

C11 - 0.0 - Solubility/ K_{sp} /pH/SHC/Latent

Bigger #, Higher Solubility

Solubility of Common Compounds in Water ($> 0.1 \frac{mol}{L}$ @ $25^{\circ}C$)		
Anions	Cations	Soluble(ility)
All	Alkali	Yes
All	H^+	Yes
All	NH_4^+	Yes
NO_3^-	All	Yes
Cl^- , Br^- , I^-	All Others	Yes
	Ag^+ , Pb^{2+} , Cu^+	Low
SO_4^{2-}	All Others	Yes
	Ag^+ , Ca^{2+} , Sr^{2+} , Ba^{2+} , Pb^{2+}	Low
S^{2-}	Alkali, H^+ , NH_4^+ , Be^{2+}	Yes
	Mg^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+}	Yes
	All Others	Low
OH^-	Alkali, H^+ , NH_4^+ , Sr^{2+}	Yes
	All Others	Low
PO_4^{3-}	Alkali, H^+ , NH_4^+	Yes
CO_3^{2-} , SO_3^{2-}	All Others	Low

Acid Base Indicators

Indicator.	pH Range (Colour Δ)	Colour Δ (As pH \uparrow)
Methyl violet	0.0-1.6	yellow-blue
Thymol blue	1.2-2.8	red-yellow
Orange IV	1.4-2.8	red-yellow
Methyl orange	3.2-4.4	red-yellow
Bromcresol green	3.8-5.4	yellow-blue
Methyl Red	4.8-6.0	red-yellow
Chlorophenol red	6.6-8.0	yellow-red
Bromthymol blue	6.0-7.6	yellow-blue
Phenol red	6.8-8.0	yellow-red
Neutral red	6.8-8.0	red-amber
Litmus Paper	7	red-blue
Thymol blue	8.0-9.6	yellow-blue
Phenolphthalein	8.2-10.0	colorless-pink
Thymolphthalein	9.4-10.6	colorless-blue
Alizarin yellow	10.1-12.0	yellow-red
Indigo Carmine	11.4-13.0	blue-yellow

Latent Heat of Fusion (F) & Vaporization (V)

$\frac{J}{g}$	Fusion	$^{\circ}C$	Vapour	$^{\circ}C$
Water	334	0	2258	100
Ethanol	109	-114	838	78
Ethanoic Acid	192	17	395	118
Chloroform	74	-64	254	62

Solubility Product Constants at $25^{\circ}C$

Name	Formula	K_{sp}
Barium carbonate	$BaCO_3$	2.6×10^{-9}
Barium chromate	$BaCrO_4$	1.2×10^{-10}
Barium sulphate	$BaSO_4$	1.1×10^{-10}
Calcium carbonate	$CaCO_3$	5.0×10^{-9}
Calcium oxalate	CaC_2O_4	2.3×10^{-9}
Calcium sulphate	$CaSO_4$	7.1×10^{-5}
Copper (I) iodide	CuI	1.3×10^{-12}
Copper (II) iodate	$Cu(IO_3)_2$	6.9×10^{-8}
Copper (II) sulphide	CuS	6.0×10^{-37}
Iron (II) hydroxide	$Fe(OH)_2$	4.9×10^{-17}
Iron (II) sulphide	FeS	6.0×10^{-19}
Iron (III) hydroxide	$Fe(OH)_3$	2.6×10^{-39}
Lead (II) bromide	$PbBr_2$	6.6×10^{-6}
Lead (II) chloride	$PbCl_2$	1.2×10^{-5}
Lead (II) iodate	$Pb(IO_3)_2$	3.7×10^{-13}
Lead (II) iodide	PbI_2	8.5×10^{-9}
Lead (II) sulphate	$PbSO_4$	1.8×10^{-8}
Magnesium carbonate	$MgCO_3$	6.8×10^{-6}
Magnesium hydroxide	$Mg(OH)_2$	5.6×10^{-12}
Silver bromate	$AgBrO_3$	5.3×10^{-5}
Silver bromide	$AgBr$	5.4×10^{-13}
Silver carbonate	Ag_2CO_3	8.5×10^{-12}
Silver chloride	$AgCl$	1.8×10^{-10}
Silver chromate	Ag_2CrO_4	1.1×10^{-12}
Silver iodate	$AgIO_3$	3.2×10^{-8}
Silver iodide	AgI	8.5×10^{-17}
Strontium carbonate	$SrCO_3$	5.6×10^{-10}
Strontium fluoride	SrF	4.3×10^{-9}
Strontium sulphate	$SrSO_4$	3.4×10^{-7}
Zinc sulphide	ZnS	2.0×10^{-25}

Specific Heat Capacities

Substance SHC@ $25^{\circ}C$	$\frac{J}{g^{\circ}C}$
H_2O (l)	4.184
Ethanol	2.42
Ethyl Alcohol	2.46
Ethylene Glycol	2.2
Ice @ $0^{\circ}C$	2.01
Steam @ $100^{\circ}C$	2.01
Vegetable Oil	2
Air	1.02
CO_2	0.839
Concrete	0.880*
Glass	0.840
Steel	0.466
Brass	0.380
Sand	0.290