

Viewport materials and dimensions [0]

Revised 13 Jan 2026

| Scale |
|-------|
| 1.0   |
| 3.0   |
| 10.0  |

|                                           |                 |                                       |                |                      |               |                        |                   |         |       | Weibull Parameters |      |       |                         |                       |                           |                  |                  |       |             |                      |                     |                      |                  | 2.00 | reverse pressure (psig) |
|-------------------------------------------|-----------------|---------------------------------------|----------------|----------------------|---------------|------------------------|-------------------|---------|-------|--------------------|------|-------|-------------------------|-----------------------|---------------------------|------------------|------------------|-------|-------------|----------------------|---------------------|----------------------|------------------|------|-------------------------|
| Type                                      | Supplier        | Model Number / DCC Link               | Flange OD (in) | Optic material       | View Dia (in) | window Radius (in) [3] | Optic thick. (in) | E (GPa) | ν (–) | S0 (Mpa)           | m    | F     | Inert Strength Si (Mpa) | Limit Stress sf (Mpa) | peak bending stress (Mpa) | FEA stress (Mpa) | Factor of Safety | N (–) | B (Mpa^2-s) | proof pressure (atm) | GN2 pressure (psig) | bending stress (Mpa) | Factor of Safety |      |                         |
| AOS Commercial 6" [1]                     | Norcal          | ZV800                                 | 9.97           | 7056 glass           | 5.600         | 3.050                  | 0.375             | 62.8    | 0.21  |                    |      |       |                         |                       | 8.07                      | 7.90             | 2.0              |       |             | 2.00                 | 14.7                | 1.10                 | 14.7             |      |                         |
| AOS Commercial 7.8" [4]                   | MDC             | 9722012/450027                        | 9.97           | Quartz/ Fused Silica | 7.780         | 4.140                  | 0.375             | 73.8    | 0.17  | 156.60             | 4.40 | 1E-02 | 55.05                   | 22.71                 | 14.68                     |                  | 1.5              | 40.5  | 5.10E-04    | 2.37                 | 20.1                | 2.00                 | 11.4             |      |                         |
| AOS Commercial 4.5"                       | MDC             | 450004                                | 4.47           | 7056 glass           | 2.690         | 1.595                  | 0.17              | 62.8    | 0.21  |                    |      |       |                         |                       | 10.74                     |                  | 2.0              |       |             | 2.00                 | 14.7                | 1.46                 | 14.7             |      |                         |
| AOS High Quality 6"                       | LIGO            | D1100999                              | 9.97           | Fused Silica         | 5.240         | 2.669                  | 0.75              | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 1.53                      | 1.47             | 3.5              | 40.5  | 5.10E-04    | 2.10                 | 16.2                | 0.21                 | 24.6             |      |                         |
| AOS High Quality 6", wedged               | LIGO            | D1101000                              | 9.97           | Fused Silica         | 5.240         | 2.669                  | 0.87              | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 1.13                      |                  | 4.5              | 40.5  | 5.10E-04    | 2.07                 | 15.8                | 0.15                 | 33.1             |      |                         |
| AOS High Quality 6", septum               | LIGO            | D1101535                              | 9.97           | Fused Silica         | 5.240         | 2.669                  | 0.75              | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 1.53                      | 1.47             | 3.5              | 40.5  | 5.10E-04    | 2.10                 | 16.2                | 0.21                 | 24.6             |      |                         |
| AOS High Quality 6", septum, wedged       | LIGO            | D1101092                              | 9.97           | Fused Silica         | 5.240         | 2.669                  | 0.87              | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 1.13                      |                  | 4.5              | 40.5  | 5.10E-04    | 2.07                 | 15.8                | 0.15                 | 33.1             |      |                         |
| TCS Dual 3" [2]                           | LIGO            | D1003194                              | 9.97           | Fused Silica         | 2.250         | 1.306                  | 0.5               | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 0.82                      |                  | 6.2              | 40.5  | 5.10E-04    | 2.04                 | 15.3                | 0.11                 | 45.6             |      |                         |
|                                           |                 |                                       |                | ZnSe                 | 2.250         | 1.306                  | 0.5               | 74.3    | 0.31  | 60.60              | 9.60 | 1E-05 | 18.27                   | 7.86                  | 0.86                      | 0.76             | 10.3             | 39.6  | 6.74E-04    | 2.05                 | 15.5                | 0.12                 | 67.4             |      |                         |
| PSL High Power, 6" (non-wedged)           | LIGO            | D1101670                              | 9.97           | Fused Silica         | 5.240         | 2.669                  | 0.75              | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 1.53                      | 1.47             | 3.5              | 40.5  | 5.10E-04    | 2.10                 | 16.2                | 0.21                 | 24.6             |      |                         |
| PSL High Power, 6", wedged                | LIGO            | D1101714                              | 9.97           | Fused Silica         | 5.240         | 2.669                  | 0.87              | 73.8    | 0.17  | 156.60             | 4.40 | 1E-05 | 11.44                   | 5.10                  | 1.13                      |                  | 4.5              | 40.5  | 5.10E-04    | 2.07                 | 15.8                | 0.15                 | 33.1             |      |                         |
| CaF2 CHETA                                |                 |                                       | 9.97           | CaF2                 | 2.362         | 1.378                  | 0.5               | 108.0   | 0.30  | 70.00              | 6.00 | 1E-05 | 10.27                   | 4.86                  | 0.95                      |                  | 5.1              | 33    | 1.22E+00    | 1.90                 | 13.3                | 0.13                 | 37.5             |      |                         |
| MPFPI, 6", Metal to Glass Brazed Seal [5] | MPFPI           | A26560-1 (aka A0651-7-MOD) / C2500228 | 9.97           | Fused Silica         | 5.380         | 2.940                  | 0.375             | 73.8    | 0.17  | 156.60             | 4.40 | 1E-03 | 32.59                   | 13.80                 | 7.41                      |                  | 1.9              | 40.50 | 5.10E-04    | 2.29                 | 18.9                | 1.01                 | 13.7             |      |                         |
| ZnSe CHETA, 6", Indium-sealed [5]         | Torr Scientific | IVPZ200-150Z NSE-1064 / C2500220      | 9.97           | ZnSe                 | 5.118         | 2.835                  | 0.374             | 74.3    | 0.31  | 60.60              | 9.60 | 1E-03 | 29.51                   | 12.40                 | 7.23                      |                  | 1.7              | 39.6  | 6.74E-04    | 2.31                 | 19.3                | 0.98                 | 12.6             |      |                         |

