Solubility of O₂ and CO₂ in water at different temperatures at sea level

<table>
<thead>
<tr>
<th>°C</th>
<th>°F</th>
<th>Sol. P.P.</th>
<th>CO₂</th>
<th>O₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32</td>
<td>1.66</td>
<td>0.644</td>
<td>501 PP</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
<td>1.20</td>
<td>0.480</td>
<td>6.50 1.046</td>
</tr>
<tr>
<td>20</td>
<td>68</td>
<td>1.88</td>
<td>0.355</td>
<td>10.1 cc of gas</td>
</tr>
<tr>
<td>30</td>
<td>86</td>
<td>1.66</td>
<td>0.764</td>
<td>0.032 1.69</td>
</tr>
<tr>
<td>40</td>
<td>104</td>
<td>0.55</td>
<td>0.040</td>
<td>0.074 1.50</td>
</tr>
</tbody>
</table>

Concentration increase:

65°F - 64°F = 94/78 = 12%  
65°F - 63°F = 1040/78 = 13.6%  
65°F - 65°F = 0.78 PP  
65°F - 65°F = 565/501 = 11.3%

Carbon dioxide

Temperature

C = 0 5 10 15 20 25 30 35 40
°F = 32 41 50 59 68 77 86 95 104
Solubility of O₂ and CO₂ in water at sea level

<table>
<thead>
<tr>
<th>Temp °C</th>
<th>CO₂ Solubility</th>
<th>O₂ Solubility</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.66</td>
<td>0.30</td>
</tr>
<tr>
<td>10</td>
<td>1.60</td>
<td>0.34</td>
</tr>
<tr>
<td>20</td>
<td>1.63</td>
<td>0.37</td>
</tr>
<tr>
<td>30</td>
<td>1.61</td>
<td>0.39</td>
</tr>
<tr>
<td>40</td>
<td>1.57</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Oxygen

V cc of gas in 1 cc of water

52-58 12,74 13.9 %
41-55 24 11.7 %
Solubility of gases in H₂O

Solubility (C.C. or gas dissolved in on C.C. of H₂O when partial pressure of gas is 760 mm of Hg.)

<table>
<thead>
<tr>
<th>Temperature °F</th>
<th>50</th>
<th>60</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

Composition of air by volume

- O₂ = 20.94 %
- N₂ = 78.14 %
- CO₂ = 0.04%
- Argon = 0.90 %
- etc.
Concentration of O₂ in water at 760 mm Hg

Temperature of air percent:
- Nitrogen: 78
- Oxygen: 21
- Argon: 1
- Carbon dioxide: 1

Atmospheric pressure: 15 lb/sq in

Boyl's law: \( V \propto \frac{P}{T} \)

Units:
1. Apply \( 3 \times 2 \times 2 \) (air atoms)
2. 7
3. 9
4. 10
5. 15