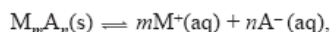


## SOLUBILITY PRODUCT CONSTANTS

The solubility product constant  $K_{sp}$  is a useful parameter for calculating the aqueous solubility of sparingly soluble compounds under various conditions. It may be determined by direct measurement or calculated from the standard Gibbs energies of formation  $\Delta_f G^\ominus$  of the species involved at their standard states.  $K_{sp} = [M^+]^m [A^-]^n$  is the equilibrium constant for the reaction



where  $M_m A_n$  is the slightly soluble substance and  $M^+$  and  $A^-$  are the ions produced in solution by the dissociation of  $M_m A_n$ .

Formula	$K_{sp}$	Formula	$K_{sp}$	Formula	$K_{sp}$
AlPO <sub>4</sub>	9.84·10 <sup>-21</sup>	PbCO <sub>3</sub>	7.40·10 <sup>-14</sup>	Ag <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	5.40·10 <sup>-12</sup>
Ba(BrO <sub>3</sub> ) <sub>2</sub>	2.43·10 <sup>-4</sup>	PbCl <sub>2</sub>	1.70·10 <sup>-5</sup>	Ag <sub>3</sub> PO <sub>4</sub>	8.89·10 <sup>-17</sup>
BaCO <sub>3</sub>	2.58·10 <sup>-9</sup>	PbF <sub>2</sub>	3.3·10 <sup>-8</sup>	Ag <sub>2</sub> SO <sub>4</sub>	1.20·10 <sup>-5</sup>
BaCrO <sub>4</sub>	1.17·10 <sup>-10</sup>	Pb(OH) <sub>2</sub>	1.43·10 <sup>-20</sup>	Ag <sub>2</sub> SO <sub>3</sub>	1.50·10 <sup>-14</sup>
BaF <sub>2</sub>	1.84·10 <sup>-7</sup>	Pb(IO <sub>3</sub> ) <sub>2</sub>	3.69·10 <sup>-13</sup>	AgSCN	1.03·10 <sup>-12</sup>
Ba(OH) <sub>2</sub> ·8H <sub>2</sub> O	2.55·10 <sup>-4</sup>	PbI <sub>2</sub>	9.8·10 <sup>-9</sup>	Sr <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	4.29·10 <sup>-19</sup>
Ba(IO <sub>3</sub> ) <sub>2</sub>	4.01·10 <sup>-9</sup>	PbSeO <sub>4</sub>	1.37·10 <sup>-7</sup>	SrCO <sub>3</sub>	5.60·10 <sup>-10</sup>
Ba(IO <sub>3</sub> ) <sub>2</sub> ·H <sub>2</sub> O	1.67·10 <sup>-9</sup>	PbSO <sub>4</sub>	2.53·10 <sup>-8</sup>	SrF <sub>2</sub>	4.33·10 <sup>-9</sup>
BaMoO <sub>4</sub>	3.54·10 <sup>-8</sup>	Li <sub>2</sub> CO <sub>3</sub>	8.15·10 <sup>-4</sup>	Sr(IO <sub>3</sub> ) <sub>2</sub>	1.14·10 <sup>-7</sup>
Ba(NO <sub>3</sub> ) <sub>2</sub>	4.64·10 <sup>-3</sup>	LiF	1.84·10 <sup>-3</sup>	Sr(IO <sub>3</sub> ) <sub>2</sub> ·H <sub>2</sub> O	3.77·10 <sup>-7</sup>
BaSeO <sub>4</sub>	3.40·10 <sup>-8</sup>	Li <sub>3</sub> PO <sub>4</sub>	2.37·10 <sup>-11</sup>	Sr(IO <sub>3</sub> ) <sub>2</sub> ·6H <sub>2</sub> O	4.55·10 <sup>-7</sup>
BaSO <sub>4</sub>	1.08·10 <sup>-10</sup>	MgCO <sub>3</sub>	6.82·10 <sup>-6</sup>	SrSO <sub>4</sub>	3.44·10 <sup>-7</sup>
BaSO <sub>3</sub>	5.0·10 <sup>-10</sup>	MgCO <sub>3</sub> ·3H <sub>2</sub> O	2.38·10 <sup>-6</sup>	TlBrO <sub>3</sub>	1.10·10 <sup>-4</sup>
Be(OH) <sub>2</sub>	6.92·10 <sup>-22</sup>	MgCO <sub>3</sub> ·5H <sub>2</sub> O	3.79·10 <sup>-6</sup>	TlBr	3.71·10 <sup>-6</sup>
BiAsO <sub>4</sub>	4.43·10 <sup>-10</sup>	MgF <sub>2</sub>	5.16·10 <sup>-11</sup>	TlCl	1.86·10 <sup>-4</sup>