Notes:

[0] The lifetime assumed for these proof tests is 20 years.

[1] FEA slide 18 of file "2008 07 18 SSV v1.6.ppt" in G080409-v1

[2] The TCS Dual 3" viewport proof pressure should be the highest of the individual proof pressures of each window. This will ensure a minimum of 20 years of life in sevice.

[3] The outer radius of the glass window is assumed to be .25" larger than the clear aperture, based on measurements for one design.

[4] (From end of Section 4 of this document) Note that for the large aperture (7.8” diameter) commercial viewports, the Factor of Safety (FS) is only 1.5 with a failure probability, F, of 10^-2, whereas for all other windows FS = 3.0 and F = 10^-5.

[5] Currently NOT approved for use in LIGO

| SiO2        |     | ZnSe      |          | CaF2          |     |
|-------------|-----|-----------|----------|---------------|-----|
| 4.4         | m   | 9.600     |          | 6             | --  |
| 156.6       | S0  | 60.600    |          | 70            | MPa |
| 1.00E-05    | F   | 1.00E-05  | 1.00E-05 | --            |     |
| 1.14E+01    | Si  | 1.83E+01  | 1.03E+01 | MPa           |     |
| 40.5        | N   | 39.600    | 33       | --            |     |
| 6.31E+08    | tf  | 6.31E+08  | 6.31E+08 | sec           |     |
| 5.10E-04    | B   | 6.74E-04  | 1.22E+00 | MPa^2 s       |     |
| 5.100186478 | sf  | 7.8636134 | 4.857597 | MPa           |     |
| 7.49E+06    | A   | 1.09E+03  | 1.89E+12 | (MPa m^.5)^-N |     |
| 0.722       | Kic | 0.900     | 0.35     | MPa m^.5      |     |
| 1.95        | Y   | 1.950     | 1.950    | --            |     |
| 657         | P   |           |          |               |     |
| 74          | I   |           |          |               |     |
| 1.00E+07    | E   |           |          |               |     |
| 5.2         | I   |           |          |               |     |
| 1.07E-01    | y   |           |          |               |     |
| 6.67E-02    | y   |           |          |               |     |
| 0.0625      |     |           |          |               |     |
| 0.004724409 |     |           |          |               |     |

