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Dedicated to the cause of chemical industries

* CAPACITY CREATION VERSUS DEMAND CREATION IN GLOBAL CHEMICAL PROJECTS
* GLOBAL LITHIUM SCENARIO - LITHIUM BATTERIES DRIVING DEMAND
* PECTIN – INVESTMENT OPPORTUNITY
* FOCUS ON OMEGA-3 FATTY ACIDS
* ISSUES RELATING TO TRANS FAT CONTENT IN VANASPATI
* TECHNOLOGY OPPORTUNITIES IN COAL FIRED POWER PLANTS

* **Plant Closures**
* **Anti Dumping**
* **News Round Up**
* **China News**
* **Technology Development**
* **Agrochemical**
* **Environmental**
* **Energy**
* **Pharma**
* **New Projects**
* **Tender**
* **Imports**

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CONTENTS

TALK OF THE MONTH
CAPACITY CREATION VERSUS DEMAND CREATION IN GLOBAL CHEMICAL PROJECTS

In the recent times, there have been a number of reports about falling demand for chemical products across the world, which is attributed to the so called global melt down. While it is true that there have been some sort of global recession due to variety of reasons, it is debatable as to whether there have been real fall in the overall demand for chemical products or only decline in growth rate in demand that has upset the demand growth expectations of newly created projects.

However, globally quite a number of companies have closed down chemical plants permanently in the last one or two years. Some plants have been temporarily closed until the demand would pick up to the desired level.

A number of new projects that have been closed and new projects that have been set up during the period August to October 2009 are given below which is revealing.(Courtesy:ICIS Chemical Business)

New Projects Index: 75

North America	9.3%
Latin America	4%
Europe Including Russia & the CIS	13.3%
Asia Pacific	66.7%
Middle East & Africa	6.7%

Plant Shutdowns Index: 27

North America	22.2%
Latin America	3.7%
Europe Including Russia & the CIS	59.3%
Asia Pacific	14.8%

While viewing the above figures, it has to be kept in view that such closures have been largely taking place only in some regions in the world particularly in Europe and North America. The country like India has not seen such large closure of chemical projects due to any distinct fall in demand.

Even as some chemical plants have been closed down in some parts of the world, we find that the capacities are being created for the same products in other parts of the world, particularly in China and for petrochemical projects in Middle East countries.

It appears to be a fact that there have been some sort of over capacity creation for chemicals and petrochemicals particularly in China and for petrochemicals in Middle East countries which have upset the global demand supply balance to some extent and which have created the situation that available production capacity is considerably more than the demand level for a number of bulk chemicals.

Over enthusiastic capacity creation in China and Middle East countries appear to be leading to such situation.

Investment rush in Middle East

The case of Middle East countries is particularly peculiar as it commands advantageous crude oil/natural gas supply scenario to some extent without having regional market for derivative products. Therefore, the projects in Middle East have to necessarily focus on the market in developed countries and Asia and Africa. In their anxiety to utilize the available petroleum feedstock resources to create capacities and to utilize the "oil money", the countries in Middle East appear to be conveniently over estimating the demand growth potential in Asia and African countries, where they predominantly target the market.

Capacity creation in China

In the case of China, the capacity creation cannot be viewed in the same way as one would view the capacity creation in Middle East countries, since China has huge domestic demand base which is not fully realized as of now but nevertheless provide attractive potential demand in the long run .

However, in China, there seem to be some sort of over enthusiastic capacity creation in recent years, with sustained support and encouragement for investment provided by several provincial governments. This has lead to the closure of several units in China in recent time, which are technically and economically not adequately competitive in the crowded global market. Probably, one may say that there is some level of wastage of resources in China due to such closures.

The following recent report about the coal to chemical projects in China is indicative of the situation in China.

"China will stop approving coal-to-chemical projects for three years and restructure existing plants, in an effort to curb overcapacity and protect the environment, a report by the country's official Xinhua news agency says.

The report cites a document issued by China's State Council. China will not allow new, modern coal chemical demonstration projects and in principle, will stop approving coke and calcium carbide production capacity expansion projects and accelerate eliminating obsolete production capacity in the next three years.

Coal-to-chemicals capacity in China is "30% more than required" and plant utilization is only 40%, the report says. The report further says that the coal-mining regions of China have developed chemical capacity "blindly" in recent years "in pursuit of fast economic development, regardless of environmental damage and the strain on China's water resources." The Chinese government cancelled a coal-to-olefins project by Shaanxi XinXing Coal and Olefins at Yulin, China and postponed until 2016 a coal-to-olefins joint venture involving Dow Chemical, also at Yulin".

Predicament of multinational companies

It is a different issue that most of the chemical projects in Middle East countries and China have been set up with engineering and technological support from the multinational organizations based in Europe and USA and there have been equity participation in such projects to some extent from these regions.

Obviously, petrochemical projects based in Europe and America find that they are not any more able to compete with several projects in the Middle East countries and China for global market share, due to their lack of petrochemical feedstock advantage, higher cost level of operations, inadequate regional demand base and ecological compulsions.

Therefore, multinational companies based in Europe and USA seem to think that it would be better for them to take part in the spate of investments in the Middle East countries and China and make whatever gain in the process for themselves, instead of missing the bus.

Need for capacity rationalization

Viewing the overall global chemical project scenario, some sort of rationalization of capacity is certainly called for in the case of quite a few bulk chemical projects.

There have to be a halt for capacity creation in some projects for some time.

Obviously, the chemical projects have to become more intensive rather than expansive in the next two or three years. This gives great opportunity for the creators of technology rather than the buyers of technology.

CHEMICAL INDUSTRIES IN SRI LANKA AWAITING EXPLOITATION

After tumultous period of unrest and violence due to militant activities , Sri Lanka is now looking forward to time of peace and growth and progress.

Obviously, the Government of Sri Lanka as well as Sri Lankan and international investors should cease this opportunity to identify the appropriate areas of investment in Sri Lanka and implement projects with time bound action plans in tune with the global trends and scenario.

While Sri Lanka has many advantages in terms of natural resources such as rubber and tea plantations and mineral resources such as ilmenite deposits, careful strategic plans have to be devised to develop and exploit these resources by converting them into profitable finished products and get value additions.

So far, Sri Lanka has been exporting several of its natural products and deposits without value addition and in the process has been losing investment and economic growth opportunities for the country. Such scenario cannot any more be justified, since Sri Lanka has no reasons for not doing so after the end of the militancy and ushering in of the period of normalcy now.

Sri Lanka may lack technological expertise and resources at present for exploiting its several natural resources and for making investments in viable chemical and agro chemical projects. But, the initiation of skilful policy measures and schemes by the Sri Lankan government can attract massive investments from the technologically developed countries and multi national companies, who can bring forth the technological inputs and investments for mutual benefits.

Sri Lanka can take clue from the growth strategies and programmes of the Government of Singapore, where the availability of natural resources are less than that of Sri Lanka and the size and population of Singapore is also much less compared to Sri Lanka. Many chemical projects of high technological standards have been set up in Singapore in recent times like huge petro chemical complex and several products like poly carbonate, poly vinyl alcohol etc. which are not produced even by larger country like India. Singapore has encouraged investments in bio technological and bio pharmaceutical field in a big way by attracting several multi national companies. While Singapore does not have any worthwhile market, the massive chemical projects are planned in Singapore with international market in view. Sri Lankan government can certainly do whatever the Singapore government has done and even may do better in view of the several natural advantages that Sri Lanka has, as compared to Singapore.

CHEMICAL INDUSTRIES IN SRI LANKA - AWAITING EXPLOITATION

Several chemical investment opportunities in Sri Lanka can readily be cited. For example, with the availability of ilmenite mineral deposits of fairly good quality standards, a large titanium complex can be set up in Sri Lanka that would involve the production of synthetic rutile, titanium dioxide pigment, titanium metal etc. which are ilemenite based products. The global demand for titanium dioxide is around 4 million tonnes per annum and it is increasing steadily at 4% per annum in the world. Titanium dioxide is a very valuable pigment that is extensively used in the production of paint, ink , plastics and several other products. Many companies produce titanium dioxide in the world even though there is no ilmenite deposits in the country, by importing the requirement of ilmenite. Singapore is an immediate example. Titanium metal, which is a strategic metal used extensively in aircrafts, defence, chemical projects etc. is another important product that can be made from ilmentie deposits.

Another great investment opportunity for Sri Lanka is the chemicals that can be produced from tea. Green tea poly phenol is a very significant product made from green tea that has important nutraceutical applications and whose demand is growing up at impressive rate in the global market. Caffeine is another important chemical from tea waste. Such products can be produced in Sri Lanka with great advantages and would significantly contribute to the improvement in the economy of tea plantations.

There is an activated carbon project from coconut shell which is already operating in Sri Lanka. But, opportunities exist for more capacity creation for activated carbon and several other value added nutraceutical products from coconut can be produced in elegant manner.

Sri Lanka should also actively consider setting up a petro chemical complex with big investment from multi national companies that would pave way for production of several down stream petro chemical products and polymers and additives, which would open up huge employment avenues and demand for skilled jobs.

While the above opportunities have been stated as examples , many other growth avenues exist in the field of chemical industries particularly in food processing, bio technology and bio pharmaceutical sector.

Sri Lankan government should consider creating separate zones for research and development activities, where several multi national companies would show interests in investments due to the comparatively lower operating costs in Sri Lanka . Such research and development centres would strengthen the much needed technological base in Sri Lanka considerably in the long run. Sri Lanka has to take urgent steps to create at least one technological educational institution of international standards.

INDIAN PAPER INDUSTRY FACING DIFFICULT TIME

Over the next one year, three large paper mills will add another 4 lakh tonnes to their production capacity, including West Coast Paper Mill that will add 1.5 lakh tonnes, Andhra Pradesh Paper 70,000 tonnes and Tamil Nadu Newsprint and Papers 1.5 lakh tonnes.

While there have been capacity addition in the paper industry in recent times, Indian paper mills appear to have been hit by the demand slowdown since October 2008.According to recent estimates by the industry, large paper mills are holding stock of about 1.5 lakh tonnes.

Another major concern of paper mills has been the worries on imports from China and Indonesia. The industry had been banking on the Government of India levying a 'safeguard duty', but the Government has decided against such a move. This has hit the morale and ruled out possibility of a price increase in the near future.

Some relief is expected in 2011 and 2012 when no large additions to capacity are expected. The mills expect the projects in the pipeline to be in place by 2010. This would provide a breathing space of a couple of years for the market to stabilise.

According to industry estimates, the total paper demand is about 94 lakh tonnes a year. Based on a growth rate of about 10 per cent in recent years, the industry expects the additional capacity to be absorbed over the next two to three years once the economy gathers steam.

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PAPER INDUSTRY LOOKS TO COPIER SEGMENT FOR GROWTH

While paper manufacturers are seeing a drop in prices and sales across various segments in the backdrop of the global slowdown, copier paper segment alone offers reason for them to be happy. The domestic market for copier paper is estimated at about 4 lakh tonnes a year and is growing in double digits after a lull in the last few months.The copier paper market is largely driven by the growth of the IT sector

JK Paper, the market leader in copier paper, sells about 10,000 tonnes a month and has devoted its entire paper production to copier paper. In addition, it is also importing about 800-900 tonnes of copier paper a month from Brazil under its own brand 'Sparkle.'

The others at the top are BILT, which sells about 3,000 tonnes a month, and TNPL. ITC has also entered the fray and is positioning its brand, 'Paperkraft', in the premium segment and 'green platform.'

SAFETY AND ACCIDENT PAGE

CHINA MINING DISASTER RAISES QUESTIONS

A gas explosion in a coal mine in northern China in the month of November, 2009left 42 people dead and dozens trapped half a kilometre underground, in an accident which has again turned the spotlight on the safety of China's mines.

More than 528 miners were working at a colliery in northern Heilongjiang province when a gas explosion tore through the mine at 2.30 a.m. China's State-run Xinhua news agency reported.

The explosion killed 42 miners while 66 were left trapped 400 metres underground .

The blast occurred at a mine operated by the Heilongjiang Longmei Mining Holding Group, a large State-owned company which produces 12 million tonnes every year. The accident has raised serious questions on the safety standards and enforcement of regulations in the State-run mines, regarded as the most tightly regulated of the country's mines.

This is the second high-profile accident this year in a large State-run mine. In February,2009, 77 people died in an explosion at the Tunlan mine in Shanxi province. The company that ran the mine was a subsidiary of the Shanxi Coking Coal Group, one of the government's biggest coking coal enterprises.

China's mining industry is one of the least safe in the world. In 2008 alone, more than 3,000 people died in mines in explosions, floods and other accidents.

But authorities have, since 2005, strengthened safety laws, tightened enforcement and closed down many mines to improve safety. Last year alone, more than 1,000 illegal mines were closed down. Mining-related deaths have since fallen by 15 percent to 3,215 deaths in 2008, according to official statistics.

