

Project Type:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Contract / Toll Manufacturing | <input type="checkbox"/> Material Procurement |
| <input type="checkbox"/> Scale Up / Piloting | <input type="checkbox"/> Other : |
| <input type="checkbox"/> Research & Development | |

Are you willing to co-invest capital?

- Yes No

Sector:

- | | |
|---|--|
| <input type="checkbox"/> Agrochemical | <input type="checkbox"/> Performance |
| <input type="checkbox"/> Pharmaceuticals | <input type="checkbox"/> CASE |
| <input type="checkbox"/> Personal Care | <input checked="" type="checkbox"/> Industrial |
| <input type="checkbox"/> Electronics | <input type="checkbox"/> Fuel Oil/Lube Additives |
| <input checked="" type="checkbox"/> Renewable/Green | <input type="checkbox"/> Other : |

Raw Materials:

- I will source materials You will source materials Combination sourcing

pine chemical derived fatty acid base stock (free flowing liquid)- Supplied by requester
maleic anhydride

Professional Certifications:

- | | | |
|---|------------------------------------|----------------------------------|
| <input checked="" type="checkbox"/> ChemStewards® | <input type="checkbox"/> ISO 9001 | <input type="checkbox"/> cGMP |
| <input type="checkbox"/> Responsible Care® | <input type="checkbox"/> ISO 14001 | <input type="checkbox"/> Other : |

Process/Technology Type:

Maleation - Diels Adler Reaction

Unit Operations/Equipment:

Requester supplied material will arrive via heated tank wagon (60C) and will be charged directly to reactor (8,000 gal minimum). Condenser required for remove of residual water and low boilers prior to reaction.

Specialized equipment needs: Tank wagon loading/unloading, condenser & nitrogen purge, reactor/agitator

Analytical equipment needs: Acid Value (mg KOH/ G); Brookfield Viscosity; Density (lbs/gal)

Equipment material of construction: Stainless Steel 304 or higher

Operating Conditions:

Temperature range: 150-200C

Pressure range: Ambient

Viscosity range: 300-600 cP @25C

Rapid cooling - Need to cool product to 60C as quickly as possible

Processing Volumes:

R&D: 2-3 Lab samples (1 gallon total)	Q2	2024
Pilot: 1-2 bulk Trucks	Q2	2024
Commercial: 1 to 3 million pounds per year	Q3	2024

Packaging Type:

Drum/Tote
 Supersack
 ISO/tank truck
 Other :

Delivery & Transportation:

Domestic
 International
 Road
 Rail
 Sea
 Air

Storage Conditions:

Ambient
 Blanketing required
 Other :

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