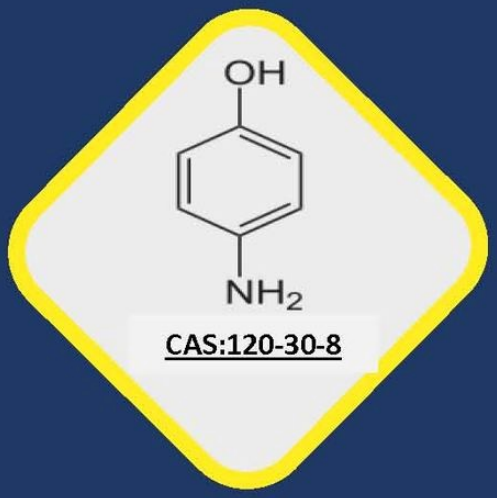
CSIR- National Chemical Laboratory

Novel process for manufacturing p-Aminophenol (PAP) from p-Nitrochlorobenzene (PNCB)

CSIR-NCL has developed a cost-effective and sustainable catalytic process for the manufacturing of Para-Aminophenol (PAP) — *a critical intermediate for Paracetamol (Acetaminophen) production.* India currently imports approximately 25,000 TPA of PAP, with 70–80% sourced from China. To become self-reliant there is a strong need to adopt indigenous technologies. Our developed process offers an improved alternative to the existing PNCB route, addressing several process-related challenges. The technology is demonstrated successfully at 0.5 kg/PAP batch scale and TRL4. This process is now available for licensing and co-development.



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Technology Available For Licensing/ Co-development

BACKGROUND

- PAP is the key starting material (KSM) for the production of paracetamol
- Existing PNCB process is associated with several drawbacks viz. generation of considerable alkaline effluent wastewater, less throughput, high utility requirement, use of expensive noble catalyst, PAP quality issues, etc.
- Our improved technology addresses the above mentioned challenges; offering cost-effective and viable alternative

TECHNOLOGY OFFERING

CSIR-NCL's novel catalytic process for PAP is available for licensing and co-development:

- Recyclable non-noble metal catalyst
- Demonstration scale: 0.5 kg/PAP batch
- Complete conversion of PNCB to PAP
- Yield: 85 to 90%
- Purity: 95-97 %
- Organic solvent free process

PAP MARKET

- 157,000 TPA(2023) worldwide demand
- $620.6 M global PAP market size (2024)
- Expected to grow at 6.1% CAGR to $1.05 billion by 2034
- India imports of PAP 21000-25000 TPA & 70-80% is from China

VALUE PROPOSITION

- Improved & Cost-effective process
- Inexpensive non-noble metal catalyst
- 100% conversion of PNCB to PAP
- Green process (Organic solvent free process)
- Higher productivity as compared to the conventional process
- Reduced water footprint (Significant reduction in effluent generation compared to the commercial process)
- Patent protected technology

Application-

KSM for production of Paracetamol

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