China had in the past four years closed down 13,000 mines and invested $ 2.2 billion in improving safety.

But most accidents take place at illegal mines, which make up around 80 per cent of the 16,000 mines. The soaring energy needs have seen hundreds of illegal mines pop up.

According to one recent government report, China accounts for 80 percent of worldwide deaths in coal mine accidents and produces 35 per cent of the world's coal.

HCFC leaks in USA

The US operations of BASF will pay $384,200 to resolve US Clean Air Act violations related to hydrochlorofluorocarbon (HCFC) leaks at company facilities in Texas, Michigan, Ohio and New Jersey.

The company will also spend more than $250,000 to reduce the use of refrigerant chemicals by retrofitting a Beaumont refrigeration unit in Texas with environmentally friendly alternatives, while also either retrofitting or retiring two other units.

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Fire in oil depot in Jaipur

The recent fire at Indian Oil Corporation's Jaipur depot, killed 11 people and damaged property worth Rs 1,000 crore. A committee has been constituted, under chairmanship of former Hindustan Petroleum Corp (HPCL) chairman to investigate and fix responsibility. The committee will submit its report in 60 days.

Officials who visited the site along with oil ministers found, to their surprise, that only two people were manning the depot, spread over 100 acres of land at the time of fire. However,IOC officials say that the plant is fully automated and therefore does not require large number of personnel.

IOC alone has 160 such depots across the country that provides fuel supplies to towns and cities. These installations were created about 20 to 30 years ago on the outskirts of the cities. But cities have expanded in natural course and many of these installations are now in the middle of town. Any fire at such installations would cause huge damage to life and property.

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Radiation leak at Kaiga n-unit

The Nuclear Power Corporation runs Kaiga, which is one of India's newer reactor complexes.

In an accident in Kaiga unit about 45 employees of the Kaiga atomic power plant suffered radiation poisoning when radioactive heavy water from the plant contaminated the drinking water meant for staff.

Though a tiny amount of radiation is normal, scientists said the contamination was unusual because the affected employees do not go into the actual reactor area but work around it.

Heavy water molecules have two atoms of deutrium instead of the hydrogen in drinkable water H_2O. It can lead to high levels of toxicity in humans which could be fatal.

PLANT CLOSURES

Clariant shuts master batch plants

Clariant will close its Milford, DE and Lachine, PQ masterbatches facilities and transfer production to sites at Albion, MI and Toronto, ON respectively.

Production at Milford will be phased out through mid 2010, while production at Lachine will end in December.

The closures are "absolutely essential and must be addressed, given the overcapacity that the economic downturn has caused in the market," says the company.

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Ineos Nova idles Texas city styrene monomer plant

Ineos Nova has idled its one billion lbs per year styrene monomer plant at Texas City, TX, citing weak margins.

The plant will be restarted when market conditions improve.

Ineos Nova has the capacity to produce nearly 3 billion lbs per year of styrene monomer at its Bayport and Texas City, TX plants and an additional 950 million lbs per year at its Sarnia, ON facility.

Ineos Nova is a joint venture between Nova Chemicals and Ineos.

*****

BASF to close maleic anhydride facility in Belgium

BASF will close permanently its Feluy, Belgium manufacturing operation by year-end. There is only one remaining BASF production unit at Feluy: a 115,000-tonnes per year maleic anhydride (MA) plant.

BASF says that its MA business is "suffering from unsatisfactory profitability" due to overcapacity and resulting low margins.Optimization measures implemented at Feluy over the past years "have not been sufficient to secure a sustainably competitive cost structure," the company says.

BASF purchased the Feluy site through the 2001 acquisition of Sisas. BASF closed most of the site's plants under a restructuring that was announced in 2005. Plants making phthalic anhydride, plasticizers, fumaric acid and butanediol derivatives were closed under the restructuring.

BASF workers at the Feluy site reacted to the MA closure announcement by launching strike action that caused the company to halt operations at the

plant. BASF declared force majeure on October 22 on deliveries of MA from Feluy.

There is one other company with manufacturing operations at BASF's Feluy site. Neochim, a subsidiary of Spiga Nord (Genoa, Italy), makes refined glycerine and biodiesel there. Neochim's 260,000- tonnes per year biodiesel plant uses waste steam generated by BASF's MA plant at Feluy.

Neochim has not announced whether it will cease operations at Feluy. However, the company confirmed earlier this year that it had been forced to take its Feluy biodiesel unit offstream frequently due to competition in the European market from biodiesel imported from the U.S., and Belgian legislation mandating relatively low biodiesel content in the country's diesel consumption.

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LyondellBasell abandons Chocolate Bayou Olefins unit

Equistar Chemicals, a LyondellBasell subsidiary, is seeking to abandon its olefins unit at Chocolate Bayou, TX,USA in a motion recently filed in the U.S. Bankruptcy Court for the Southern District of New York.

The company idled the unit, which has a nameplate capacity of 1.2 billion lbs per year of ethylene and 725 million lbs per year of propylene in December 2008, due to declining petrochemical demand and weak economic conditions. Equistar hoped to eventually restart the unit when demand would improve, but instead decided to exit operations at the facility. LyondellBasell' six other crackers in the U.S. can provide sufficient volumes to meet customer needs, the company says.

However, Equistar's olefins unit is situated on property leased from Solutia. Solutia sold its nylon assets at the site to Ascend Performance Materials in June, but retained its landlord status of the Equistar property.

Solutia and Ascend objected earlier this year to a court ruling authorizing LyondellBasell to walk away from its lease and allowing the company to abandon chemicals, distribution tanks piping and equipment at the location.

However, if Equistar wants to leave the facility behind, it must do so by abandonment, providing notice and an opportunity to object. A court ruling in September says that LyondellBasell cannot force Solutia or Ascend to accept property if they do not want it, especially because Solutia and Ascned would be burdened with considerable environmental obligations.

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NATURAL INDIGO
UNEXPLOITED AGRO CHEMICAL OPPORTUNITY

Natural indigo plantation, a drought resistant crop, which provides indigo blue dye for textile application was known in India for over 400 years.

Natural indigo was extensively cultivated in India in the 19th century and early part of 20th century. The natural indigo was cultivated in thousands of acres in the country and huge quantity was exported by the East India company and later on by British traders to Europe for use in cotton dyeing.

The indigo crop provided livelihood to thousands of farmers as a profitable crop in Bihar, Uttar Pradesh, Gujarat, Madhya Pradesh, Andhra Pradesh and Tamil Nadu.

BASF, the famous German company developed synthetic indigo as a substitute for natural indigo and introduced synthetic indigo in the global market in 1897.

Then gradually, the Indian natural indigo lost its export market,unable to withstand the competition from synthetic indigo. Synthetic indigo became popular in Europe due to its superiority in terms of colour strength and purity over natural indigo and it was also offered at a lower cost. It was convenient for European consumers to buy synthetic indigo from Europe, rather than importing natural indigo from distant India.

During the last several decades, after the natural indigo lost its export market, the natural indigo cultivation ceased in India for all practical purposes and the farmers became unaware of the nuances of cultivating natural indigo.

Now, the cycle has taken a full turn. With the environmental consciousness becoming widespread in the developed countries, the synthetic indigo has been losing its popularity in recent times due to its carcinogenicity and the environmental harm that it causes. To meet the expectations of the eco friendly consumers, quite a number of textile industries around the world are now looking for natural indigo, which is the only natural colour that provides blue dye.

There are huge demand around the world for denim cloth and cotton fabrics that would involve the use of natural dye and not synthetic dye.

India is particularly well placed for the cultivation of natural indigo in view of its tropical conditions which meets the requirement of the indigo crop very well. Natural indigo can be grown in red, black, alluvial and latteritic soils.

The most suitable area is red soil. Locations receiving 800 mm to 1600 mm rainfall are ideal for kharif cultivation.

Unfortunately, India is unable to utilize this developing opportunity, as the cultivation of indigo crop is now largely confined to a few pockets in Tamil Nadu and Andhra Pradesh.The indigo crop is now cultivated only in around 1000 hectares of land in the country and adequate attention by way of research and development activities to optimize the cultivation practices are yet to be put forth. The content of indicotin (the blue dye) in the indigo plantations in India is often low, while higher indicotin content of 70% and more is very much within the possibility by adopting better cultivation technics. Obviously, the farmers are cultivating the crop without adequate guidelines and there is lack of focus on the crop by the agricultural research bodies in the country.

From the indigo leaves, the indigo dye has to be extracted which essentially involves the process of hydrolysis. Whatever the extraction that is being done now in India are carried out without adequate technological inputs and without using proper chemical operations and process parameters. In the process, the quality and specification of the extracted indigo dye is poor and unacceptable to the textile industries in large measure.

Indian textile industry mostly use synthetic indigo now and imports small quantity of natural indigo largely from China. Several denim producers say that they have placed trial orders for natural indigo and experimented with the Indian supply but could not proceed to use natural indigo due to uncertain supply scenario and lack of consistency in the quality and specification of the Indian product.

At present, Indian cultivators largely export indigo leaves powder which means that the leaves from the plant are simply dried and powdered and exported without being converted to value added finished product (indigo dye). The overseas buyers take this raw powder and have to further process it to extract the indigo blue dye. While the export of indigo leaves powder is around 400 tonnes per annum which is an insignificant quantity, the production of extracted indigo blue dye in India is less than 10 tonnes per annum. This a very low and insignificant quantity, compared to the potential demand level for natural indigo dye by textile industries around the world.

Indigo plantation, which is a crop of four months duration can be kharif crop and can be planted immediately after the harvest of paddy crop. This is an ideal crop particularly for states like Tamil Nadu where farmers are often forced to keep the land unutilized due to want of water for several months in a year.

The natural indigo blue dye has to be extracted from the natural indigo crop leaves immediately after harvesting without loss of time and therefore the facilities for extraction of indigo dye from indigo leaves have to be set up proximate to the area of cultivation, that would boost the potential for employment in rural areas. For the states like Tamil Nadu, the indigo plantation offers great opportunities for research and development, cultivation and production, export market as well as employment generation.

BIOETHANOL FROM FEED STOCKS TECHNOLOGY DEVELOPMENT EFFORTS

TMO Renewables (Guildford, UK), has developed a process to convert at least 25 different biofeed stocks into ethanol. The company has successfully tested feedstocks including corn stover, municipal waste, used newsprint, and wheat straw at the company's Guildford demonstration facility.

The firm's process is based on a thermophilc geobacillus bacterium with the capability to digest a wide range of materials. The bacterium is commonly found in compost environments.

Process outline

TMO Renewables (TMO) has re-engineered the metabolism of the bacterium, TM242, to generate less lactic acid and more ethanol.

TMO has opted for a relatively simple and versatile system, unlike many firms developing cellulosic ethanol processes, which have sought to engineer microorganisms that efficiently convert a single feedstock into ethanol.

TMO's process features a feedstock pretreatment phase taken from the paper industry, in which the raw material is pumped into a reactor with steam, under pressure. Enzymes are added in a second step to break down the cellulosic "soup" into complex sugars. TMO uses an enzyme supplied by Novozymes. In a third step, TM 242 bacteria are introduced into a fermentation tank to convert the C_6 and C_5 complex sugars into ethanol, prior to the subsequent distillation step. For every gram of sugar, the process generates at least 0.4 grams of ethanol.

Advantages of the process developed

Relatively low energy use is one of the TMO process's main advantages. The technology also uses about 10% of the standard amount of enzymes necessary for comparable processes because TM 242 is able to consume longer-chain sugars than most other bacteria. This has enabled TMO to employ the steam pretreatment process, which is much simpler and quicker than that used in many other proposed cellulosic ethanol processes.

The TMO process's other advantages include its ability to use wet and dry feedstocks, avoiding the need for costly drying procedures. This equates to a 50% to 60% uplift in margins, equivalent to more than 40 cts per gallon of ethanol, compared with companies that have to pay to dry feedstock for their current processes.The company is seeking to establish licensing agreements worldwide for its process.

AYURVEDIC DRUGS TO COME UNDER QUALITY NET

There are reported to be over 9,000 producers of ayurvedic drugs in the country.

The department of Ayush of Government of India has launched a quality control system in which Ayurvedic drug manufacturing companies would need to get their products validated by third party certifiers authorised by the autonomous body Quality Council of India (QCI), mainly on the parametres of purity levels and good manufacturing practices. While the scheme is voluntary initially, it could become mandatory in future.

Many countries usually insist on recognised quality stamps, as most of them do not have regulatory system of their own unlike matured markets like the US and UK.

Currently, the domestic exporter incurs cost on lab tests in every batch of drugs to check conformity to GMP standards and purity. The same tests are then repeated by the clients in the importing country to check on the quality aspect, resulting in duplicity of efforts and added costs.

