

[Azodicarbonamide (ADC)]
INVESTMENT OPPORTUNITY

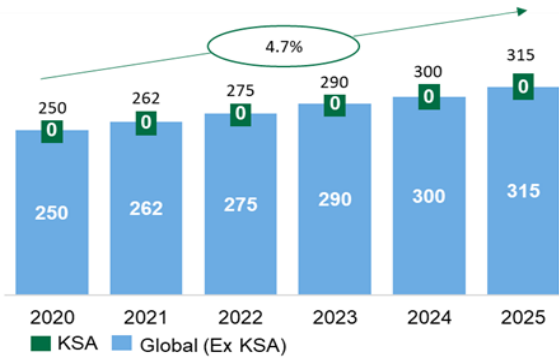
[Specialty]



OPPORTUNITY DESCRIPTION: Opportunity to develop Azodicarbonamide (ADC) production facility of ~5 KTA in KSA to cater regional and global demand

DEMAND

MARKET SIZE, KT



INVESTMENT HIGHLIGHTS

- Expected investment size of ~USD 20-25 MN
 - Plant capacity: 5 KTA
 - Expected IRR: >15%
- Investment case does not include integrated hydrazine manufacture

INVESTMENT OVERVIEW

VALUE PROPOSITION

- Most raw material is produced locally in abundance in KSA which can be used for Azodicarbonamide (ADC) production.
- KSA can leverage trade agreements (eg : GAFTA, GSFTA) and strong logistics infrastructure to enhance export capability for distributing the products in Middle East and SEA.
- KSA can become exporter of Azodicarbonamide (ADC) as well as produce downstream products in value chain owing to availability of raw material and resources.
- Increasing global demand and no producers in the region provides an opportunity to penetrate markets including Africa, India and SEA.

KEY DEMAND DRIVERS

- Azodicarbonamide (ADC) (TSSC) is a chemical blowing agent with a decomposition temperature in the range of 205-215 deg.C. It is commonly used with plastics such as ABS and other styrenics, PVC (for rigid foams), polypropylene, and polycarbonate. Expanded rubber grades too use ADC in their formulation.
- The demand for foamed products, like yoga mats, gymnasium products, rubber seals and shoes, is expected to increase, that will translate into demand in the ADC market.
- Some applications no longer use ADC due to HSE considerations.

KEY PLAYERS

- Arkema
- Abtonsmart Chemicals (Group) Co., Ltd.
- Honeywell International
- Kum Yang Co., Ltd
- Otsuka Chemical

MARKET OVERVIEW

GLOBAL TRENDS

- The global demand for Azodicarbonamide (ADC) stood at around 262 thousand metric ton in 2021 and is expected to reach around 315 thousand metric ton in 2025 with an average yearly growth of approximately 4.5% in next five years.
- North America is estimated to dominate the market, with the largest consumption coming from the United States. But due to the market reaching its saturation, the growth is on the lower side. However, Asia-Pacific is likely to register the fastest growth rate during the forecast period.
- Companies making ADC manufacture a range of chemical blowing agents. This could also form part of a wider plastic additive's portfolio.



[Specialty]

Azodicarbonamide (ADC)

