



شرکت پتروشیمی کارون

www.krnpcc.com

Central Office :

No.17, Khlilzadeh St., Vali-e-Asr Ave., Vanak Sq., Tehran-Iran

Tel: +98-21-88786992-5

Fax: +98-21-88777506

Email: Sales@krnpcc.ir , Info@krnpcc.ir.

South Office :

Karoon Petrochemical Co. Site 2, Special Industrial Zone, Mahshahr, Khuzestan, Iran

Tel: +98-61-52122750

Fax: +98-61-52122030

Supplies: +98-61-52122223

Public relations: +98-61-52122114, +98-61-52122718 & Fax: +98-61-52122025

Email: Sales@krnpcc.ir , Info@krnpcc.ir.

Karoon Petrochemical Company Public Relations



شرکت پتروشیمی کارون

Karoon Petrochemical CO.





A History and Introduction Of Karoon Petrochemical Company

Kroon Petrochemical Company (KRNPC) is the first producer of Isocyanates in the Middle East. The company was established in 2002 and was officially inaugurated on March, 2009 by Iranian oil minister.

Using Chlorine, Carbon monoxide, hydrogen, Toluene, and Nitric acid, KRNPC is capable of producing a variety of basic petrochemical products including high-quality Isocyanates having higher added value and presenting them at domestic and foreign markets.

The main products of the company are 40000 tonnes of Toluene diisocyanate (TDI) and 40000 tonnes of Methylene diphenyl diisocyanate (MDI) annually.

The products and services of the company are designed with the highest quality to meet the needs of domestic downstream (petroleum industry) to raw materials. Isocyanate products of the company can also compete with those of the other companies in global market. The company activities are based on sustainable development activities.

We are responsible for strengthening the economical and environmental foundations, improving scientific level, taking care of body and spirit health, and observing spirituality, moralities and social matters in the society that surrounds us and we adhere to these principles all the time. KRNPC is constructed in khozestan state (Special Industrial Zone) and is 34 hectares in area.



Karoon Petrochemical Products

Product Name	Capacity (Ton per year)
Toluene diisocyanate (TDI)	40000
Methylene diphenyl diisocyanate (MDI)	40000
Hydrochloric acid (HCL)	116000
Nitric acid (HNO ₃)	92000
Ortho toluene di amine (OTD)	1152
Meta toluene diamine (MTD)	31700
Nitrobenzene (NB)	40000
Aniline (AN)	30000

Toluene diisocyanate (TDI)

Toluene diisocyanate (TDI) is a member of isocyanates which are chemically related to Polyurethanes. In a process for TDI preparation, first, Dinitrotoluene (DNT) is reacted with hydrogen in the presence of a suitable catalyst and produce toluenediamine (TDA). Then, TDA is converted to TDI by reaction with Carbonyl Dichloride (CDC). The produced TDI in KRNPC is a 80:20 mixture of the 2,4- and 2,6-isomers with purity of at least 99.5%.



TDI Applications

TDI has a wide variety of applications which ranges from furniture industry, bedding furniture, and carpet underlay to transportation and packaging industry. The substance is also applied for the production of surface coatings, sealants, adhesives and elastomers.

TOLUENEDIISOCYANATE

Property	Specification	Analytical Method
Appearance @ 30 °C	Clear liquid	Visual
Purity % wt.	Min. 99.5	Gc
2,4- TDI Content. %wt.	80.0 ± 1.0	ASTM D4660.00
2,6- TDI Content. %wt.	20.0 ± 1.0	ASTM D4660.00
Total Acidity. ppm by wt.	Max. 40	ASTM D5629.05
Hydrolysable chlorine. ppm by wt.	Max. 60	ASTM D4663.98
Total chlorine. ppm by wt.	Max. 500	ASTM D4661.03
Colour (APHA)	Max. 25	ASTM D4877.04
Sp.gr @ 25 °C	1.22 ± 0.	ASTM D4659.03
Nitro Isocyanate compounds.ppm	Max. 30	H900.5800



Methylene diphenyl diisocyanate (MDI)

Methylene diphenyl diisocyanate, most often abbreviated as MDI, is an aromatic diisocyanate. It exists in three isomers, 2,2'-MDI, 2,4'-MDI, and 4,4'-MDI. The first step of the production of MDI is the conversion of Benzene into nitrobenzene. Next, in the presence of a suitable catalyst, aniline is produced. Then, aniline reaction with Formaldehyde produce PMA (Polymeric methylene dianiline). Finally, by the effect of carbonyl chloride, PMA produce MDI. In KRNPC, MDI is produced with 9 different grade including MDI, LMDIA, LMDIB, UPMI, ESPMI, CPMILF, CPMI MF, CPMI HF. Moreover, the total capacity of MDI production in KRNPC is 40000 tonnes per year.



MDI Applications

MDI is reacted with Polyol to produce polyurethane. These rigid polyurethane foams are good thermal insulators and are used in nearly all freezers and refrigerators worldwide, as well as buildings. MDI is also used as an industrial strength adhesive, which is available to end consumers as various high-strength bottled glue preparations..