The Government of India has formulated two levels of standards for Ayurvedic drugs. A seal of 'Ayush standard mark' on a product would imply that it complies to all quality related domestic regulatory requirements prescribed under the Schedule T of the Drug and Cosmetics Act. If the product carries an 'Ayush premium mark', it signifies conformity to manufacturing standards as laid out by WHO for international trade.

Hyderabad-based FoodCert India is one of the two certifiers authorised by QCI till now to carry out the scheme.

The cost of certification would depend on the number of products and number of employees of an organisation among other factors. An organization, which has 20 employees and produces one product, would roughly need to invest about Rs 30,000 to 35,000 for the Ayush standard mark and around Rs 45,000 for the Ayush premium mark.

There are two schools of thoughts prevailing within health ministry on the future of the scheme. An arm of ministry foresees that the scheme would become mandatory and merging with the existing regulatory framework in times to come. However, another set of officials are skeptical, as it would mean having to amend law to make the seal a statutory requirement. However, even the latter concede that such a mark would gain in principle acceptance among state drug regulators, which regulate manufacturing, sale and distribution of drugs.

INDIA'S NELP PROGRAMME

The New Exploration Licensing Policy (NELP), approved in 1997 and launched two years later, helped kick off a major exploration programme in India.

The current licensing round, NELP VIII, puts 70 blocks up for exploration and production: 24 in water depths greater than 400m, 28 in shallow water and 18 onshore.

By the end of 1st quarter of 2009, the NELP programme had attracted exploration investment commitments of about $10 billion and increased India's acreage under licence fourfold.

India's offshore production

India's offshore production dates to the late 1970s, at the ONGC-operated Mumbai High field in the Mumbai Basin. The field is India's biggest producer and peaked in 1984 at about 450,000 barrels per day and has produced some 3 billion barrels to date. Mumbai High also yields more than 1billion cu.feet per day of gas.

Further exploration in the 1980s and 1990s brought a number of smaller fields into production, mostly in the Mumbai Basin, which still dominates India's offshore production.

In the mid-1990s, the Cairn India-operated Ravva field in the Krishna-Godavari Basin in the Bay of Bengal off the countrys eastern coast, came onstream and has been producing some 50,000 barrels per day since 2006.

Reliance Industries is producing gas at the D6 block in the Krishna-Godavari Basin, with volumes expected to reach up to 2.8 billion cu.feet per day shortly.

Programme NELP VIII

The offshore blocks on offer in NELP VIII, which closed on 10th August, 2009 include three shallow water blocks in the Bengal Basin where Reliance has plans to develop eight gas discoveries. One deepwater and four shallow water blocks are up for bid in the Krishna-Godavari (KG) region, where Reliance and ONGC have made 42 discoveries since May 2002, when Reliance announced its Dhirubhai 1 gas discovery.

Three shallow water blocks are on offer in the Cauvery Basin in South India, where only one offshore field operated by the Hardy Oil & Gasoperated PY3, is in production. Nine shallow water and four deepwater blocks are up for bid

in the Kerala Konkan Basin, where no discoveries have been reported and where the deepwater blocks on offer lie more than 300km from shore.

One deepwater and seven shallow water blocks are up for bid in the Mumbai Basin, where more than 100 discoveries have been made to-date. Two shallow water blocks are on offer in the Kutch Basin in the northwest, where small discoveries have been reported. The balance of 18 deepwater blocks up for bid lies in the Andaman Basin, a frontier region where ONGC reported a gas discovery in 1980. The blocks range from 800km to 1500km in distance from the Indian mainland.

Participating companies and operators

Company	Operator	Participant
Oil & Natural Gas Corp	84	12
Reliance Industries	27	4
BHP Billiton	7	0
Cairn India	5	3
BG E&P India	3	3
Gujarat State Petroleum Corp	2	18
Hardy E&P India	2	2
Santos International Operations	2	0
Eni India	1	1
Hindustan Oil Exploration Co	1	1
Petrogas E&P	1	1
BP Exploration (Alpha)	1	0
Essar E&P	1	0`
Focus Energy (India)	1	0
Gazpram	1	0
GAIL (India)	0	16
Hindustan Petroleum Corp	0	15
Oil India Ltd	0	9
GVK Infrastructure Oil & Gas	0	7
Tata Petrodyne	0	6
Bharat Petro Resources	0	4
Indian Oil Corp	0	4
Petrobras Intl SA-Braspetro	0	3
Niko Resources Oil Co	0	2
HPCL Mittal Energy	0	2
GeoGlobal Resources (India)	0	1
Jubilant Corp	0	1
Marubeni India	0	1
Newbury	0	1
Niko Resources	0	1
Noble Energy International	0	1
Rocksources ASA	0	1
StatoilHydro ASA	0	1
Videocon Petroleum	0	1

UPCOMING FLOATING LNG PLANTS

Following hard on the heels of the floating LNG (FLNG)) deal struck by Petronas, MISC and Mustang Engineering, a number of other oil & gas industry players have been busy raising their profile in what is seen as a potentially huge floating LNG market with particular significance for the Asia-Pacific region.

The new Petronas joint venture with MISC and Mustang is developing integrated FLNG solutions using Mustang's LNG smart liquefaction technologies and looking to have its first LNG FPSO facility produce first gas offshore Malaysia in 2013 .

In September, the Indonesian government, approving an Inpex development plan for the Abadi gas field in the east Timor Sea Masela block, gave the go-ahead to build a FLNG facility. The field, about 360 km north of Darwin in Indonesian waters, was discovered in 2000 and its substantial reserves were firmed up by a 2002 appraised well drilling programme.

Inpex Masela plans to start work shortly on a scheme that will ultimately offer 4.5 mtpa LNG production capacity and is looking to have it onstream in 2016. PT Tiara Energy, in co-operation with Flex LNG and Samsung, has offered to build three 1.8 mtpa FLNG facilities for the project at a combined estimated cost of $4.5 billion.

Flex LNG expects to take delivery of the world's first FLNG unit- the LNG Producer – in 2011. Samsung has firm turnkey orders for three more LNG producer hulls and they are under consideration for projects of Paua New Guinea and Nigeria .

In other recent moves, Santos and LNG player GDF Suez established a 60:40 unincorporated joint venture looking to develop a 2mtpa FLNG plant in Australia's Bonaparte Basin, utilizing gas from the Petrel, Tern and Frigate fields. GDF Suez will lift all the LNG production and ship it to Asia-Pacific markets and becoming operator in 2011 .

Shell meanwhile continues to focus its attention on the upper end of the FLNG installation range. Shell Gas & Power Developments has signed a master agreement with a consortium of Technip and Samsung for the design and installation of multiple FLNG facilities over a period of up to 15 years.

Their first assignment is execution of FEED for the 3.5 mtpa FLNG solution currently favoured by Shell. With dimensions of 450 m × 70 m and a topside weight exceeding 50,000 t, this concept's 3.5 mtpa LNG capacity plus associated LPG and condensate production would have a total liquids production potential of over 5 mtpa.

ANTI DUMPING PAGE

Caustic soda

India's Ministry of Finance has recommended the imposition of a 20% safeguard duty on liquid caustic soda imports into the country for 200 days. The ministry made the recommendation after an investigation, which was launched in response to a petition filed by the local chlor-alkali association in July.

*****

PVC paste resin

The Designated Authority in the Commerce Ministry of Government of India has started an anti-dumping investigation probe on the import of `Poly Vinyl Chloride Paste Resin', also known as PVC paste resin, from China, Japan, South Korea, Malaysia, Taiwan and Thailand.

The probe precedes a petition filed by Chemplast Sanmar Ltd, which claimed that there is no significant difference in the imported item and the one domestically produced by it. It said that both are technically and commercially substitutable with the consumers using the two interchangeably.

PVC paste resin is also known as Emulsion PVC resin and there are two types PVC paste resin and PVC suspension resin, the latter being excluded from the ambit and scope of the proposed probe. The PVC paste resin is made from vinyl chloride monomer and is produced and sold in the form of white and off-white powder.

The period of investigation is from April 1,2008, to March-end 2009, while the injury investigation span would cover 2005-06, 2006-07, 2007-08 and the period of investigation.

*****

Soda ash

The Finance Ministry of Government of India has imposed 20 per cent safeguard duty on all soda ash imports from China as part of its efforts to help maintain a healthy domestic soda ash industry in the country.

The move is also aimed at ensuring a steady and reliable source of soda ash to the downstream user industry.

This final safeguard duty has been levied for a period of one year from the date of the provisional safeguard duty, which means that the final duty would remain in force up to April 19,2010.

Tata Chemicals, the second largest producer globally, has manufacturing facilities in India, Kenya, the UK. It is decommissioning a facility in the Netherlands. GHCL has manufacturing bases in Europe and the US. Nirma too makes soda ash. DCW is the other listed local manufacturer.

In the first quarter of 2009-10, soda ash imports into India from China surged to 1,10,329 tonnes as compared to 10,046 tonnes in the same quarter in 2008-09 and 2,256 tonnes in 2007-08.

The Alkali Manufacturers' Association of India (AMAI) on behalf of Tata Chemicals Ltd, Gujarat Heavy Chemicals Ltd, Saurashtra Chemicals Ltd, DCW Ltd and Nirma Ltd-had filed the petition seeking a safeguard duty on soda ash imports from China.

*****

Silk

India imported silk items like raw silk, silk yarn and fabric worth Rs.1,713 crore in 2008-09, up from Rs.1,597 crore in the previous fiscal. In value terms, raw silk imports increased to Rs.900 crore in 2008-09 from Rs.734 crore a year ago.

In addition, India imported silk yarn and fabrics worth Rs.812 crore primarily from China during 2008-09. In terms of volume, India's total raw silk imports increased to 8,369 tonne in 2008-09 from 7,922 tonne a year ago. Of this, a major chunk of 8,297 tonne was imported from China, up from 7,840 tonne in the previous fiscal.

Besides China, India imported a minuscule amount of 72 tonne of raw silk from Uzbekistan, Brazil, Hong Kong, Vietnam and a few other countries.

In fact, India could not bring down imports of Chinese silk, as the gap between domestic silk production and demand for silk-based products widened. China is the only source for India to meet its demand for silk.

An anti-dumping duty on silk fabric was imposed for five years from 2006. The country is facing shortage of around 8,000 to 9,000 tonne, and depends on China to meet its demand.

*****

GPCA slams antidumping procedures against Mideast Petchem Exports

The Gulf Petrochemicals and Chemicals Association (GPCA; Dubai) will challenge antidumping procedures launched recently by China, the European Union (EU), and India against petrochemical exports from the Gulf

Cooperation Council (GCC) region, labeling the cases "protectionist measures in the garb of antidumping procedures."

GPCA plans to investigate and recommend "specific actions" against trading partners that "restrict GCC petrochemical and chemical exports."

China imposed antidumping duties last June on imports of butanediol from Saudi Arabia and launched an antidumping investigation into methanol imports from Saudi Arabia, as well as from Indonesia, Malaysia, and New Zealand.

India slapped provisional antidumping duties on imports of polypropylene from Oman and Saudi Arabia, as well as from Singapore, and is investigating whether to make the duties permanent.

The EU launched an antidumping inquiry recently into polyethylene terephthalate imports from the United Arab Emirates and Iran, as well as Pakistan.

*****

Saccharin

In its mid-term review of the anti-dumping duty currently in force on imported Saccharin from China, the Designated Authority in the Commerce Ministry of Government of India held that the subject goods are entering the Indian market at dumped prices.

Also, the dumping margins of the subject goods imported from China are significant.

A mid-term review is normally undertaken after definitive anti-dumping duty runs the third year of its five-year span to decide on the continuation or cessation of the duty. The decision depends on the persistence of injury to the domestic industry producing the like product.

Stating that Saccharin is more than 500 times sweeter than sugar, the Authority said that all forms of Saccharin – soluble saccharin and insoluble saccharin produced in granular and powder form – are within the purview of the present investigation.

The Authority noted that the product continues to be exported at dumped prices by China and the current dumping margin and injury margin irrefutably establishes the need for revision in the existing anti-dumping duty.

The review has pointed out that the situation of the domestic industry continues to be fragile with the likelihood of resumption of dumping. And

import of the subject goods from China are causing injury to indigenous industry.

The Authority held that the measure is needed to be extended and the quantum of anti-dumping duty needs to be modified.

Accordingly, while all grades of Saccharin produced by Shanghai Fortune Chemicals Ltd, China must perforce fork out an anti-dumping duty of $0.96 per kg, other producers/exporters from China or those using China as an export base will have to pay an anti-dumping duty of $3.99 per kg of Saccharin.

*****

Adipic acid

The Ministry of Commerce of China (MOC) announced November 11th its determination concerning adipic acid imported from the United States of America, the European Union and Korea.

