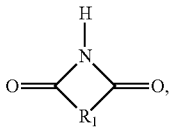
(B)



the converting comprising one or both of thermal and catalytic processing, the cyclic compound being present in a mixture comprising one or more additional components; and

performing a purification to remove at least some of the one or more additional components.

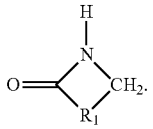
2. The method of claim **1** wherein the converting and purification are conducted in a single reactor.

3. The method of claim **1** further comprising:

providing the purified form of compound (B) to a second reactor; and

in the presence of a catalyst, hydrogenating the purified compound (B) to produce a pyrrolidinone compound having formula (C)

(C)



4. The method of claim **3** wherein the converting further comprises providing a first solution into a first reactor, the first solution comprising ammonia and the initial compound having formula (A), the first solution having a first ratio of ammonia to the initial compound.

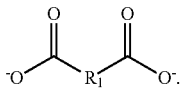
5. The method of claim **4** wherein the converting further comprises:

adjusting the ratio of ammonia to produce a second solution having a second ratio of ammonia relative to the initial compound of from 1:1 to 1.5:1; and

cyclizing the initial compound to form the compound having the formula (B).

6. The method of claim **4** wherein the initial compound comprises

(A)



7. The method of claim **6** wherein R_1 is selected from the group consisting of branched and un-branched hydrocarbons having from 1 to 10 carbons.

8. The method of claim **1** wherein the performing the purification comprises at least one of decanting, distillation, sublimation, reactive distillation, steam distillation, extraction and crystallization.

9. The method of claim **1** wherein the converting is conducted at a temperature of from greater than about 100° C. to about 400° C.

10. The method of claim **1** wherein the converting is a catalytic process.

11. The method of claim **10** wherein the catalyst comprises one or more of Fe, Ni, Pd, Sn, Pt, Co, Re, Rh, Ir, Os, Ag, Au, Ru, Zr, and Cu.

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