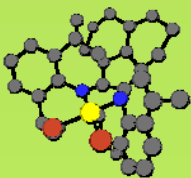


Preparation of Supported Nickel Diimine Catalysts with Borate Activator for Ethylene Polymerization

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Characteristics of Nickel Diimine Catalyst



- High catalyst activity at low temperature
- Aluminoxanes or borates are needed as activators
- Copolymerization of ethylene and polar comonomers is possible due to less oxophilic active sites (Ni, Pd)
- Resultant polyolefin has many branches in the absence of α -olefin comonomer

● C ● N ● Ni ● Br

Commercial Needs for Supported Catalysts

	HDPE	LLDPE	PP
Gas phase	Supported Ziegler-Natta or Metallocene	Supported Ziegler-Natta or Metallocene	Supported Ziegler-Natta
Slurry phase	Supported Ziegler-Natta, Metallocene or Phillips	Not Available	Supported Ziegler-Natta
Solution phase	Not Available	Ziegler-Natta or Metallocene	Not Available

Key Factors of Preparation of Supported Catalysts

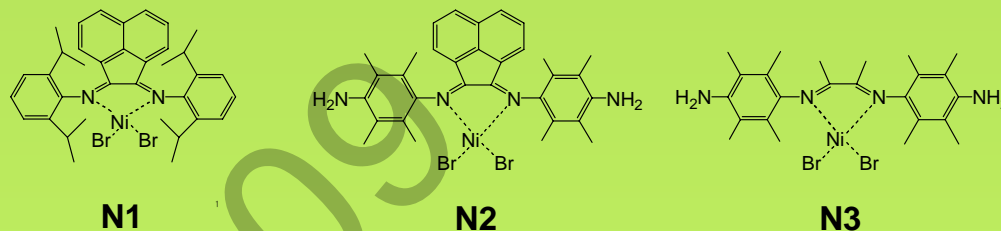
- Catalyst structure should be maintained after its heterogenization
- Supported catalyst needs to maintain the high catalyst activity and comonomer reactivity ratios of the equivalent homogeneous catalyst
- Catalyst should not leach from the support during polymerization to avoid reactor fouling

Ex.) Reactor fouling (0.2 m³, loop slurry pilot plant)

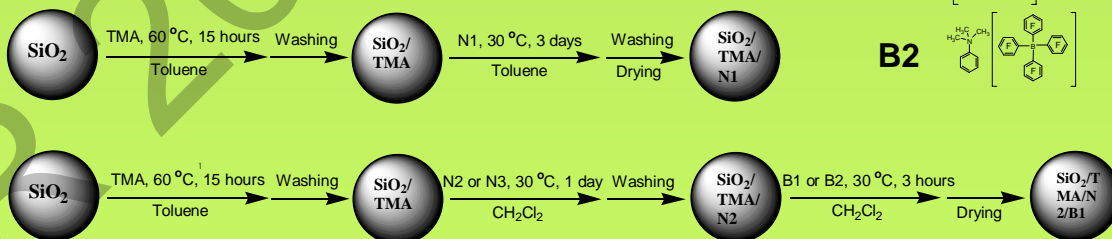


Preparation of Supported Nickel Diimine Catalysts

Step 1. Synthesis of Nickel Diimine Complexes



Step 2. Preparation of Supported Nickel Diimine Catalysts



Ethylene Polymerization Results