China instituted the adipic acid dumping probe on November 10th, 2008.

The MOC found that adipic acid imported from above mentioned countries and region was dumped into China during the investigation period, injuring domestic adipic acid industry.

Under the determination, the Customs Tariff Commission of the State Council decided to levy the antidumping tariff on the adipic acid case over five years, effective November 2nd , 2009. And all importers, when importing adipic acid from these sources, must pay the tariff to the Chinese customs.

The tariff ratios for respective sources of adipic acid are as follows:

USA:

Ascend Performance Materials LLC	16.8%
All others	35.4%

EU

Radici Chimica S.P.A.	7.4%
Radici Chimica Deutshland GMBH	7.4%
BASF SE	9.8%
All others	16.7%

Korea

Rhodia Polyamide Co.Ltd	5.9%
Asahi Kasei Chemicals Korea Co	5.0%
All others	16.7%

*****

Coated papers import

The Safeguards Authority has turned down the domestic producers' plea for imposition of safeguard duty on coated paper and paperboard imports.

ITC Limited's paperboards and speciality papers division, Ballarpur Industries and JK Paper Ltd had filed the petition seeking safeguards duty on coated paper and paperboard imports. Indian Paper Manufacturers' Association had supported the application.

The Safeguards Authority noted that the term "serious injury" means significant overall impairment in the position of the domestic industry. It has highlighted that a profit-making domestic industry that has the maximum production, maximum sales, maximum capacity utilisation and been undertaking capacity expansion during the entire period of consideration cannot be said to be in the position of significant impairment.

"There is no evidence that the increased imports at higher prices are threatening to cause serious injury to the domestic industry," the Director-General (safeguards) said.

The share of imports relative to production has gone up from 30 per cent in 2006-07 to 33 per cent in 2007-08 and 39 per cent in 2008-09 (upto December 2009).

*****

Adipic acid

China has imposed definitive antidumping duties of between 5.9% and 35.4% on imports of adipic acid from the European Union (EU), Korea, and the U.S.

The duties will be in force for five years.

Mofcom has been investigating adipic acid imports for one year and imposed preliminary antidumping duties on product from the EU, Korea, and the U.S. last June.

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LAB

The Department of Revenue, under the Ministry of Finance, has not recommended safeguard duty on linear alkyl benzene (LAB) imports into the country in view of the necessity of exports of the product for Indian companies.

Responding to an application submitted jointly by Reliance Industries Ltd. (RIL), Tamil Nadu Petroproducts Ltd. (TNPL), Nirma Ltd. (NL) and Indian Oil Corporation Ltd. (IOC), the authority conducted an investigation over the imports of the product from Iran, ?Switzerland and Saudi Arabia. The domestic LAB producers requested the authority to impose safeguard duty on the imports, in order to protect the domestic industry against the consequences of imports. The investigation, conducted by the authority, revealed that heavy imports were indeed taking place in the country, thus, substantiating the claim of the companies.

*****

PET film

On August 25, 2009, the US Department of Commerce initiated an administrative review of the countervailing duty (CVD) order on PET film from India covering one producer/exporter, Jindal Poly Films Ltd., for the period January 1, 2008, through December 31, 2008.

On October 26, 2009, Jindal filed a timely withdrawal from its request for a countervailing duty administrative review.

The Department's regulations provide that the Department will rescind an administrative review if the party that requested the review withdraws its request for review within 90 days of the date of publication of the notice of i nitiation of the requested review, or withdraws its request at a later date if the Department determines that it is reasonable to extend the time limit for withdrawing the request. .

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Sodium nitrate

The Directorate General of Anti-Dumping and Allied Duties, under the Ministry of Commerce and Industry of Government of India has recommended for the extension of the period of the prevailing anti-dumping duty over the Imports of sodium nitrite into the country from China.

During the investigation, it was found that the volume of imports of the product from China was increasing, despite the imposition of anti-dumping duty, and, the Chinese imports were occupying a major portion in the Indian market share. And, most importantly, the Chinese imports were reducing the prices of the domestic product in the country.

GLOBAL LITHIUM SCENARIO
LITHIUM BATTERIES DRIVING DEMAND

Lithium stores a large amount of energy for its volume, which makes it suitable for application in electronic industry.

In a mobile phone or PDA, there is about one-tenth of an ounce (0.284g) of lithium in the battery. But hybrid electric vehicles batteries are projected to contain about 20lbs (9kg) of lithium.

Lithium sells for roughly $1 per kg.

Global lithium reserves

At the 2009 Lithium Supply & Markets conference, held in Santiago, Chile in 2009, global lithium reserves and resources were estimated at nearly 25 million tonnes, with 7.6 million tonnes from mining and 17.4 million in continental brines.

Lithium producing countries

Leading lithium producing countries include Bolivia, Brazil, Canada, China, Finland, Portugal, Serbia, the US (in Nevada) and Zimbabwe.

The Andean areas between Bolivia, Argentina and Chile are referred to as the Lithium Triangle.

Bolivia's reserves are projected at about 5.4 million tonnes

Chile has estimated reserves of 3 million tonnes and Argentina about 0.4 million tonnes.

China's capacity including Tibet is likely to add another 10,000 tonnes per year of production capacity by 2010.

Project plan in Bolivia

At the start of October,2009, the government-run Bolivian Mining (Comibol) revealed its plan to invest about $400m to build a lithium carbonate plant at Salar de Uyuni.

Bolivia says the site will be producing by 2014 .

Construction was started on a smaller processing facility in March 2008, and Bolivia says the plant will be completed by the end of 2009. The cost of this unit has risen from its initial estimate of $5.7million to $8million due to delay in project completion.

Major producers

The major lithium producers are

* Rockwood / Chemetall (with reserves in Nevada and Chile)

* FMC (Argentina)

* Sociedad Quimica y Minera (SQM), based in Chile and 32% owned by PotashCorp of Saskatchewan and 2% by Japan's Kowa.

Thrust area for demand

The future growth in demand for lithium would be contributed by the automobile sector

Currently, demand for lithium from automobiles sector is negligible . But by 2015, demand from hybrid electric vehicles (HEV) will be about 10,000 tonnes, expected to increase to 81,000 tonnes by 2020.

Global automotive industry is setting the stage for rechargeable lithium-ion batteries to emerge as the enabling technology for hybrid electric vehicles (HEV). Sales of lithium for HEV batteries are expected to exceed $500 million by 2015.It is estimated that about 1 million hybrids will be sold by 2010 and double that by 2015.

By 2015, battery usage is expected to comprise almost half of lithium revenues, with electric vehicle battery usage explaining up to one-quarter of overall lithium revenues, up from less than 1% in 2007.

Lithium use in lithium-ion batteries is already well-established, and the technology is being used in progressively larger applications.

The first phase of penetration was in cell phones, which require about one-tenth of an ounce of lithium carbonate per battery.

Laptop computers were the next phase of penetration for lithium producers, requiring about 10 times the amount of lithium carbonate than does a cell phone.

A lithium battery in a plug-in HEV will require more than 100 times the lithium content of a laptop computer battery.

Other application areas

Lithium demand in the near term will be largely driven by strong demand from the pharma sector for butyl lithium and for both lithium carbonate and lithium hydroxide for other battery applications.

Beyond battery applications, moderate growth rates in the medium-term include lithium hydroxide for greases, lubricants, lithium carbonate for glasses and frits, and lithium carbonate for air conditioning, among others.

With the ongoing drive to reduce energy demand and decrease Co_2 emissions in basic industries, consumption of lithium in ceramics, glass and aluminium could benefit from regulatory controls given its use as an energy saving additive.

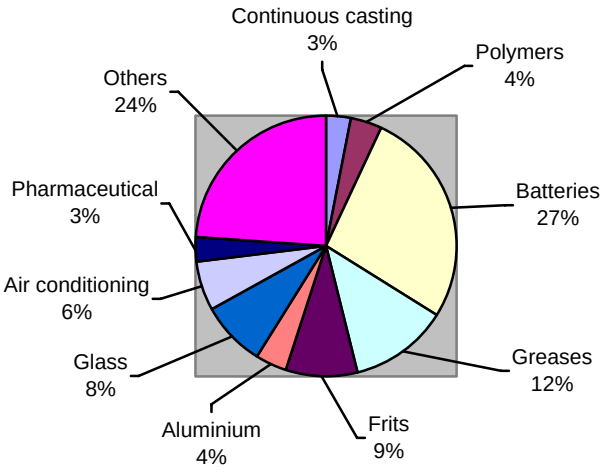
Demand growth

Lithium industry would enjoy a compound annual growth rate (CAGR) of 7.2% from 2009 to 2015 mainly due to demand for lithium ion batteries.

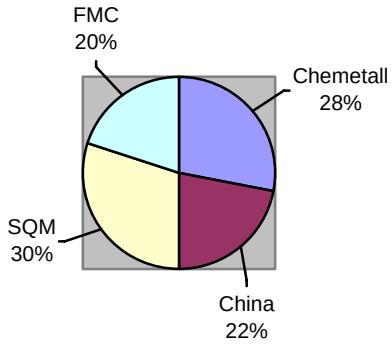
Global demand

Global demand for lithium expressed in lithium carbonate equivalents is estimated at 70,000 to 80,000 tonnes per year.

Lithium demand pattern by end user market 2009



Global lithium market share



Supply scenario

Lithium supplies from existing and expanded operations are more than sufficient to meet potential demand for 500,000 lithium-powered vehicles in 2015 and could meet demand for up to 2m lithium-powered EVs and HEVs in the same period.

Global production

Global lithium production, expressed in lithium carbonate equivalents, is estimated to be between 50,000 tonnes per year and 80,000 tonnes per year.

The major producers are Chile, Argentina and the US.

Production process

Lithium was previously extracted from spodumene mineral deposits. However, production via this process requires many more extraction steps due to low purity, and it is an energy-intensive process. China is the only country that produces large quantities of lithium carbonate from spodumene.

Production from continental brines

Melting snow from the Andes Mountains runs about 39.6 meter underground, into lithium deposits, then gathering into pools of salt water, or brine.

The brine is pumped out from under salt flats such as Chile's Salar de Atacama, and spread among networks of ponds, where the desert sun and high altitude provide a beneficial environment for evaporation.

It takes about a year for the brine to reach a lithium concentration of 6%, when it is shipped to a plant to be purified, dried and crystallized into lithium carbonate, which then is granulated into a fine powder for battery makers.

Lithium production via the brine method is much less expensive than mining. Lithium from minerals or ores costs about $4,200 to 4,500 per tonne to produce, while brine-based lithium costs around $1,500 to 2,300 per tonne to produce.

The three major lithium suppliers extract lithium from brine reserves in the "lithium triangle," a series of salt flats located along the borders of Argentina, Bolivia, and Chile.

SQM and Rockwood extract lithium from Chile's Salar de Atacama that has "considerable" advantages compared with other salt lakes. These include a high lithium concentration and evaporation rates, which allow producers to use solar energy in the production process.

Outside South America, Rockwood also has brine production at Silver Peak, NV.

FMC produces lithium from its reserves at Salar de Hombre Muerto in Argentina using a filtration process that is faster but more costly than other processes.

The largest of the Chinese brine deposits has a high magnesium-lithium ratio and would need more complex processing.Magnesium prevents the formation of lithium chloride in the evaporation fields and is the "most deleterious" element to producing lithium from brine. The magnesium-lithium ratio is relatively low at the Salar de Atacama, where SQM and Rockwood operate and very low at the Salar de Hombre Muerto, where FMC operates.

Developmental project in China

China has set up a low-cost developmental project based on brine in Qinghai Province that recently started pilot production of several thousand tonnes. The plan is to raise the output capacity to over 20,000-tonnes per year.

In addition, another project on the scale of several thousands of tonnes annually is reportedly in progress in Tibet. With these projects coming on stream, China will not only be able to cover its domestic needs, but will become a top global supplier of lithium carbonate, producing one-fourth of the world's requirement.

PECTIN – INVESTMENT OPPORTUNITY

Pectin is produced from edible plant material usually citrus fruits or apples, by aqueous extraction.

Pectin consists primarily of a chain of galacturonic acid units linked by bonds. The galacturonic acid chain is partially esterified as methyl esters.

Product characteristics

* Light coloured powder
* Producing high clarity solutions
* High, uniform gel strength
* Good protein stabilisation

Grades

Pectin is classified by the degree of methylation

- Low methoxy pectin (LM Pectin)
- High Methoxy Pectin (HM Pectin)

Low methoxy pectin (LM pectin)

- Pectin in which less than 50% of the carboxyl units occur as the methyl ester

High methoxy pectin (HM pectin)

- Pectin in which more than 50% of the carboxyl units occur as the methyl ester.
- HM pectin requires 55 to 85% sugar and p_H 2.5 to 3.8 in order to gel.
- These requirements limit the possible uses of HM pectin as a gelling agent to sweetened fruit products.