		Mg(OH) <sub>2</sub>	5.61·10 <sup>-12</sup>	Tl <sub>2</sub> CrO <sub>4</sub>	8.67·10 <sup>-13</sup>
BiI <sub>3</sub>	7.71·10 <sup>-19</sup>	MgC <sub>2</sub> O <sub>4</sub> ·2H <sub>2</sub> O	4.83·10 <sup>-6</sup>	TlIO <sub>3</sub>	3.12·10 <sup>-6</sup>
Cd <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	2.2·10 <sup>-33</sup>	Mg <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	1.04·10 <sup>-24</sup>	TlI	5.54·10 <sup>-8</sup>
CdCO <sub>3</sub>	1.0·10 <sup>-12</sup>	MnCO <sub>3</sub>	2.24·10 <sup>-11</sup>	TlSCN	1.57·10 <sup>-4</sup>
CdF <sub>2</sub>	6.44·10 <sup>-3</sup>	Mn(IO <sub>3</sub> ) <sub>2</sub>	4.37·10 <sup>-7</sup>	Tl(OH) <sub>3</sub>	1.68·10 <sup>-44</sup>
Cd(OH) <sub>2</sub>	7.2·10 <sup>-15</sup>	Mn <sub>2</sub> C <sub>2</sub> O <sub>4</sub> ·2H <sub>2</sub> O	1.70·10 <sup>-7</sup>	Sn(OH) <sub>2</sub>	5.45·10 <sup>-27</sup>
Cd(IO <sub>3</sub> ) <sub>2</sub>	2.5·10 <sup>-8</sup>	Hg <sub>2</sub> Br <sub>2</sub>	6.40·10 <sup>-23</sup>	Y <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub>	1.03·10 <sup>-31</sup>
CdC <sub>2</sub> O <sub>4</sub> ·3H <sub>2</sub> O	1.42·10 <sup>-8</sup>	Hg <sub>2</sub> CO <sub>3</sub>	3.6·10 <sup>-17</sup>	YF <sub>3</sub>	8.62·10 <sup>-21</sup>
Cd <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	2.53·10 <sup>-33</sup>	Hg <sub>2</sub> Cl <sub>2</sub>	1.43·10 <sup>-18</sup>	Y(OH) <sub>3</sub>	1.00·10 <sup>-22</sup>
CaCO <sub>3</sub>	3.36·10 <sup>-9</sup>	Hg <sub>2</sub> F <sub>2</sub>	3.10·10 <sup>-6</sup>	Y(IO <sub>3</sub> ) <sub>3</sub>	1.12·10 <sup>-10</sup>
CaF <sub>2</sub>	3.45·10 <sup>-11</sup>	Hg <sub>2</sub> I <sub>2</sub>	5.2·10 <sup>-29</sup>	Zn <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	2.8·10 <sup>-28</sup>
Ca(OH) <sub>2</sub>	5.02·10 <sup>-6</sup>	Hg <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	1.75·10 <sup>-13</sup>	ZnCO <sub>3</sub>	1.46·10 <sup>-10</sup>
Ca(IO <sub>3</sub> ) <sub>2</sub>	6.47·10 <sup>-6</sup>	Hg <sub>2</sub> SO <sub>4</sub>	6.5·10 <sup>-7</sup>	ZnCO <sub>3</sub> ·H <sub>2</sub> O	5.42·10 <sup>-11</sup>
Ca(IO <sub>3</sub> ) <sub>2</sub> ·6H <sub>2</sub> O	7.10·10 <sup>-7</sup>	Hg <sub>2</sub> (SCN) <sub>2</sub>	3.2·10 <sup>-20</sup>	ZnF <sub>2</sub>	3.04·10 <sup>-2</sup>
CaMoO <sub>4</sub>	1.46·10 <sup>-8</sup>	HgBr <sub>2</sub>	6.2·10 <sup>-20</sup>	Zn(OH) <sub>2</sub>	3·10 <sup>-17</sup>
CaC <sub>2</sub> O <sub>4</sub> ·H <sub>2</sub> O	2.32·10 <sup>-9</sup>	HgI <sub>2</sub>	2.9·10 <sup>-29</sup>	Zn(IO <sub>3</sub> ) <sub>2</sub> ·2H <sub>2</sub> O	4.1·10 <sup>-6</sup>
Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	2.07·10 <sup>-33</sup>	Nd <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub>	1.08·10 <sup>-33</sup>	ZnC <sub>2</sub> O <sub>4</sub> ·2H <sub>2</sub> O	1.38·10 <sup>-9</sup>
