



Hanwha Corporation

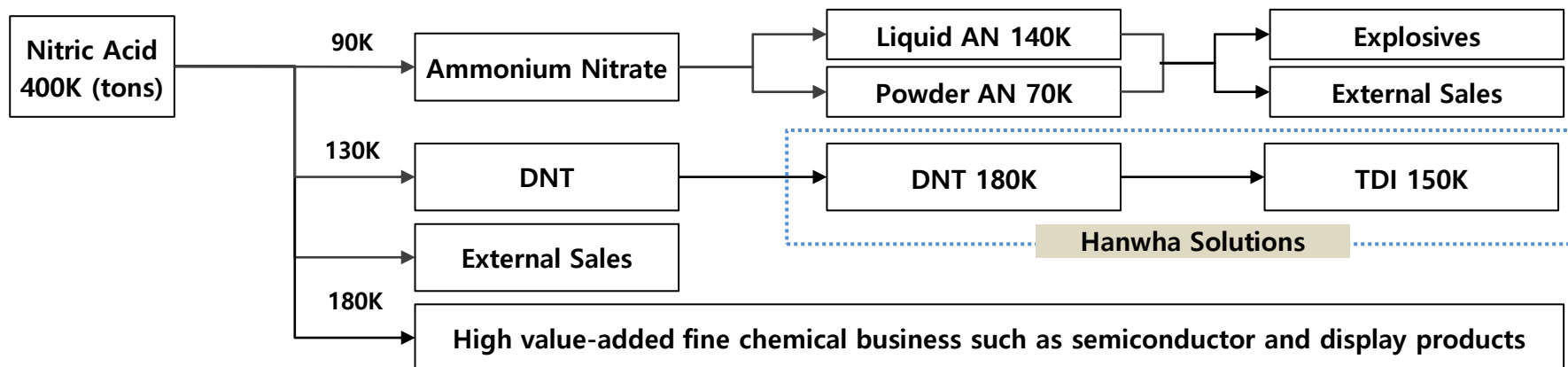
Nitric Acid Plant Investment

2021.04.19

1. Summary

■ Improve competitiveness by realizing economy of scale and expanding product lines

Agenda	Content
Purpose	<ul style="list-style-type: none"> Improve price competitiveness and expand fine chemical business (semiconductor/display)
Capacity	<ul style="list-style-type: none"> 520K tons of nitric acid (400K new + 120K existing)
Investment	<ul style="list-style-type: none"> Around 190 Billion KRW (land cost included)
Benefit	<ul style="list-style-type: none"> Price competitiveness of nitric acid and derivative products businesses <ul style="list-style-type: none"> - Annual sales of 100 Billion KRW and high double-digit profit expected
Site	<ul style="list-style-type: none"> Yeosu Industrial Complex
Start of operation	<ul style="list-style-type: none"> January 2024



Nitric Acid (HNO₃): Colorless liquid used in manufacturing of fertilizers, dye carriers, explosives, and others

Ammonium Nitrate (NH₄NO₃): Made by neutralizing nitric acid with ammonia water, used for fertilizer, explosives, coolants, and others

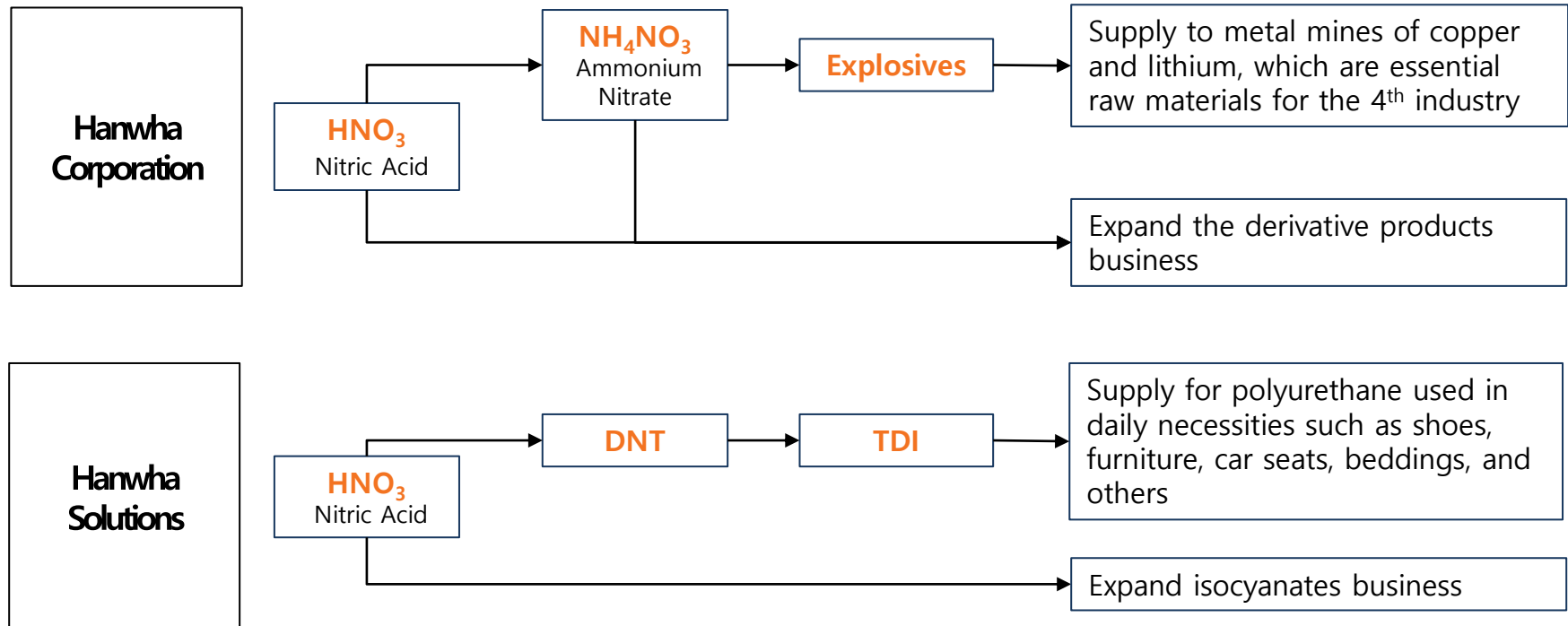
DNT (Dinitrotoluene, C₆H₆CH₃(NO₂)₂): Raw material for TDI, which is used in polyurethane manufacturing