circular plate

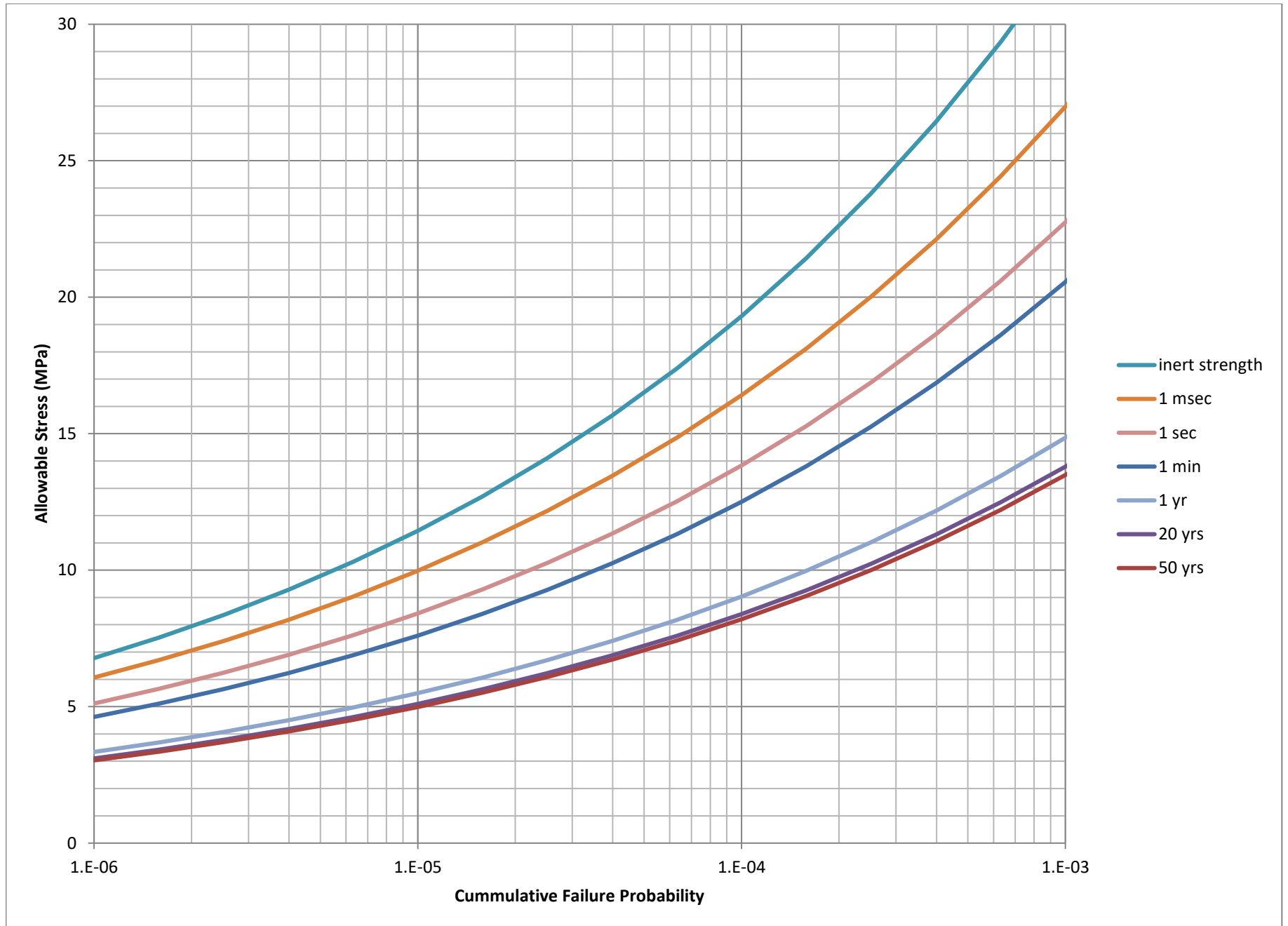
Flat Circular Plate of constant thickness, with uniform pressure & simple support  
Roark's Formulas for Stress and Strain, 6th ed., Table 24, case 10a with  $r_o=0$