Hydrochloric acid (HCL)

Hydrochloric acid (HCL) is a solution of hydrogen chloride in water. It is a highly corrosive, strong mineral acid with many industrial uses. HCL is made as a by-product of the TDI preparation process.

HCL applications

HCL is one of the basic chemicals. Therefore, it has a wide variety of applications such as pickling of steel, production of organic compounds, production of inorganic compounds, pH control and neutralization, regeneration of ion exchangers, leather processing, household cleaning, and building construction.



HCL

Nitric acid (HNO3)

Nitric acid (HNO3) is a highly corrosive and strong acid made from respectively the oxidation of ammonia to form nitrogen oxide and the reaction of nitrogen oxides with water. The pure compound is colorless, but concentrated HNO3 tend to acquire a brownish yellow cast due to decomposition into oxides of nitrogen and water. Nitric acid is commonly used as an oxidizing agent reacting with many materials.



HNO₃

Nitric Acid (HNO3)

Property	Specification	Analytical Method	Typical value
Purity, wt%	Min. 60	ASTM E1584	62
HN02, ppm by weight	Max. 1500	PTM 1785	10
Residue on ignition, wt. %	Max. 0.03	ASTM D7348	Trace
Fe (ppm by weight)	Max. 10	ASTM D2790	7

HNO3 Applications

Nowadays the main use of nitric acid is for the production of fertilizers, such as nitrate, nitrophosphate, mixed fertilizers and ... Furthermore, it is most commonly applied for producing mineral and organic nitrates, dissolution of the plated industrial equipments, making materials much more resistant to corrosion, dissolving of gold and silver, and electrolysis. It is also used in arms, dairy, and plastic manufacturing industries.



Ortho toluene di amine (OTD)

OTD or ortho toluene diamine is one of TDA isomers. It is a mixture of 2,3 TDA and 3,4 TDA isomers which is made from hydrogenating dinitrotoluene (DNT) in the presence of a suitable cata-

ORTHO TOLUENE DI AMINE		
Property	Specification	Analytical Method
Appearance @ 25 °C	Pale gray	Visual
Purity % wt.	99.2±0.2	ASTM 21.7023A
MTD	<1.5 %	ASTM T620.1800
2,5- TDI	<1% -	ASTM T620.1800
Toluidines	<1%	ASTM T620.1800
TAR	<0.5 %	ASTM T620.1800
Unknown	<1.5 %	ASTM T620.1800



OTD is a toxic substance and should not be inhaled. Exposure to OTD can cause skin and eye irritation. It also decomposes into highly toxic nitrogen oxide gases when heated.

OTD production in 100% capacity equals 160 kg/h that is equal to daily production of 3840 kg and its annual production with a basis of 300 working days equals 1152000 kg.

In order to increase the purity of OTD, temperature of dehydration tower should be gone up by 2-3 degrees centigrade. Therefore, the impurities along with water will be exited from the top of the tower.

OTD applications are as follows

OTD is used as a chemical intermediate in the production of tolyltriazole (TTA) that acts as a corrosion inhibitor for copper, lead, nickel, and silver.

OTD act as an initiator compound to make polyether. The foam which is made of this polyether has uniformity, and better properties in comparison with the other foams. It can also improve the foam performance as heat insulation. Besides, polyether that is made of OTD has better compatibility with cyclopentane. OTD and the other Toluene Di Amine compounds are used in the preparation of colorful materials, dyeing, and the other cosmetics colors.

It is also applied to pharmaceutical industry (as a pharmaceutical intermediate to produce such material as ramosetron hydrochloride), and biochemistry.

Meta toluene diamine (MTD)

Meta toluene diamine (MTD) is an organic compound with a closed formula $C_6H_3(NH_2)_2CH_3$. It is one of the six TDA isomers that is made from hydrogenating 2,4 DNT in the presence of metal salt that acts as a catalyst.

META TOLUEN DIAMINE		
Property	Specification	Analytical Method
Appearance @ 100 °C	BROWN	Visual
Purity % wt.	99.2±0.2	ASTM T620.1800
OTD	<0.25 %	ASTM 21.70.23A
2,5- TDI	<1%	ASTM T620.1800
Toluidines	<D.1%	ASTM T620.1800
TAR	<1.5 %	ASTM T620.1800
Unknown	<1.5 %	ASTM T620.1800



MTD Applications

MTD is commonly used in color, resin, and pharmaceutical industries to produce antioxidants, Polyimides with specific properties, polyurethane foams, and polyether polyol.



Nitrobenzene (NB)

Nitrobenzene (NB) is a pale yellow liquid with an almond-like odor. It freezes to give greenish-yellow crystals. It is produced on a large scale from benzene as a precursor to aniline.

In the laboratory, it is occasionally used as a solvent, especially for electrophilic reagents.

