

**TABLE 17.1 The Effect of  $\Delta H$ ,  $\Delta S$ , and  $T$  on Spontaneity**

$\Delta H$	$\Delta S$	Low Temperature	High Temperature	Example
-	+	Spontaneous ( $\Delta G < 0$ )	Spontaneous ( $\Delta G < 0$ )	$2 \text{N}_2\text{O}(g) \longrightarrow 2 \text{N}_2(g) + \text{O}_2(g)$
+	-	Nonspontaneous ( $\Delta G > 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$3 \text{O}_2(g) \longrightarrow 2 \text{O}_3(g)$
-	-	Spontaneous ( $\Delta G < 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(s)$
+	+	Nonspontaneous ( $\Delta G > 0$ )	Spontaneous ( $\Delta G < 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(g)$

**TABLE 17.1 The Effect of  $\Delta H$ ,  $\Delta S$ , and  $T$  on Spontaneity**

$\Delta H$	$\Delta S$	Low Temperature	High Temperature	Example
-	+	Spontaneous ( $\Delta G < 0$ )	Spontaneous ( $\Delta G < 0$ )	$2 \text{N}_2\text{O}(g) \longrightarrow 2 \text{N}_2(g) + \text{O}_2(g)$
+	-	Nonspontaneous ( $\Delta G > 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$3 \text{O}_2(g) \longrightarrow 2 \text{O}_3(g)$
-	-	Spontaneous ( $\Delta G < 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(s)$
+	+	Nonspontaneous ( $\Delta G > 0$ )	Spontaneous ( $\Delta G < 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(g)$

**TABLE 17.1 The Effect of  $\Delta H$ ,  $\Delta S$ , and  $T$  on Spontaneity**

$\Delta H$	$\Delta S$	Low Temperature	High Temperature	Example
-	+	Spontaneous ( $\Delta G < 0$ )	Spontaneous ( $\Delta G < 0$ )	$2 \text{N}_2\text{O}(g) \longrightarrow 2 \text{N}_2(g) + \text{O}_2(g)$
+	-	Nonspontaneous ( $\Delta G > 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$3 \text{O}_2(g) \longrightarrow 2 \text{O}_3(g)$
-	-	Spontaneous ( $\Delta G < 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(s)$
+	+	Nonspontaneous ( $\Delta G > 0$ )	Spontaneous ( $\Delta G < 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(g)$

**TABLE 17.1 The Effect of  $\Delta H$ ,  $\Delta S$ , and  $T$  on Spontaneity**

$\Delta H$	$\Delta S$	Low Temperature	High Temperature	Example
-	+	Spontaneous ( $\Delta G < 0$ )	Spontaneous ( $\Delta G < 0$ )	$2 \text{N}_2\text{O}(g) \longrightarrow 2 \text{N}_2(g) + \text{O}_2(g)$
+	-	Nonspontaneous ( $\Delta G > 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$3 \text{O}_2(g) \longrightarrow 2 \text{O}_3(g)$
-	-	Spontaneous ( $\Delta G < 0$ )	Nonspontaneous ( $\Delta G > 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(s)$
+	+	Nonspontaneous ( $\Delta G > 0$ )	Spontaneous ( $\Delta G < 0$ )	$\text{H}_2\text{O}(l) \longrightarrow \text{H}_2\text{O}(g)$