Applications

Pectin has the ability to add viscosity and stabilize emulsions and suspensions.

Pectin is used as gelling agent to impart a gelled texture to foods, mainly fruit based foods.

Application sector

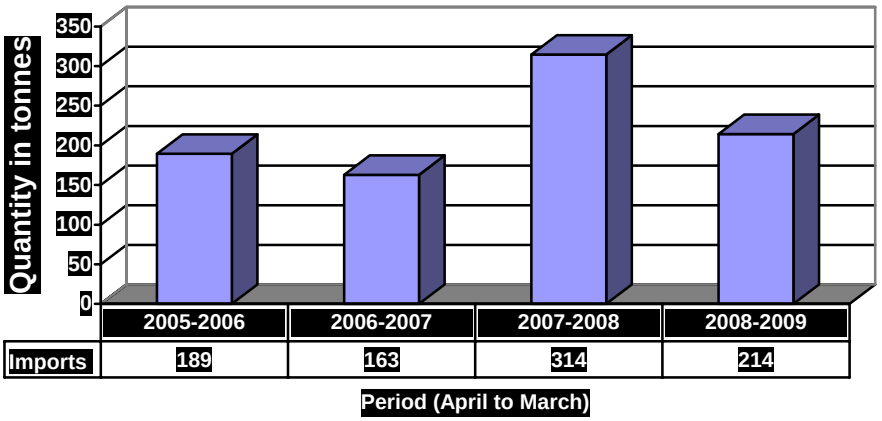
Grade of pectin generally used	Application area
HM pectin	• Jams and jellies • Fruit juice • Fermented dairy products • Confectionery products(fruit jellies)
LM pectin	• Yogurt • Fruit/milk desserts

Non food uses of pectin

In the preparation of laxatives and face treating pharmaceuticals

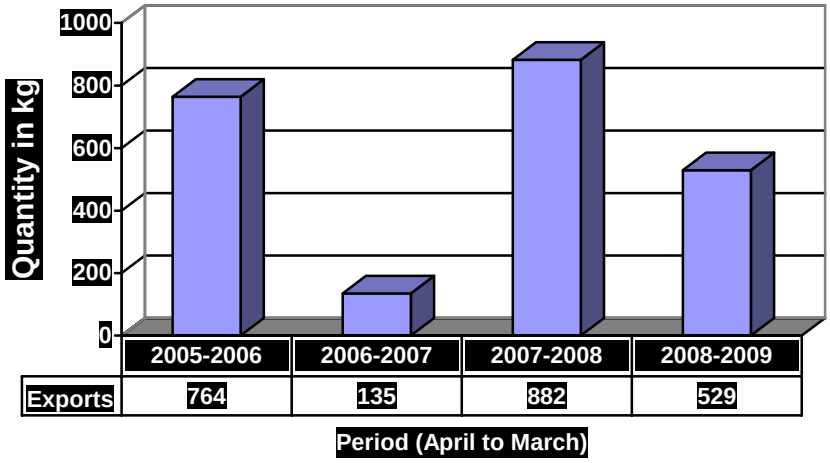
Import

Quantity in tonnes



Export

Quantity in kilograms



Indian manufacturers

* Krishna Pectins Private Limited, Maharashtra
* Enzo-Chem Laboratories Pvt. Ltd., Maharashtra
* Southern Citrus Products Pvt. Ltd.,Andhra Pradesh

The units are reported to operate at low capacity utilization level and sometimes intermittently due to the non availability of raw material.

Indian demand

Indian Demand Around 350 tonnes per annum

Indian demand is largely met by imports

Present demand level is much less than potential demand level due to lack of application development efforts. The process of food industry is still in nascent stage in the country.

Growth rate in demand 7% per annum

Constraints facing the Indian pectin industry

- Sourcing of suitable quality raw material..

- In India, there are many applications for citrus lime like pickles, beverages, etc. and only the waste fruits come for processing. The volumes are less.

Raw material

- Citrus pectins are derived from the peel of the lemon and lime and to a minor extent, orange and grape fruit.

- Citrus peel is a byproduct from juice and oil pressing .

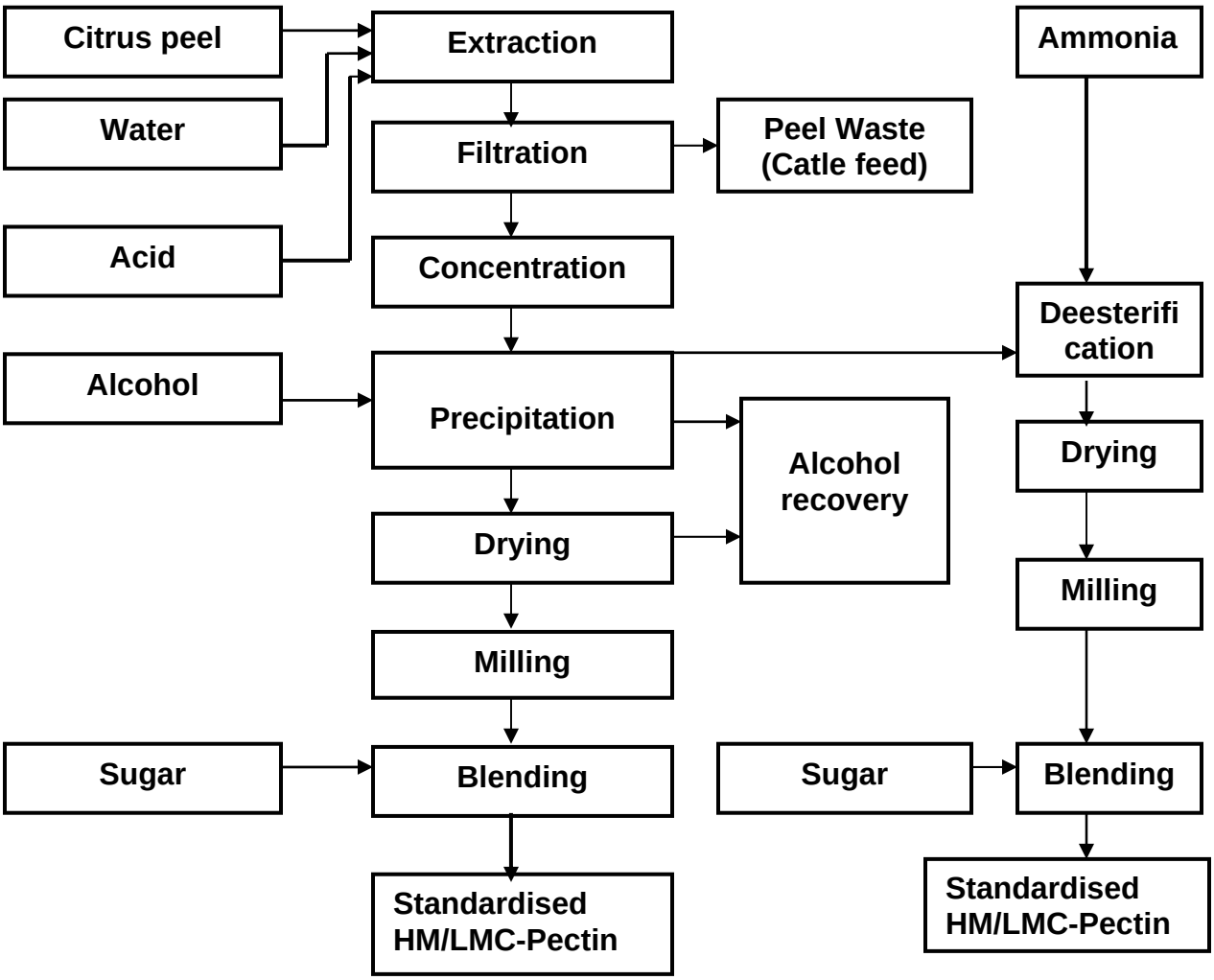
- Apple pomace, the residue from apple juice pressing, is the raw material for commercial apple pectins.

Process

Process steps:

- Extraction from plant material with hard acidified water.
- Purification of the liquid extract
- Precipitation of pectin with alcohol, from concentrated (2 to 4%) pectin solution
- If low ester (LM) pectin is the end product desired, then de esterification of the high ester (HM) pectin is required.

PECTIN MANUFACTURING PROCESS



Global pattern of raw materials used for pectin production

Raw material	% use
Citrus (Lemon/Lime/Orange)	85.5
Apple	14
Sugar beet	0.5

GLOBAL SCENARIO

Production 42000 tonnes per annum

Growth 3 to 6%

Global market for pectin

End use	Consumption In tonnes	% share	Growth rate (%)
High sugar jams	12600	30	4
Acidified milk drinks	6300	15	1.5
Low sugar jams	5880	14	1.5
Bakery jams	3780	9	8
Yoghurt fruit preparations	3360	8	1.5
Fruit beverages	3360	8	4
Confectionery	3360	8	3.5
Pharma/tobacco	2100	5	2
Dairy	840	2	8-12
Others	420	1	1
Total	42000		4.5 to 5.5

Major global producers

* CP Kelco
* Danisco
* Cargill
* H& F
* Yantai

Global player - CP Kelco

Founded in 2000 by merger of following organisatioins :

Copenhagen Pectin (Hercules)
Kelco Biopolymers (Monsanto) and later
Noviant

Produces pectin from orange, apple and lemon peels in several facilities.

Global player - Danisco

Danisco is the world's second largest pectin producer.

Trade name Grindsted pectin

Global market share 25%

Facilities

- Tecoman, Mexico
- Denmark
- Smirice, Czech Rep.

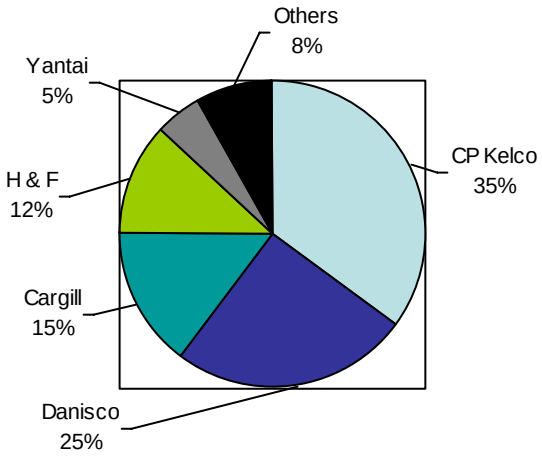
Global player - Cargill

The company is the third largest producer of pectin in the world.

Cargill acquired Citrico International

Facility Germany
Plant capacity: 4500 tonnes per annum

Market Share of major global players



PROGNOSIS

India has fruits going waste and on other side, India is importing product like pectin.

Pectin industry is bound to have high growth in demand, in view of highly relevant application of the product.

FOCUS ON OMEGA-3 FATTY ACIDS

OMEGA-3 FATTY acids are becoming popular in health foods such as food and beverage products, as well as dietary supplements.

Scientific studies report that omega-3 fatty acids are beneficial to heart, joint and brain health and for cognitive functioning and developments, especially for infants and children.

Recent studies tentatively support the use of omega-3 fatty acids in treating depression, therapeutic management of autism, preventing age-related blindness and decreasing the risk of prostate cancer.

Next to probiotics, omega-3 is sought after functional ingredient right now and it is successful in both dietary supplements and fortified/functional products.

Omega-3 as antidepressants

The results of a major review of published research that examined the relationship between depression and level of omega-3 fatty acids in the diet suggest that omega-3 fatty acids have antidepressant effects.

However, the researchers point out that it is still too soon to say definitively that omega-3s can treat depression or bipolar disorder.

More studies are also needed to determine the appropriate dosage and the best composition of omega-3 supplements, as well as the patients who are most likely to benefit from the therapy, Drs. Pao-Yen Lin of Chang Gung, University College of Medicine in Kaohsiung and Kuan-Pin Su of China Medical University Hospital in Taichung, both in Taiwan, conclude.

Types

Process technology for omega-3 fatty acids have steadily improved and are now produced in various forms, which can be used successfully in a wide range of end-products in foods, beverages, supplements and infant formulas.

Commercially important omega-3 fatty acids include the short-chain alpha-linolenic acid (ALA), which is found mainly in plant sources such as nuts and seeds and the long chain eicopentaenoic acid (EPA) and decosahexaenoic acid (DHA), which are found in marine oils and algae alpha-linolenic acid (ALA) from plants like flax .

EPA and DHA are said to be the main health benefit contributors associated with omega-3.

The omega-3s are not created equal, and different fatty acids have been associated with different benefits.

Much attention has been paid to the conversion of ALA to the longer chain EPA.Between 8 and 20 per cent of ALA is reportedly converted to EPA in humans, and between 0.5 and 9 per cent of ALA is converted to DHA.