NB is slightly soluble in water. It is a toxic substance and should not be inhaled. Exposure to NB can cause skin and eye irritation. It also decomposes into highly toxic nitrogen oxide gases when heated.

NB production in 100% capacity equals 5569 kilograms/hour that is equal to daily production of 133656 kilograms and its annual production with a basis of 300 working days equals 40 thousand tonnes.



NB

NITRO BANZAN

Property	Specification	Analytical Method
Appearance @ 30° C	Pale Yellow	Visual
Nitrobenzene (Wt.%)	99.2±0.2	GC-1-2.9.3-1008
Benzene (ppm by weight)	Max. 600	1-2.9.3-1008
Dinitrobenzene (ppm by weight)	Max. 300	1-2.9.3-1008
Water	Balanced	1-2.9.3-1004

NB applications

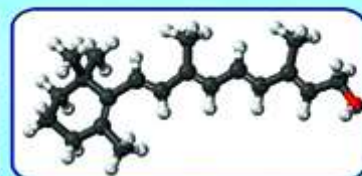
Approximately 95% of NB is consumed in the production of aniline.

NB is a precursor to fabric dyes and it is also used to mask unpleasant odors in shoe and floor polishes, leather dressings, paint solvents, and other materials.

Redistilled NB has been used as an inexpensive perfume for soaps.

A significant merchant market for NB is its use in the production of acetaminophen.

NB is also applied to prepare a variety of dyes and it is specifically used as a middle material for dye production.



Aniline (AN)

Aniline (AN) is a chemical compound that its production involves two steps. First, benzene is converted to nitrobenzene. The nitrobenzene is then hydrogenated. It is also a colorless and oily liquid.

AN is freely soluble in ether and alcohol and slightly soluble in water. AN is toxic by inhalation of the vapor. Therefore, it should not be inhaled. Exposure to AN can cause skin and eye irritation. It also decomposes into highly toxic nitrogen oxide gases when heated. AN production in 100% capacity equals 4144 kilograms/hour that is equal to daily production of 99456 kilograms and its annual production with a basis of 300 working days equals 30 thousand tonnes.



ANILINE

ANILINE

Property	Specification	Analytical Method
Appearance @ 30° C	Clear Liquid	Visual
Aniline Purity. %wt	Min 99.8	GC/ 1-2.93-1015
Nitrobenzene. %wt	Max 0.0005	GC/ 1-2.93-1013
Water. %t	Max 0.2	GC/ 1-2.93-1005
Freezing point	-6.2 °C	GC/ 1-2.93-N015
Colour . APHA	Max 100	GC/ 1-2.93-1006

AN applications

AN is used in the manufacture of rubber processing chemicals and its derivatives act as antioxidants.

It is applied to produce pigments and it is used in polymer industry.

In pharmaceutical industry, aniline is used in the preparation of Sulfanilamide.





Mission

Using Chlorine, Carbon monoxide, hydrogen, Toluene, and Nitric acid, KARNPC is capable of producing a variety of basic petrochemical products including high-quality Isocyanates having higher added value and presenting them at domestic and foreign markets.

By the use of relative advantages in the area including access to international waters via Persian Gulf, railroad, easy access to food, a variety of exclusive products in the area, skilled, committed, and interested human force, and employment of advanced domestic and foreign technologies, we believe that we always respect our domestic and foreign customers' viewpoints, and their wants are at the center of our attention.

We believe that human development is the most valuable aim of civilization and humanity, and participatory management and human dignity provide the best condition for empowering the employees and preserving the shareholder interests. By proper guiding, providing job security of the employees, and giving them material and spiritual rewards, we hope that we can provide a lively and highly motivated environment for KARNPC.

We are responsible for strengthening the economical and environmental foundations, improving scientific level, taking care of body and spirit health, and observing spirituality, moralities and social matters in the society that surrounds us and we adhere to these principles all the time.

Countries that have issued product :

Turkey , Armenia , Azerbaijan , India , China , Pakistan , Georgia , Russia
Nigeria , Kenya



The Company's Basic Values

Customers: Having friendly and fair treatment with customers and making attempt to satisfy them.

Sellers and contractors: Choosing the sellers and contractors in free and fair conditions

Employees: Behaving the employees with great dignity, paying great attention to their health and safety, setting the condition for expressing their self-assertion, advancing their career, and improving their personality traits.

Area : Paying specific attention to the area's problems and activity fields, and co-operating with officials to achieve the best of cultural, educational, and athletic affairs.

Environment: KARNPC is completely aware of its responsibility for protecting the environment and it attempts to follow the principals for sustainable development. In addition, using the most suitable technologies, the company firmly tries to reduce the environmental pollutants.

Shareholders: Interacting with shareholders based on mutual respect and exchanging clear and accurate information.

Perspective:

Best known producer and supplier of Isocyanates in the Middle East .

Strategy :

Increase profitability by improving the quantity and quality of human resources and priorities with emphasis on safety and the environment



شرکت پتروشیمی کارون

Karoon Petrochemical Co.

