Acceptable forms for the entropy

$$S(E,V,N) = \left(\frac{k_B^2}{v_0 T_0}\right)^{1/3} (EVN)^{1/3}$$
dimensions ok; extensivity ok, grows like N

$$S(E,V,N) = \left(\frac{k_B v_0^2}{T_0^2}\right)^{1/3} \left(\frac{EN}{V}\right)^{2/3}$$
dimensions ok; extensivity bad, grows like $N^{2/3}$

$$S(E,V,N) = \left(\frac{k_B v_0^2}{T_0^2}\right)^{1/3} \frac{EN}{V}$$
dimensions bad: entropy $\times$ energy$^{1/3}$ $\times$ volume$^{1/3}$;
extensivity ok, grows like N

$$S(E,V,N) = \left(\frac{k_B}{T_0}\right)^{1/2} \left(NE + \frac{k_B T_0 V^2}{v_0^2}\right)^{1/2}$$
dimensions ok; extensivity ok, grows like N

$$S(E,V,N) = k_B N \ln(EV/N^2 k_B T_0 v_0)$$
dimensions ok; extensivity ok, grows like N

$$S(E,V,N) = k_B N \exp(-EV/N^2 k_B v_0)$$
dimensions bad: exponent has dimensions of temperature;
extensivity ok, grows like N

$$S(E,V,N) = k_B N \exp(-EV^2/N^2 k_B T_0 v_0^2)$$
dimensions ok; extensivity bad, grows like Ne^{-aN}