

15.4: Appendix D- Miscellaneous Abbreviations and Symbols

D.1 Physical States

These abbreviations for physical states (states of aggregation) may be appended in parentheses to chemical formulas or used as superscripts to symbols for physical quantities. All but “mixt” are listed in the IUPAC Green Book (E. Richard Cohen et al, *Quantities, Units and Symbols in Physical Chemistry*, 3rd edition, RSC Publishing, Cambridge, 2007, p. 54).

g	gas or vapor	
l	liquid	
f	fluid (gas or liquid)	
s	solid	
cd	condensed phase (liquid or solid)	
cr	crystalline	(15.4.1)
mixt	mixture	
sln	solution	
aq	aqueous solution	
aq, ∞	aqueous solution at infinite dilution	

D.2 Subscripts for Chemical Processes

These abbreviations are used as subscripts to the Δ symbol. They are listed in the IUPAC Green Book (E. Richard Cohen et al, *Quantities, Units and Symbols in Physical Chemistry*, 3rd edition, RSC Publishing, Cambridge, 2007, p. 59–60).

The combination Δ_p , where “p” is any one of the abbreviations below, can be interpreted as an operator: $\Delta_p \stackrel{\text{def}}{=} \partial/\partial\xi_p$ where ξ_p is the advancement of the given process at constant temperature and pressure. For example, $\Delta_c H = (\partial H/\partial\xi_c)_{T,p}$ is the molar differential enthalpy of combustion.

vap	vaporization, evaporation ($l \rightarrow g$)	
sub	sublimation ($s \rightarrow g$)	
fus	melting, fusion ($s \rightarrow l$)	
trs	transition between two phases	
mix	mixing of fluids	
sol	solution of a solute in solvent	
dil	dilution of a solution	
ads	adsorption	(15.4.2)
dpl	displacement	
imm	immersion	
r	reaction in general	
at	atomization	
c	combustion reaction	
f	formation reaction	

D.3 Superscripts

These abbreviations and symbols are used as superscripts to symbols for physical quantities. All but ‘, int, and ref are listed as recommended superscripts in the IUPAC Green Book (E. Richard Cohen et al, *Quantities, Units and Symbols in Physical Chemistry*, 3rd edition, RSC Publishing, Cambridge, 2007, p. 60).

◦	standard	
*	pure substance	
'	Legendre transform of a thermodynamic potential	
∞	infinite dilution	(15.4.3)
id	ideal	
int	integral	
E	excess quantity	
ref	reference state	

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