| value       | units | value    | units | symbol         | description                                                        |          |
|-------------|-------|----------|-------|----------------|--------------------------------------------------------------------|----------|
| 2.8         | in    |          |       | a              | radius to center of simple support (either o-ring or flex support) |          |
| 14.7        | psi   |          |       | q              | applied pressure load                                              |          |
| 0.375       | in    |          |       | t              | thickness                                                          |          |
| 9.11E+06    | psi   | 6.28E+01 | GPa   | E              | modulus of elasticity                                              | 9.11E+06 |
| 0.21        | -     |          |       | v              | Poisson's ratio                                                    |          |
| 41881.13787 | in-lb |          |       | D              | plate bending stiffness                                            |          |
| -0.00145145 | in    |          |       | y <sub>c</sub> | center deflection                                                  |          |
| 986.52288   | psi   |          |       | σ <sub>c</sub> | surface stress at center                                           |          |

Flat Circular Plate of constant thickness, with a uniform annular line load and simple support  
Roark's Formulas for Stress and Strain, 6th ed., Table 24, case 9a

| value       | units | value    | units | symbol         | description                                               | Notes                               |
|-------------|-------|----------|-------|----------------|-----------------------------------------------------------|-------------------------------------|
| 2.855       | in    |          |       | a              | radius to center of outer support (clamping ring)         |                                     |
| 2.7855      | in    |          |       | r <sub>0</sub> | radius to center of inner support (o-ring)                |                                     |
| 0.75        | in    |          |       | t              | thickness                                                 |                                     |
| 287         | lb/in |          |       | w              | unit line load (force per unit of circumferential length) | 5023.02                             |
| 1.07E+07    | psi   | 7.38E+01 |       | E              | modulus of elasticity                                     | Fused Silica                        |
| 0.17        |       |          |       | v              | Poisson's ratio                                           | Fused Silica                        |
| 387366.7748 |       |          |       | D              | plate bending stiffness                                   |                                     |
| 2.3748E-06  |       |          |       | L <sub>3</sub> | loading constant                                          |                                     |
| 0.023802603 |       |          |       | L <sub>9</sub> | loading constant                                          |                                     |
| -0.00017534 |       |          |       | y <sub>c</sub> | deflection at the center of the plate                     | compare to FEA value of -0.00010 in |
| 19.50349604 |       |          |       | M <sub>c</sub> | moment at the center of the plate                         |                                     |
| 208.0372911 |       |          |       | σ <sub>c</sub> | tensile stress at center                                  | compare to FEA value of 180 psi     |
| 8702.264381 | psi   | 6.00E+07 | Pa    |                | static fatigue stress limit?                              |                                     |
| 4           |       |          |       | FS             |                                                           |                                     |
| 2175.566095 |       |          |       |                | allowable stress                                          |                                     |