SUPPLY

SCALABILITY AND LOCALIZATION

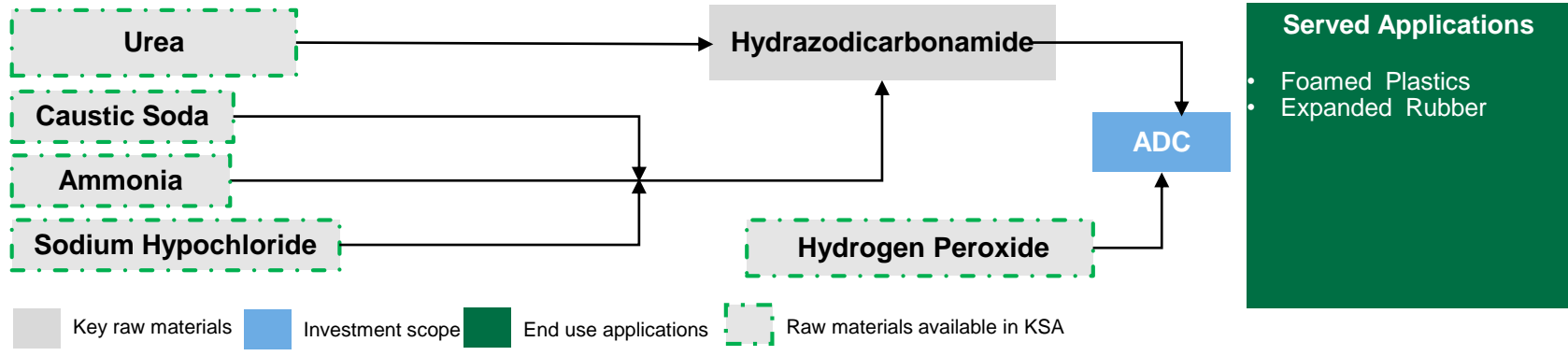
Grade: Low Medium High

- The feedstocks for making ADC are all available in KSA. However, ADC production needs the intermediate, hydrazodicarbonamide. This is made from urea and hydrazine. Hydrazine is used a rocket fuel component and needs to be made in-situ from ammonia and sodium hypochlorite in a multi-step process. Hydrazine can also serve the manufacture of other chemicals e.g., certain herbicides and p-toluenesulfonyl semi carbazide (TSSC). Hydrogen peroxide is also needed for ADC manufacture, and this is already made at large scale in the KSA. KSA is also a major urea producer and exporter. The quantities needed to support ADC manufacture are relatively small compared to major markets.

IMPORT DEPENDENCY

- There is no production of ADC in KSA or the wider Middle East. The same is true of other chemical blowing agents, all of which are imported.
- Key raw materials are produced in KSA.
- ADC production in KSA could form part of a wider chemical blowing agent's portfolio.

VALUE CHAIN



KEY STAKEHOLDERS



ENABLING FACTORS

ENABLERS & INCENTIVES

- Up to 75% of project financing by Saudi Industrial Development Fund (SIDF).
- 2-year grace period for the repayment of loans
- Expat worker levy waived-off for industrial manufacturers until October 2024.
- HRDF covers 30-50% of Saudi employee's monthly salaries (additional 10% for females) for 2 years, provide that it does not exceed USD 4,000

COST OF DOING BUSINESS IN KSA

Factor	Ranking amongst regional peers
Electricity tariffs for industrial players	\$48 /MWh
Productivity adjusted wages	\$3.3 /hour
Logistics Performance Index (1-5)	3.2
Construction Costs (Indexed to US, % 0 is cheapest)	74
Ease of getting credit (0-100)	50

Bottom 25% | Top 75% | Top 50% | Top 25%

DEFINITIONS

#	SCORECARD SECTION	DEFINITIONS
1	Market size	Size of market in value/volume in KSA and/or Region (MENA/GCC) covering future projections based on available estimates from published /government sources
2	Business drivers	A select number of factors that will influence future demand for the related product/service
3	Investment highlights	An overview of key financial metrics summarizing the investment opportunity along with the expected return based on the suggested investment size
4	Value proposition	Summary of key differentiators that position KSA as a strategic choice over other regional/global peers
5	Market readiness	An overview of KSA market structure, market maturity and level of participation by local and global players
6	Global trends	Latest business developments within the sector/product category
7	Scalability and localization	Ease of scaling the business across the value chain or into new adjacent products or geographies that would maximize the opportunity's investment returns and the ability and potential to locally manufacture the product and its components
8	Import dependency	An overview of the countries from which Saudi Arabia is importing the product and their value/volume and share in total imports
9	Value chain analysis	The process or activities that would potentially need to be carried out to deliver the underlying product or service
10	Key stakeholders	Government institutions, organizations, and/or authorities that participate or influence the market for the underlying product/service
11	Enablers	Factors that enable investment in the underlying opportunity
12	Cost of doing business in KSA	Key factors that position KSA as a competitive destination for investment in the region. Productivity adjusted wages do not include cost of \$1.23/hour towards annual recurring charges including work permit, resident identity (iqama) and health insurance

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