In addition, the gender plays an important role with women of reproductive age reportedly converting ALA to EPA at a 2.5-fold greater rate than healthy men.

This conversion obviously contributes to the body's pool of EPA and DHA, which play a key role in, amongst other things in maintaining cardiovascular health.

Market size

Netherlands-based producer DSM estimates the global value of the fish oil and algae-based omega-3 ingredient market at $1.2bn to $1.5bn. Current growth is put at 10 to 13% per year.

A recent report by global consulting firm Frost & Sullivan estimates global consumption of marine and algae omega-3 ingredients last year at 67450 tonnes. North America is the largest consumer of 26,948 tonnes, followed by Asia-Pacific at 21,145 tonnes, the EU (13,595 tonnes) and the rest of the world (5,762 tonnes) of omega-3 ingredients.

UK-based Croda, estimates the global refined oils and concentrated omega-3 ingredients market to be worth $1.3bn.

Regulatory issues

There is increasingly favorable regulatory environment towards omega-3s, especially in the US and Australia. It is expected that recommended daily intake levels for long-chain omega-3s will soon be established by official and government institutions.

Producers

The current number of producers of omega-3 in the world is more than 30.

Companies like Ruess focus specifically on forms, while others show their strengths in sourcing and basic refining.

DSM has focused on the development of high quality oils and forms specific for targeted applications in food, dietary supplements and infant formula.

The market for algal omega-3 is currently dominated by two firms: Martek Biosciences (US) and Lonza (EU). There are a number of smaller players trying to squeeze in, but they have a minor impact due to the network of patents that currently protect the market.

Croda focuses on the manufacture of high-purity omega-3 concentrates for the supplement and pharmaceutical industries.

Cognis entered the market fairly recently with the acquisition of Norwegian fish oil concentrate producer Napro Pharma three years ago.

Issues

Omega-3 oils are unstable to oxidation due to their degree of unsaturation. Therefore, great care and attention is required in handling them.

Starting material

Fish and fish oil, as well as flax seed oil, are rich sources of omega-3 polyunsaturated fatty acids (PUFAs).

While fish, especially salmon and tuna, are known to be one of the best food sources of omega-3, they are also associated with high mercury levels, which limits the amounts one can consume

Fish oils

Fish oil is by far the biggest source for omega-3, estimated to account for some 85 percent of the market by volume.

Almost all the fish oil produced in the world comes from South America and Morocco, and only a tiny percentage of global crude fish oil production is actually channeled into the market for human consumption, with the rest being used for fish feed and animal feed.

According to the Global Organization for EPA and DHA (GOED), an omega-3 trade association, around 6 to 10 percent of the total one million tonnes crude fish oil produced per year is refined to produce omega-3 for human consumption. The figure from the International Fishmeal and Fish oil Organisation (IFFO) is even smaller, placing human consumption at less than 3 percent.

Most of the refining takes place in facilities in Norway and Canada, with some also sent to the UK, Japan and the US. According to Frost & Sullivan figures published in 2007, the US market for fish oil stands at 17,384 tonnes and the EU market at 13,340 tonnes per annum.

The one potential threat to the supply of marine-sourced omega-3s is environmental. Warmer waters, possibly as a result of El Nino conditions, are thought to have contributed to lower DHA levels in fish oil from South American waters over the last few years.

This has meant that it has been harder to find the standard 18:12 ratio fish oil (18 percent EPA, 12 percent DHA).

Algal oils

Algal oil, which is a concentrated source of DHA and is used primarily for infant health (90 percent of total volumes) or cognitive benefits, currently accounts for 3 percent of the total omega-3 market .

The algae are produced in Martek's and Lonza's factories, and then undergo an extraction and refining process. Algal-sourced omega-3 oils generally range from around 40 to 50 percent DHA.

Although this type of omega-3 is predominantly used in products for infant health, the suppliers are encouraging its use in other areas as an alternative to fish omega-3. One of the advantages promoted is the vegetarian origin.

Frost & Sullivan estimates that the EU market for algal-sourced omega-3 is $56m, while the US market is $83m. Some people think that this is understated.

One of the key issues in the algal-sourced omega-3 market is the web of intellectual property, which has so far kept smaller competitors from entering. However, Martek's patents will begin expiring in the next decade, which will encourage other suppliers into the market and place downward pressure on price.

Plant oils

Flaxseed is currently by far the largest source of plant-based omega-3. Frost & Sullivan estimates that the flax seed sector accounted for 13 percent of the volumes of omega-3 ingredients in 2007.

Flax oil generally contains around 50 to 60 percent ALA, a short-chain fatty acid.

Supply of omega-3 from flax is subject to the environmental challenges that face all farmers.

Also, flax competes for acreage with other oilseeds such as canola, which can also potentially impact flax production. This may lead to short fall in supply at times.

Major suppliers of flax omega-3 include Pizzey's Nutritionals (recently purchased by Glanbia), Bioriginal, Degussa, Biodroga, Barleans and Arista Industries.

A promising emerging area in plant-sourced, omega-3 production is the modification of the fatty acid profile of oils from regular oilseeds in order to produce plant-sourced EPA/DHA.

Demand driver

There is strong and growing scientific evidence on the health benefits of EPA (eicosapentaenoic acid) and DHA (docosahexaenoic)-based omega-3.

The market of omega-3 ingredients geared toward specific health conditions such as cognitive, joint and immune health will begin to expand as people increasingly look to self-treat to save money.

Efforts to improve omega-3 content in plants

The world's big agricultural firms, such as Monsanto, Solae, BASF and Dow AgroScience are currently working on producing long-chain fatty acids from oilseeds such as soy, canola and flaxseed. Some initial production has been successful at a pilot scale, and there are estimates that the technology could result in plant-soured EPA/DHA reaching the market within around three to seven years.

Monsanto is developing soybeans with stearidonic acid (SDA) omega-3 fatty acids, as well as its own high oleic soybeans.

Monsanto has been working with Germany's BASF Plant Science on the production of healthy fatty acids in canola oil, including omega-3 fatty acid eicosapentaenoic acid (EPA) as well as a mixture of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) for food, feed and dietary supplement applications.

When commercialized, Dow AgroSciences and Martek's new healthy oil will be marketed to the food industry as part of Dow AgroSciences' "next generation" of food industry oils. Meanwhile, via its Nexera line of canola and sunflower seeds, Dow AgroSciences has created a series of oils it calls Omega-9s, with zero trans fat and high levels of mono unsaturated (omega-9) fat. Since canola natually has zero trans fat and low saturated fat, the company's goal is to add a higher omega-9 content.The resulting product can

allow up to 50% longer fry life than partially hydrogenated soybean oil and other commonly used frying oils.

Development efforts for omega-3 from pig

Researchers have now turned to pigs for the production of omega-3 fatty acids – known for their ability to help reduce the risks of heart disease as well as their capacity to increase brainpower.

Given their similar physiology to humans, pigs genetically engineered to make omega-3 could prove useful models to see what happens if we increase the omega-3 levels in the body.

While fish, especially salmon and tuna, are known to be one of the best food sources of omega-3, they are also associated with high mercury levels, which limits the amounts one can consume

Formulation producers

Findus has signed up David Beckham to captain the team that will promote its newest product, MEGAO3 Omega-3 capsules. The international soccer player and fashion icon is endorsing the brand through his football academy.

Findus manufactures the tablets according to a 100-year-old Norwegian recipe, using "fat" mackerel and herrings caught in the Antarctic Sea. It takes Omega-3 from the meat of oily fish, as opposed to using cod liver oil. The fish oil is refined in natural triglyceride form, using alcohol to detach the three fatty acids present from glycerol. It is then double distilled to re-attach the glycerol, ensuring that the oil returns to its natural and most bio-available triglyceride form. The tablets also contain vitamins A, D and E, as the antioxidants in these vitamins help maintain the freshness of the oils. The capsule shells are made from fish gelatine.

Patent dispute

Martek sued Lonza for the infringement of patents related to the production of DHA, an omega-3 fatty acid.

The jury found Lonza infringed three patents, which it claimed were invalid

PROBIOTIC FOOD LIKELY TO COME UNDER CLINICAL TRIAL AMBIT

The probiotic food industry in the country may have to establish the safety and efficacy of their products through clinical trials just like drugs, if they wish to use the word "probiotic" on their label, according to Indian Council of Medical Research (ICMR) draft guidelines.

Even imported products, which may have already undergone requisite trials in other geographies, would have to be tested on Indian population before they are granted marketing approval, ICMR recommends.

"The commercial probiotic cultures currently used in India are of foreign origin. Inherent differences in gut flora of Indian population are known to occur, hence it is imperative to carry out efficacy studies in Indian population prior to their use in the country. Further, there is an urgent need for development of indigenous probiotic strains for expressing optimal functionality," the guidelines say. ICMR further advocates surveillance system containing multiple checkpoints, including trace-back and post-marketing surveillance so that adverse events associated with probiotics food can be recorded.

The recommendation if implemented, could go a long way in reducing exaggerated, false and broad generalized claims that accompany priobiotic food products in the country.

The market size of probiotic product in the country was estimated to be around Rs.120 crore in 2007, growing at the rate of 40% annually. The global probiotics industry is pegged at $14 billion with a compound annual growth rate of 13.7%, according to a Frost and Sullivan estimate.

PROPOSED NEW GUIDELINES FOR PRO-BIOTIC FOOD PRODUCTS

Many pro-biotic products across the world have proven to prevent diahorrea, irritable bowel syndrome and inflammatory bowel disease.

Besides playing an important role in digestive, immunological and respiratory functions, pro-biotics can have a significant effect on the alleviation of infectious diseases in children, adults and high risk groups.

At present, pro-biotic food products claim to have certain health benefits but there are few clinical tests to prove them. Majority of the pro-biotic products in India have not undergone clinical trials to prove their benefit.

Pro-biotic products soon have to prove the legitimacy of health benefit claims.

While there is a difference between food and drugs, guidelines and regulations are yet to be framed for pro biotic foods.

There needs to be a quality stamp which would help the consumers distinguish between products that are actually pro-biotic and helpful for the body.

New guidelines could see pro-biotic food products being labelled with the kind of bacteria it uses and the number of bacteria used in the product. Companies may also be required to clinically prove health benefits before claiming their products provide certain specific health benefits.

TECHNOLOGY OPPORTUNITIES IN COAL FIRED POWER PLANTS

Use of super critical technology

While supercritical technology is now making some headway into India, the country still has a long ay to go.

Ultra supercritical technology, with steam parameters of 300 Bar and about 600 deg.C are now established, but technologists are working on `advanced ultra supercritical technologies', where the steam temperature is about 750 deg. C. For every 20 deg. increase in super-heat temperature, the plant efficiency improves by one percentage point.

However, raising pressure and temperature of steam in the boiler is not without its challenges. Austenitic steel with high chromium content and nickel-based alloys are required to withstand the stresses due to very high pressure and temperature. In addition, these must be resistant to high corrosion and have good wieldable and formable characteristics. This is another area where India can take the lead in developing the technologies concerned.

Coal combustion

To burn coal completely, more air has to be admitted into the boiler so that there is sufficient oxygen for thorough combustion. But when air is introduced, the nitrogen in the air forms nitrous oxides. The question is whether separating oxygen from the air is economically feasible.

Oxy-firing

Another area for research is the improvements that can be made in fluidized bed combustion (FBC) and circulating fluidised bed combustion boilers (CBFC). In these boilers, air is pumped in at the bottom and the coals `bubble' in mid-air, which helps in complete combustion of the fuel.

While this technology is by no means new, the capacities are on the lower side. The biggest CFBC boiler in the world with supercritical parameters is that of Foster Wheeler in Poland, with a capacity of 460 MW. CFBC boilers of 300 MW size are prevalent in the US.

CFBC boilers have considerably lower combustion temperatures and hence are not suitable for ultra supercritical system applications. India can take the initiative to develop supercritical CFBC technologies to fire lower grade fuels leaving better coal to be fired n conventional supercritical systems.

POTENTIAL FOR ORGANIC TEA CULTIVATION IN INDIA

Organic tea farming, which had been identified as a major growth sector during the Tenth Five Year Plan, continues to be in focus and is viewed as a segment with high potential that is expected to boost agricultural growth during the current Plan period as well.

The high return of almost twice the price of conventional tea is the price incentive to the farmer and the planter to convert their holdings into organic teas.

However, a sharp fall in production and productivity is often pointed out as the major constraint before small and large holders who want to convert their holding into organic tea plantations. Yields have been reported to fall by 10 per cent in the first year of conversion and by 20,30 and 40 percent in the succeeding years.

But in the following years, yields have reportedly gained by 20 per cent, a study by UPASI Regional Centre and Tea research Centre.