Chart1



lifetime fused silica

|                    |              |                  |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
|--------------------|--------------|------------------|------------------------------------------------|----------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| 3.15E+09 sec       | 100 yrs      | tf               | lifetime                                       |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 7.20E-01 MPa m^.5  |              | Kic              | critical stress intensity                      |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 3.80E+01 --        |              | N                | crack growth parameter                         |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 3.11E+01           |              |                  |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 1.77E+00 --        |              | Y                | crack geometry parameter                       |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 3.50E+07 m/s       |              | A                | crack growth parameter                         |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 6.91E-05 MPa^2 sec |              | B                | crack growth parameter, from crack propagation |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 8.60E-06 MPa^2 sec |              | B                | from static fatigue data                       |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
|                    |              |                  |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 1.51E+02 MPa       |              | Si               | inert strength                                 |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 1.57E+02           |              |                  |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 5.07E+01 MPa       | 7.35E+03 psi | sa               | applied stress, from crack propagation         |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 3.86E+01           | 5.60E+03     |                  | applied stress, from static fatigue data       |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
|                    |              |                  |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
|                    |              |                  |                                                | 5.53E+02 |                 |          |          | 3.68E+02 |          |          |          |          |          |          |          |          |          |  |
|                    |              |                  |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 1.00E-04           |              | F                | Si (psi)                                       |          |                 |          |          |          |          |          |          | Sa (psi) |          |          |          |          |          |  |
| 4.40E+00           |              | m                | 1659.242                                       |          |                 |          |          |          |          |          |          | 1.10E+03 |          |          |          |          |          |  |
| 1.57E+02           |              | So               |                                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 1.93E+01           | 2.80E+03     | Si               | 5 number of pts per decade                     |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 5.10E-04           |              | B                | 1.584893 factor                                |          |                 |          |          |          |          |          |          |          |          |          |          |          |          |  |
| 4.05E+01           |              | N                | tf (yrs)                                       |          |                 |          |          |          |          |          |          | 1        | 1        | 20       | 20       | 50       | 50       |  |
