| Upper Acceptable | | | 13.00 | 6 | 3.5 | - | - | 1000 | - | - | 2000 | 194 |