Facilitators

The European Commission is expected to grant the `equivalence' status to Indian organic certifying bodies, which would exempt Indian organic products from seeking the mandatory certification from the European Certifying Agencies.

This would not only reduce the formalities for certification and export considerably but also reduce cost significantly by as much as €500 to 1000 per hectare for certification.

It would also help counterbalance production shortfalls during the process of conversion and trigger the next phase of growth in organic tea cultivation in India.

The issues

Studies have shown that sudden withdrawal of inorganic fertilizers and nutrients such as zinc and magnesium as well as a profusion of weed growth depresses yields in the early years of the conversion to organic crop.

This is also because unlike other crops, tea is harvested at short gaps of 7 to 10 days, which leads to the removal of large biomass at these short and regular intervals.In order to sustain yields, the recurring loss of biomass has to be made up periodically through application of fertiliser and other organic matter.The inability to provide the same level of organic fertilizers is seen as one of the prime reasons for the decline in production.

ISSUES RELATING TO TRANS FAT CONTENT IN VANASPATI

With an annual production of 1.5 million tonnes, the Indian vanaspati industry, taking an average ex-factory price of Rs 45 a kg, is worth over Rs 6,500 crore.

Besides the likes of JVL Agro Industries (‘Jhoola' brand) and Amrit Corp (‘Gagan'), the bigger edible oil companies too – from Bunge India (‘Dalda'), Cargill (‘Gemini'), Ruchi Soya (‘Ruchi No. 1' and ‘Nutri Gold'), Adani Wilmar (‘Raag' and ‘Avsar) and ConAgra (‘Rath') – have dedicated vanaspati brands.

The industry has been in the news following a report by the Delhi-based Centre for Science and Environment in January. The study showed trans fatty acid (TFA) levels in samples of leading vanaspati brands to range from 9.4 per cent and 12.7 per cent in ‘Dalda' and ‘Gemini' to above 23 per cent in ‘Raag'.

The National Institute of Nutrition, Hyderabad (NIN) has recommended a 10 per cent TFA cap (as a proportion of total fatty acids) by considering a per capita daily fat consumption of 20 grams in rural India and 30 grams in urban India. At 9 kilocalories (Kcal) for every gram, these would correspondingly produce 180 Kcal and 270 Kcal out of a person's total energy consumption of 2,000 Kcal from food.

If the 20 gram fat is consumed as vanaspati, even at a 10 per cent TFA level, a person in rural India would derive 0.9 per cent energy from TFA. The same would be 1.35 per cent in urban India, as against the World Health Organisation's norm that TFAs should not contribute more than one per cent of total energy.

“Even at 10 per cent TFA level, there is health risk at 30 grams of vanaspati consumption per day”, the NIN has noted.

The downside, however, is that the very process of hydrogenation leads to formation of TFAs. As hydrogenation proceeds, the TFA content (as a percentage of total fatty acids) increases and then decreases only after the melting point is raised to levels that make the resulting vanaspati so hard to put off consumers.

The problem is more in oils having high poly-unsaturated fatty acids, such as soyabean, cotton seed and rice bran.

In soyabean oil, the TFA content is around 28 per cent at a melting point of just 33.5 degrees celsius, rising to 37.6 per cent at 43.7 degrees and falling

to zero at 68 degrees. For rice bran oil, the TFA is as high as 65 per cent even at a melting point of 41 degrees.

TFA is not as much an issue with palm oil. In the case of palm oil, the TFA level is zero at a melting point of 34.5 degrees, hitting a maximum of 17.3 per cent at 51.5 degrees, when the product becomes fully solid.

Proposed regulation

Vanaspati makers are apprehensive over a proposed regulation seeking to limit the Trans Fatty Acids (TFA) content in their product to 10 per cent by early next year and to 5 per cent over the subsequent three years.

The Food Safety & Standards Authority of India (FSSAI) is in the process of drafting a notification fixing the above limits in line with the recommendations of the National Institute of Nutrition, Hyderabad.

The draft limits are likely to be put up shortly on the FSSAI's Web site to invite public comments within 45 days, after which the final version would be notified.

The industry view point

If the proposed 10 per cent TFA limits would be imposed , Indian Vanaspati units will become completely dependent on imported palm oil and lose the flexibility to use domestically produced oils.

While palm oil currently accounts for some 95 per cent of vanaspati industry's raw material, the cost equation can change if the Malaysians or Indonesians push up prices or the Government of India hikes import duties to protect domestic oilseeds growers.

What the vanaspati industry desires is the removal of the existing melting point limit of 41 degrees prescribed for vanaspati under the Prevention of Food Adulteration Act. This will give the leeway to meet the proposed TFA limits by blending hydrogenated hard fractions with soft oils.

According to the industry, melting point is of little relevance because all oils are first split into fatty acids to enable their absorption. What matters is their digestibility, which has hardly any correlation to melting point. That is why the international CODEX standards do not refer to any melting point limits for PHVO and margarine.

NEWS ROUND UP - INTERNATIONAL

PVDF

Arkema has nearly completed a $20 million debottlenecking at its Calvert City, KY polyvinylidene fluoride (PVDF) plant.

Production capacity will increase by about 15% by early 2010.

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Waste-to-bioethanol

INEOS Bio has started a $5.7million feasibility study for a 24,000 tonne per year household-waste-to-bioethanol plant at its Seal Sands site in the UK.

An investment decision could be made in 2010.

INEOS Bio is also investigating the potential for a world-scale bio-refinery at the site.

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Nonbiodegradable bag ban in Buenos Aires

Argentina has endorsed a growing trend in Latin America by banning the use of non-biodegradable plastic bags in the province of Buenos Aires.

The new law was published in the country's Official Bulletin for September, and will affect the most populated province in the nation, which houses about a third of the country's 41 million inhabitants.

The law allows 12 months for commercial establishments that predominantly sell food and beverages to replace regular plastic bags with containers made of degradable or biodegradable materials, while allowing 24 months for all other establishments.

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Bioethanol study in UK from household waste

Ineos Bio, an Ineos unit, has launched a feasibility study for a bioethanol project at Seal Sands, U.K.

The plant would convert biodegradable household and commercial waste into ethanol, using technology unveiled by Ineos Bio last year.

It could be expanded into an integrated biorefinery by 2015. Ineos Bio plans to make a final investment decision in 2010.

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PVC complex in Iran

Petkim Petrokimya (Izmir, Turkey) and National Petrochemical Co. (NPC; Tehran) have signed a memorandum of understanding to study and build an equally owned, integrated polvinyl chloride (PVC) complex in Iran. The project is one of NPC's previously announced downstream manufacturing facilities being built by Bakhtar Petrochemical Holding along a 2,200-km ethylene pipeline from Assaluyeh in southern Iran to Mahabad in northwestern Iran.

The PVC jv will be at Miandoab, near Mahabad. It will comprise a chlor-alkali complex, designed to produce 195,000 tonnes per year of caustic soda; an ethylene dichloride unit with capacity for 560,000 tonnes per year; a vinyl chloride monomer facility producing 300,000 tonnes per year; a 44,000-tonnes per year sodium hypochlorite plant; and a suspension-grade PVC complex with capacity for 300,000 tonnes per year.

The No. 11 ethane cracker of Kavyan Petrochemical, an NPC affiliate, will supply ethylene to Bakhtar's downstream units. The Kavyan cracker will be designed to produce 2 million tonnes per year of ethylene and 180,000 tonnes per year of propylene.

The cracker will use Technip technology and be engineered by Nargan (Tehran). Bakhtar has a 50% stake in Kavyan and NPC owns 17.5%. Several of the downstream firms along the ethylene pipeline each own 6.5% of Kavyan. Petkim is owned by a joint venture between energy group Turcas (Istanbul, Turkey) and state-owned oil company Socar (Baku, Azerbaijan).

TOTAL IN FRENCH BIODIESEL PROGRAMME

Total aims to play a leading role in France's second-generation biodiesel pilot programme. The French Government gave the green light recently for its share of financing for the BioTfueL programme, which is expected to cost more than €100 million over a five-year period.

The programme aims to test technology for the manufacture of diesel and kerosene from biomass. One of two pilot plants is expected, be built at Compiegne, France in a major agricultural region, with Total hosting the other plant, Institut Francais du Petrol (Paris), vegetable oils and proteins company Sofiproteol (Paris), and Uhde is expected to participate in the programme.

Total is also a partner in France's Futurol project to develop second-generation bioethanol. The programme involves construction of a pilot plant at Pomacle, France.

NEWS ROUND UP – INDIA

Plastic industries oppose ban on multi layered pouches

Opposing the government's proposal to ban multi-layered and metallic pouches used for packing food items like namkeen and pan masala, the plastic manufacturing sector has said that it will leave many people jobless and needed a review.

The environment ministry had recently issued draft guidelines of "Plastic (Manufacture, usage and waste management) Rules, 2009" proposing, "No person shall manufacture, stock, distribute or sell non-recyclable laminated plastic/metallic pouches, multi-layered packaging and other non-recyclable plastics."

It has also suggested a complete ban on coloured bags, as they are injurious to health as well as the environment. Now the Centre has sought public comments in the matter by December after which it will take a decision accordingly.

Opposing the move, the associations alleged that the draft has "major lacunae and needs a total review as it contradicts various other rules of the government such as Prevention of Food Adulteration Act, Edible Oil Packaging order and The Drugs and Cosmetic Act."

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Molasses export ban in UP

The Uttar Pradesh government decided to continue ban on the export of molasses outside the state for the second year in succession.

According to the policy, the state government has reserved 30% of the molasses produced by all the sugar mills for country liquor. The total production of the commodity is expected to be pegged at 210 lakh quintals, with the private sector contribution being 143.89 quintals. The government has also stopped the supply of molasses to the chemical units in Uttarakhand.

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Government of India plans polymer bank notes

In a bid to check proliferation of counterfeit currency notes and make bank notes last longer, India will introduce 100 crore polymer notes of Rs.10 denomination on a trial basis soon.

To increase the life of bank notes, the government has decided to introduce one billion (100 crore) pieces of polymer bank notes in Rs.10 denomination on trial basis.

The RBI would come out with polymer bank notes of higher denomination after the trial.

While polymer in popular usage suggests plastic, the term actually refers to a large class of natural and synthetic materials with a variety of properties.

Some of the features of the polymer currency notes will be:

- Greater life span compared to the regular notes
- Cleaner than paper notes
- Minimise counterfeiting of notes

Polymer notes were first introduced in Australia. Other countries to have introduced plastic notes include Nepal, New Zealand, Papua New Guinea, Romania, Bermuda, Brunei and Vietnam.

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Fertilizer subsidy policy

The fertilizer industry has urged the government to de-link the disbursement of subsidy from the industry and formulate an alternative mechanism for providing fertilizers to farmers at affordable prices.

The government has ended up paying higher subsidy year after year which crossed Rs.1,00,000 crore during 2008-09 primarily due to unprecedented increase in cost of inputs. During the current year, the subsidy requirement is estimated at Rs.70,000 crore.

Stating that the present product-based pricing regime has affected all major stakeholders which include farmers, industry and the government, the industry has appealed to the government to do away with this system and move towards a system of direct transfer of subsidy to farmers before completely moving towards a nutrient-based subsidy regime.

Fertilizer Association of India (FAI) said that the consumption of fertiliser nutrients (N+P+K) witnessed an annual growth of about 8.2% during the past five-year period increasing from 16.8 million tonne in 2003-04 to 24.9 million tonne during 2008-09. Nutrientwise annual growth in consumption of nitrogen was 6.4%, phosphorous (P) 9.5% and that of potassium (K) 15.7% during the same period. The growth in P and K consumption during 2008-09 over 2007-08 increased significantly by 18% and 25.7% respectively as against the growth in nitrogen (N) byh 4.7% during the period.

CHINA NEWS

COAL BED METHANE PROJECTS IN CHINA

The development of CBM is crucial to coal mine safety. If harvested and used properly in large scale, CBM could become a clean fuel just like natural gas.

China has CBM production capacity of 2 billion cubic meters under ground in 2008 and produced only 500 million cubic meters that year. This is far from large scale commercial operation, since most planned CM pipelines have not be built yet.

An original target of extracting 10 billion cubic meters by 2010 has been modified to 6.5 billion cubic meters.

Important players

Shanxi Jincheng Anthracite Coal Mining Company (SJACMC) put its 120 MW coalbed methane (CBM) power generation into operation this July.

A CBM liquefaction plant phase I came onstream at Jiafeng town. Qinshui county in Jincheng city of Shanxi province on July 5th, by The Hong Kong and China Gas Company (Towngas) and SJACMC. Qinshui CBM pipeline started operation on Septembe 15th.

Qinshui Lanyan Coalbed Methane Company a subsidiary of SJACMC, has the nation's biggest CBM resources but was told to halt the CBM business because it does not have a CBM extraction right.