| 6.31E+08 sec       | 20           | tf               | tf (sec)                                       | 1.00E-03 | 1.00E-03        | 1.00E+00 | 1.00E+00 | 6.00E+01 | 6.00E+01 | 3.15E+07 | 3.15E+07 | 6.31E+08 | 6.31E+08 | 1.58E+09 | 1.58E+09 |          |          |  |
| 8.388E+00 MPa      | 1.22E+03 psi | Sa               | N                                              | 40.5     | 31.1            | 40.5     | 31.1     | 40.5     | 31.1     | 40.5     | 31.1     | 40.5     | 31.1     | 40.5     | 31.1     |          |          |  |
|                    |              |                  |                                                | B        | 5.10E-04        | 8.60E-06 | 5.10E-04 | 8.60E-06 | 5.10E-04 | 8.60E-06 | 5.10E-04 | 8.60E-06 | 5.10E-04 | 8.60E-06 | 5.10E-04 | 8.60E-06 |          |  |
| 5.52E+00           | 800          |                  | F                                              | Si (MPa) | Sa (MPa)        | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) | Sa (MPa) |          |  |
|                    |              |                  |                                                | 1.00E-06 | 6.78E+00        | 6.07E+00 | 5.14E+00 | 5.11E+00 | 4.12E+00 | 4.62E+00 | 3.61E+00 | 3.34E+00 | 2.36E+00 | 3.10E+00 | 2.15E+00 | 3.03E+00 | 2.08E+00 |  |
|                    | 220          |                  |                                                | 1.58E-06 | 7.53E+00        | 6.70E+00 | 5.67E+00 | 5.65E+00 | 4.54E+00 | 5.11E+00 | 3.98E+00 | 3.69E+00 | 2.61E+00 | 3.43E+00 | 2.37E+00 | 3.35E+00 | 2.30E+00 |  |
|                    | 660          |                  |                                                | 2.51E-06 | 8.36E+00        | 7.40E+00 | 6.26E+00 | 6.24E+00 | 5.01E+00 | 5.64E+00 | 4.39E+00 | 4.07E+00 | 2.88E+00 | 3.78E+00 | 2.61E+00 | 3.70E+00 | 2.54E+00 |  |
|                    | 4.55054      |                  |                                                | 3.98E-06 | 9.28E+00        | 8.18E+00 | 6.90E+00 | 6.89E+00 | 5.53E+00 | 6.23E+00 | 4.84E+00 | 4.50E+00 | 3.17E+00 | 4.18E+00 | 2.88E+00 | 4.09E+00 | 2.80E+00 |  |
|                    |              |                  |                                                | 6.31E-06 | 1.03E+01        | 9.03E+00 | 7.61E+00 | 7.61E+00 | 6.09E+00 | 6.88E+00 | 5.34E+00 | 4.97E+00 | 3.50E+00 | 4.62E+00 | 3.18E+00 | 4.51E+00 | 3.08E+00 |  |
|                    |              |                  |                                                | 1.00E-05 | <b>1.14E+01</b> | 9.98E+00 | 8.39E+00 | 8.41E+00 | 6.72E+00 | 7.60E+00 | 5.89E+00 | 5.49E+00 | 3.86E+00 | 5.10E+00 | 3.50E+00 | 4.99E+00 | 3.40E+00 |  |
| 1.30E+01 MPa       | 1.88E+03 psi | Sa at 1 atm      |                                                | 1.58E-05 | 1.27E+01        | 1.10E+01 | 9.26E+00 | 9.29E+00 | 7.41E+00 | 8.40E+00 | 6.50E+00 | 6.07E+00 | 4.25E+00 | 5.63E+00 | 3.86E+00 | 5.51E+00 | 3.75E+00 |  |
| 2.36E+00 atm       |              | SP, proof load   |                                                | 2.51E-05 | 1.41E+01        | 1.22E+01 | 1.02E+01 | 1.03E+01 | 8.18E+00 | 9.28E+00 | 7.17E+00 | 6.70E+00 | 4.69E+00 | 6.22E+00 | 4.26E+00 | 6.08E+00 | 4.14E+00 |  |
| 3.06E+01 MPa       | 4.44E+03 psi | Sp, proof stress |                                                | 3.98E-05 | 1.57E+01        | 1.34E+01 | 1.13E+01 | 1.13E+01 | 9.02E+00 | 1.02E+01 | 7.91E+00 | 7.40E+00 | 5.18E+00 | 6.87E+00 | 4.70E+00 | 6.72E+00 | 4.56E+00 |  |
| 6.91E+08 sec       | 21.90393 yrs | Tmin, after Sp   |                                                | 6.31E-05 | 1.74E+01        | 1.49E+01 | 1.24E+01 | 1.25E+01 | 9.95E+00 | 1.13E+01 | 8.72E+00 | 8.18E+00 | 5.71E+00 | 7.59E+00 | 5.18E+00 | 7.42E+00 | 5.03E+00 |  |
|                    |              |                  |                                                | 1.00E-04 | 1.93E+01        | 1.64E+01 | 1.37E+01 | 1.38E+01 | 1.10E+01 | 1.25E+01 | 9.62E+00 | 9.03E+00 | 6.30E+00 | 8.39E+00 | 5.72E+00 | 8.20E+00 | 5.55E+00 |  |