CaSO <sub>4</sub>	4.93·10 <sup>-5</sup>	NiCO <sub>3</sub>	1.42·10 <sup>-7</sup>	ZnSe	3.6·10 <sup>-26</sup>
CaSO <sub>4</sub> ·2H <sub>2</sub> O	3.14·10 <sup>-5</sup>	Ni(OH) <sub>2</sub>	5.48·10 <sup>-16</sup>	ZnSeO <sub>3</sub> ·H <sub>2</sub> O	1.59·10 <sup>-7</sup>
CaSO <sub>3</sub> ·0.5H <sub>2</sub> O	3.1·10 <sup>-7</sup>	Ni(IO <sub>3</sub> ) <sub>2</sub>	4.71·10 <sup>-5</sup>		
CsClO <sub>4</sub>	3.95·10 <sup>-3</sup>	Ni <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	4.74·10 <sup>-32</sup>		
CsIO <sub>4</sub>	5.16·10 <sup>-6</sup>	Pd(SCN) <sub>2</sub>	4.39·10 <sup>-23</sup>		
Co <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	6.80·10 <sup>-29</sup>	K <sub>2</sub> PtCl <sub>6</sub>	7.48·10 <sup>-6</sup>		
Co(OH) <sub>2</sub>	5.92·10 <sup>-15</sup>	KClO <sub>4</sub>	1.05·10 <sup>-2</sup>		
Co(IO <sub>3</sub> ) <sub>2</sub> ·2H <sub>2</sub> O	1.21·10 <sup>-2</sup>	KIO <sub>4</sub>	3.71·10 <sup>-4</sup>	CdS	1.2·10 <sup>-28</sup>
Co <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	2.05·10 <sup>-35</sup>	Pr(OH) <sub>3</sub>	3.39·10 <sup>-24</sup>	CuS	3.2·10 <sup>-38</sup>
CuBr	6.27·10 <sup>-9</sup>	Ra(IO <sub>3</sub> ) <sub>2</sub>	1.16·10 <sup>-9</sup>	FeS	3.8·10 <sup>-20</sup>
CuCl	1.72·10 <sup>-7</sup>	RaSO <sub>4</sub>	3.66·10 <sup>-11</sup>	PbS	3.6·10 <sup>-29</sup>
CuCN	3.47·10 <sup>-20</sup>	RbClO <sub>4</sub>	3.00·10 <sup>-3</sup>	MnS	1.4·10 <sup>-15</sup>
CuI	1.27·10 <sup>-12</sup>	ScF <sub>3</sub>	5.81·10 <sup>-24</sup>	HgS	3·10 <sup>-54</sup>
CuSCN	1.77·10 <sup>-13</sup>	Sc(OH) <sub>3</sub>	2.22·10 <sup>-31</sup>	Ag <sub>2</sub> S	5.7·10 <sup>-51</sup>
Cu <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	7.95·10 <sup>-36</sup>	AgCH <sub>3</sub> COO	1.94·10 <sup>-3</sup>	SnS	1·10 <sup>-27</sup>
Cu(IO <sub>3</sub> ) <sub>2</sub> ·H <sub>2</sub> O	6.94·10 <sup>-8</sup>	Ag <sub>3</sub> AsO <sub>4</sub>	1.03·10 <sup>-22</sup>	ZnS	6.9·10 <sup>-26</sup>
Cu <sub>2</sub> O <sub>4</sub>	4.43·10 <sup>-10</sup>	AgBrO <sub>3</sub>	5.38·10 <sup>-5</sup>		
Cu <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	1.40·10 <sup>-37</sup>	AgBr	5.35·10 <sup>-13</sup>		
Eu(OH) <sub>3</sub>	9.38·10 <sup>-27</sup>	Ag <sub>2</sub> CO <sub>3</sub>	8.46·10 <sup>-12</sup>		
Ga(OH) <sub>3</sub>	7.28·10 <sup>-36</sup>	AgCl	1.77·10 <sup>-10</sup>		
FeCO <sub>3</sub>	3.13·10 <sup>-11</sup>	Ag <sub>2</sub> CrO <sub>4</sub>	1.12·10 <sup>-12</sup>		
FeF <sub>2</sub>	2.36·10 <sup>-6</sup>	AgCN	5.97·10 <sup>-17</sup>		
Fe(OH) <sub>2</sub>	4.87·10 <sup>-17</sup>	AgIO <sub>3</sub>	3.17·10 <sup>-8</sup>		
Fe(OH) <sub>3</sub>	2.79·10 <sup>-39</sup>	AgI	8.52·10 <sup>-17</sup>		
FePO <sub>4</sub> ·2H <sub>2</sub> O	9.91·10 <sup>-16</sup>				
La(IO <sub>3</sub> ) <sub>3</sub>	7.50·10 <sup>-12</sup>				
PbBr <sub>2</sub>	6.60·10 <sup>-6</sup>				