TDI (Toluene Diisocyanate, C₉H₆N₂O₂): Raw material for polyurethane, used for insulation, automotive, adhesives, textiles, paints, and others

2. Expected Outcome

1) Realize 'economy of scale' for nitric acid business and establish a stable value chain

- Price competitiveness improved with expanded capacity (400K tons new + 120K tons existing)
- Utilize Hanwha's industrial explosives business and expand supply to high value-added fine chemical products
- Economy of scale by supplying captive amount of raw materials for Hanwha Solutions' DNT



Derivative products: Intermediate materials for petrochemical products

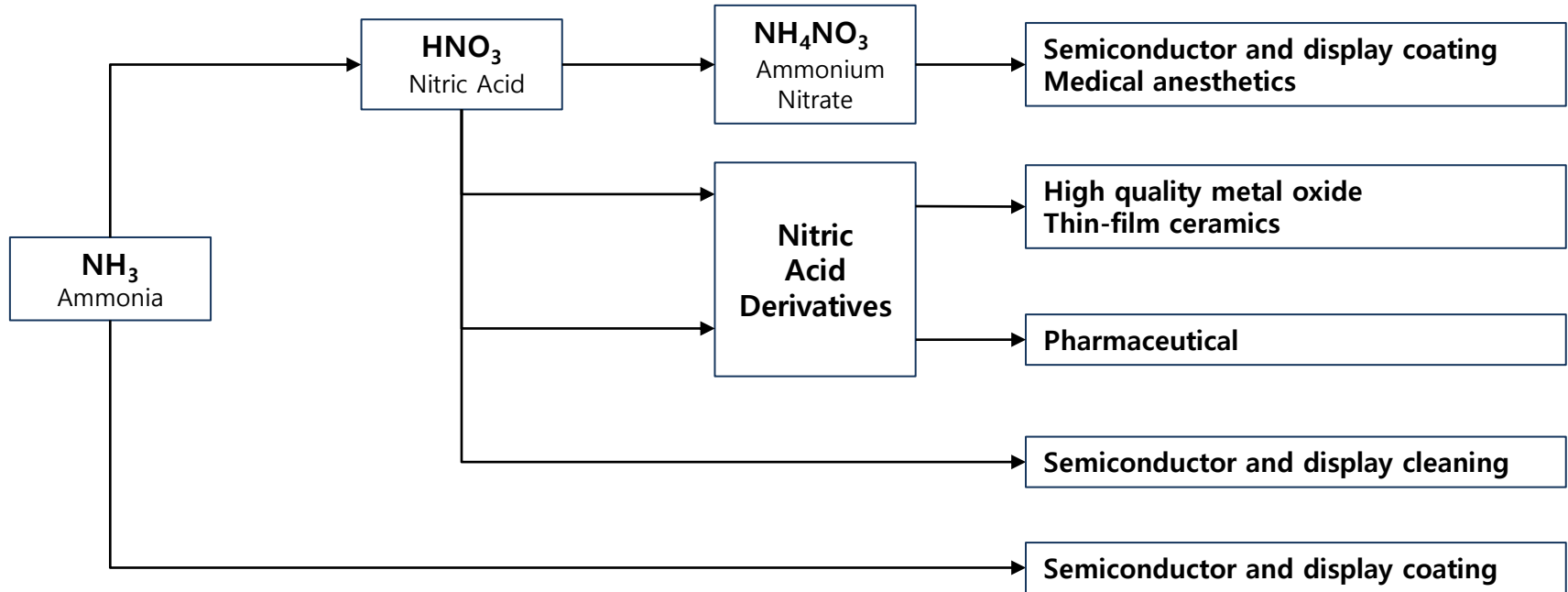
Isocyanates: Reacts with ammonia to form urea, with alcohol to produce urethane, used for plastics, adhesives, and others

Urea ((NH₂)₂CO): Mostly used for fertilizers, also used for synthesizing melamine resin and urethane

2. Expected Outcome

2) Expand to new material businesses such as semiconductor and electronics

- High value-added fine chemical product business



New high value-added chemical products based on Ammonia, Nitric Acid, and Ammonium Nitrate through R&D

3) Eco-friendly businesses such as carbon credits

- Expand CDM (Clean Development Mechanism) business using GHG (Green House Gas) reduction technology