|                    |              |                  |                                                | 1.58E-04 | 2.14E+01        | 1.81E+01 | 1.51E+01 | 1.53E+01 | 1.21E+01 | 1.38E+01 | 1.06E+01 | 9.98E+00 | 6.94E+00 | 9.27E+00 | 6.31E+00 | 9.06E+00 | 6.12E+00 |  |
|                    |              |                  |                                                | 2.51E-04 | 2.38E+01        | 2.00E+01 | 1.67E+01 | 1.69E+01 | 1.33E+01 | 1.53E+01 | 1.17E+01 | 1.10E+01 | 7.66E+00 | 1.02E+01 | 6.95E+00 | 1.00E+01 | 6.75E+00 |  |
|                    |              |                  |                                                | 3.98E-04 | 2.64E+01        | 2.21E+01 | 1.84E+01 | 1.86E+01 | 1.47E+01 | 1.69E+01 | 1.29E+01 | 1.22E+01 | 8.45E+00 | 1.13E+01 | 7.67E+00 | 1.11E+01 | 7.45E+00 |  |
|                    |              |                  |                                                | 6.31E-04 | 2.93E+01        | 2.44E+01 | 2.03E+01 | 2.06E+01 | 1.62E+01 | 1.86E+01 | 1.42E+01 | 1.34E+01 | 9.31E+00 | 1.25E+01 | 8.46E+00 | 1.22E+01 | 8.21E+00 |  |
|                    |              |                  |                                                | 1.00E-03 | 3.26E+01        | 2.70E+01 | 2.24E+01 | 2.28E+01 | 1.79E+01 | 2.06E+01 | 1.57E+01 | 1.49E+01 | 1.03E+01 | 1.38E+01 | 9.33E+00 | 1.35E+01 | 9.06E+00 |  |
|                    |              |                  |                                                | 1.58E-03 | 3.62E+01        | 2.98E+01 | 2.47E+01 | 2.51E+01 | 1.97E+01 | 2.27E+01 | 1.73E+01 | 1.64E+01 | 1.13E+01 | 1.52E+01 | 1.03E+01 | 1.49E+01 | 9.99E+00 |  |
|                    |              |                  |                                                | 2.51E-03 | 4.02E+01        | 3.29E+01 | 2.72E+01 | 2.78E+01 | 2.18E+01 | 2.51E+01 | 1.91E+01 | 1.81E+01 | 1.25E+01 | 1.68E+01 | 1.14E+01 | 1.65E+01 | 1.10E+01 |  |
|                    |              |                  |                                                | 3.98E-03 | 4.46E+01        | 3.64E+01 | 3.00E+01 | 3.07E+01 | 2.40E+01 | 2.77E+01 | 2.11E+01 | 2.00E+01 | 1.38E+01 | 1.86E+01 | 1.25E+01 | 1.82E+01 | 1.22E+01 |  |
|                    |              |                  |                                                | 6.31E-03 | 4.96E+01        | 4.02E+01 | 3.31E+01 | 3.39E+01 | 2.65E+01 | 3.06E+01 | 2.32E+01 | 2.21E+01 | 1.52E+01 | 2.06E+01 | 1.38E+01 | 2.01E+01 | 1.34E+01 |  |
|                    |              |                  |                                                | 1.00E-02 | 5.50E+01        | 4.44E+01 | 3.65E+01 | 3.75E+01 | 2.92E+01 | 3.39E+01 | 2.56E+01 | 2.45E+01 | 1.68E+01 | 2.27E+01 | 1.52E+01 | 2.22E+01 | 1.48E+01 |  |
|                    |              |                  |                                                | 1.58E-02 | 6.12E+01        | 4.91E+01 | 4.03E+01 | 4.14E+01 | 3.23E+01 | 3.74E+01 | 2.83E+01 | 2.70E+01 | 1.85E+01 | 2.51E+01 | 1.68E+01 | 2.45E+01 | 1.63E+01 |  |
|                    |              |                  |                                                | 2.51E-02 | 6.80E+01        | 5.43E+01 | 4.45E+01 | 4.58E+01 | 3.56E+01 | 4.14E+01 | 3.12E+01 | 2.99E+01 | 2.04E+01 | 2.78E+01 | 1.86E+01 | 2.71E+01 | 1.80E+01 |  |
|                    |              |                  |                                                | 3.98E-02 | 7.56E+01        | 6.01E+01 | 4.91E+01 | 5.06E+01 | 3.93E+01 | 4.58E+01 | 3.45E+01 | 3.31E+01 | 2.26E+01 | 3.07E+01 | 2.05E+01 | 3.00E+01 | 1.99E+01 |  |
|                    |              |                  |                                                | 6.31E-02 | 8.42E+01        | 6.65E+01 | 5.43E+01 | 5.61E+01 | 4.35E+01 | 5.07E+01 | 3.81E+01 | 3.66E+01 | 2.50E+01 | 3.40E+01 | 2.27E+01 | 3.32E+01 | 2.20E+01 |  |
|                    |              |                  |                                                | 1.00E-01 | 9.39E+01        | 7.38E+01 | 6.02E+01 | 6.22E+01 | 4.82E+01 | 5.62E+01 | 4.22E+01 | 4.06E+01 | 2.77E+01 | 3.77E+01 | 2.51E+01 | 3.69E+01 | 2.44E+01 |  |