It is said that all the CBM production areas in Shanxi province have been registered. Among the 38 blocks, CNPC owns, 19, CUCM has 12, Sinopec Group owns four while other companies hold the remaining three.

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New environmentally friendly polymer dispersion

As one of the world's leading producers of binders and polymer additives for coatings, construction chemicals and adhesives, the Munich based WACKER Group will launch a new cutting edge product at Chinacoat 2009.

The water based dispersion called VINNAPAS EF718 enables the formulation of ultra low VOC and low odor interior paints.

Other products to be presented focus on sustainable solutions to meet demand in China, including environmentally friendly binders and dispersions for the mid end odorless interior paint market. Chinacoat 2009 will take place from November 18th to 20th in Shanghai.

Degradable plastic

Henan Tianguan Group Co., Ltd (Tianguan Group) recently announced that the commencement of construction of its 100 000 tonnes per annum complete gradable plastic project implemented smoothly.

With a total investment of RMB960 million, construction on the project was started in Nanyang of Henan province on September 28th, 2009. The construction period of the project will be three years.

Tianguan Group, headquartered in Nanyang, Henan province in central China, mainly manufactures alcohol, fuel alcohol, glacial acetic acid and acetates, with a total of over 40 varieties.

Fumed silica

Wacker Chemie and Dow Corning, joint venture partners in a siloxanes and fumed silica project at Zhangjiangang, China, have held a groundbreaking ceremony for phase two of the fumed silica part of the complex.

Wacker Fumed Silica (Zhangjiagang) a 51-49 jv between Wacker and Dow Corning, is expected to add about 10,000 tonnes per year of fumed silica capacity by the end of next year.

The project will raise total fumed silica capacity at the site to about 26,000 tonnes per year. The partners completed construction last year of the first phase of the complex, designed to produce 16,000 tonnes per year of fumed silica. The complex uses Wacker's process technology.

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Dupont licenses VAM

DuPont will license vinyl acetate monomer (VAM) technology to Jiangsu Sopo Group (Sopo; Shanghai) for a 330,000-tonnes per year plant at Zhenjiang, China.

The site includes a methanol plant and a 1.2 million tonnes per year acetic acid plant that will supply feedstock to the VAM unit. The VAM plant is expected to be completed in 2013.

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Methanol

Shanxi Xianyang started its new 600,000 tonne per year coal-based methanol plant last month in Shanxi, northwest China.

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Collaboration in phenol and EPDM

China Petroleum & Chemical Corp (Sinopec Corp.) and Mitsui Chemicals Inc. have reached a fundamental agreement concerning phenol and ethylene-propylene-diene terpolymer (EPDM) projects in Shanghai. The investments for the two operations are expected to be approximately US$666 million.

The two companies signed an agreement in April 2006 to form the equal joint venture Shanghai Sinopec Mitsui Chemicals Co. Ltd., to produce and sell bisphenol-A (BPA) in China. The joint venture currently produces 120 000 tonnes of BPA per year.

The proposed phenol project, which is designed to produce 250 000 tonnes of phenol per year with scheduled startup in early 2013, will be managed by the joint ventures Shanghai Sinopec Mitsui Chemicals.

Construction on the EPDM plant is expected to be started at the end of 2013, with a planned capacity of 7 500 tonnes per annum. Both sides intend to form an additional joint venture for the new EPDM plant.

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Lime sulphur project

On October 27th, Xinhe Xinglin Agricultural Means Co. Ltd.'s 15000 tonnes per annum lime sulphur project went into operation in Xinhe county of Xinjiang region.

The company made lime sulphur, for the control of crop diseases and elimination of pests, through reaction of quick lime, sulphur powder and water at high temperature and high pressure, with existence of catalyst.

The company says farmers in Xinjiang region used to produce lime sulphur themselves. Xinhe Xinglin Agricultural Means Co.,Ltd. is the first enterprise in this region to produce lime sulphur.

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Gas phase silicon dioxide

On October 20th, 2009 Tokuyama Chemicals (Zhejiang) Co., Ltd. commenced production of the second phase 5000 tonnes per annum gas phase silicon dioxide project in Jiaxing harbour area, Zhejiang province.

With an investment of around RMB 250 million, the second phase occupies an area of 150 000 square meters and includes 5000 tonnes per annum gas

phase silicon dioxide and 10000 tonnes per annum trichlorosilane production lines.

Besides, the first phase 5000 tonnes per annum gas phase silicon dioxide project project in Tokuyama Chemicals (Zhejiang) Co., Ltd was completed and went on stream on October 15th, 2007.

After completion of the second phase, the production capacity of gas phase silicon dioxide in the company has reached 10000 tonnes per annum.

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Carbon black

On October 23rd, 2009 Cabot Corporation announced the commissioning of 150 000 tonnes per annum of manufacturing capacity at its carbon black facility in Tianjin, China, bringing the plant's production capacity to nearly 300 000 tonnes per annum.

The manufacturing facility is a project of Cabot Chemical (Tianjin) Co., Ltd., an equity joint venture between Cabot (China) Limited and Shanghai Coking & Chemical Co.Ltd., a member of Huayi Group. Cabot and Shanghai Coking have been joint venture partners since 1988.

Cabot Corporation, headquartered in Boston, Massachusetts, is a global performance materials company. Cabot's major products are carbon black, fumed silica, inkjet colorants, aerogels, capacitor materials and cesium formate drilling fluids. Shanghai Coking was founded in 1958 and is one of the largest manufacturers of methanol and coke products in China.

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Production and use of DME China

According to ASIACHEM, China had 5.8 million tonnes per annum of DME capacity in 2008 and produced only 1.8 million tones of DME. Over 90% of the product was used as civil fuel gas to substitute LPG.

DME application in civil fuel gas to replace part of LPG is of great potential.

Despite of the validation of standard on DME product since January 2008, so far the practice of blending DME in LPG has yet not been standardized by the national authority, leading to the lack of rules and guidance in this field.

Special equipment is necessary for the use of DME as civil fuel gas and directly blending DME into LPG cylinders is banned. In March 2008, a notification was issued related to cylinder filling process, prohibiting the filling of DME blended LPG in LPG cylinders.

As to September 2009, there are ten DME buses on road for demonstration in Shanghai. Estimated annual DME consumption by these buses will not exceed 1000 tonnes. In addition, Linyi city of Shandong province also plans to arrange DME fuel demonstration in a fleet of 7to 9 buses. These indicate that use of DME as diesel substitute is only at the stage of demonstrative operation in China.

Hubei Biocause Pharmaceutical Co.,Ltd (Biocause, SZ) has put its 400 000 tonnes per annum dimethyl ether (DME) project into operation in Jingmen of Hubei province, bringing Biocause's DME capacity to 500 000 tonnes per annum. The company released on October 26th.

The whole project was conducted in two phases. The first phase – a 200 000 tonnes per annum DME line was completed and came on stream in June 2008. The second phase – an additional 200 000 tonnes per annum DME unit has normally operation now.

Biocause has ambitions to be a leader in new energy field in China, towards DME production capacity of 1 million tonnes per annum.

*****

Praxair metals technology makes debut in China

Jinlong Copper is the largest copper smelting joint venture in China, located in Tongling city, Anhui province. Praxair China's applications technology team designed, fabricated and installed a complete dual-fuel Dilute Oxygen Combustion system for a 400-ton anode furnace at Jinlong Copper, replacing an existing air-fired system.

The results were fuel savings of more than 60% and flue gas emissions reduction of more than 70%.

Additional benefits to Jinlong Copper include higher furnace productivity and low maintenance.

Jinlong Copper plans to install the Praxair system on a second anode furnace in the first quarter 2010.

*****

Aliphatic isocyanates production

Perstorp plans to increase its production capacity of aliphatic polyisocyanates. Perstorpwill commence implementation of a new production structure in China in 2012. At maturity, this production capacity should reach 12 000 tonnes per annum. Perstorp posted on November 18th.

In parallel Perstorp plans to debottleneck existing plants to support growth outside Asia.

Perstorp producers solvent-based Tolonate® and self-emulsifiable into water Easaqua™ aliphatic polyisocyanates for high-performance polyurethane coatings.

Isocyanates are used as hardeners in coatings, elastomers and foam products with major market applications in automotive (OEM & refinish), industrial maintenance, plastic & wood coatings, transportation, aerospace, coil & can coatings, leather finishing and adhesives. They represent a strategically important part of Perstorp's product portfolio. With an average expected annual growth rate of 6%, aliphatic isocyanates specialty materials represent a highly attractive market.

*****

Thin-film photovoltaic production facility in China

DuPont Apollo Ltd., a wholly-owned subsidiary of DuPont, announced on November 17th the opening of its silicon based thin-film photovoltaic module manufacturing facility.

The 538 000 square feet manufacturing facility, located in Shenzhen, Guangdong province, will have an annual capacity of up to 50 megawatts with a thin-film-on-glass photovoltaic module production line.

Full scale commercial production is targeted for the first quarter 2010. In addition to providing innovative thin-film photovoltaic modules that are fully International Electrotechnical Commission (IEC) certified.

DuPont Apollo offers a total system solution focused on the China domestic market to help safequard customer's long-term investments in renewable power generation.

Thin-film photovoltaic modules are projected to be the fastest growing segment of the solar module industry because of their potential to reduce the cost of producing solar-derived energy-helping solar energy become more competitive with other forms of energy generation. Thin-film photovoltaic modules are well-suited to commercial rooftops, building facades, and large-scale solar farm applications. The modules can also generate more wattage output under diffuse lighting conditions, achieving a competitive cost/performance ration. With silicon consumption of only about 1/200 of traditional crystalline silicon solar cells, thin-film modules consume less silicon metal, resulting in shorter energy payback times.

DuPont expects the photovoltaic market will grow rapidly over the next several years due to surge in innovation aimed at transforming a global petroleum-based economy into one that increasingly and effectively uses non-depletive resources. DuPont expects that overall sales of its family of products into the photovoltaic industry will exceed US$1 billion by 2012.

TECHNOLOGY DEVELOPMENT - INTERNATIONAL

Phosgene-free route to polycarbonate

Shell Chemical is in the pilot-scale phase of development of a less costly propylene oxide (PO)- and carbon dioxide (CO_2)-based route to produce diphenyl carbonate (DPC) that avoids use of phosgene and results in commercially useful coproducts including propylene glycol.

Shell says that its process is estimated to be ground-breaking in cost and it would commercialize the process by selling DPC to polycarbonate producers.

Most polycarbonate is produced using phosgene and bisphenol A (BPA) as feedstocks, in an energy-intensive reaction that requires large amount of chlorinated solvents and produces excess salt. However, the company's process produces only DPC and propylene glycol. When PO is replaced as a reactant with ethylene oxide, the process produces ethylene glycol. All feedstocks and coproducts are already in Shell's portfolio.

Several companies produce polycarbonate directly from DPC and (BPA). The process does not require solvents, uses less energy, and the coproduct phenol can be recycled to produce the DPC. However, many of these companies also use phosgene to produce the DPC.

Other commercialized routes to synthesize DPC without the use of phosgene already exist, but they are cumbersome and energy intensive. For these reasons, investment in phosgene-based DPC production continues. However, Shell believes that its DPC technology will be a "very attractive alternative for polycarbonates producers.

*****

Carbon capture project

The governments of Alberta and Canada have signed letters of intent to contribute a total of $837 million to Shell's carbon capture and storage (CCS) project at Shell's Fort Saskatchewan bitumen up grader. The government of Alberta agreed to earmark C$745 million of its C$2 billion CCS fund for Shell's "Quest" project.

Canada's federal government says it will provide C$120 million.

The project will integrate CCS technology at Shell's oil sands upgrader. The unit could capture up to 1.1 million tonnes of GHG emissions annually, a reduction of approximately 40%. CCS technology could cut Canada's GHG emissions by as much as 600 million tonnes per year by 2050 and amount equal to almost three-quarters of Canada's current annual emissions.

The Quest project is a joint venture of Shell Canada (60%), Chevron Canada (20%), and Marathon Oil Sands (20%). Commissioned in 2003, the upgrader turns bitumen from the Athabasca oil sands into synthetic crude oil.

*****

Eco-friendly technology for chlorine production

On October 22nd, Bayer MaterialScience and China National BlueStar (Group) (BlueStar) signed a Memorandum of Understanding (MOU) in Beijing.

As part of the agreement, Bayer will provide its innovative Oxygen Sepolarise Cathode (ODC) for use in BlueStar's membrane cells for developing advanced electrolysis solutions for chlorine production.

The partnership between Bayer MaterialScience and Bluestar promises significant benefits in the production of chlorine. These benefits include providing a direct reduction of upto 30% in electricity consumption and a corresponding indirect reduction in Co_2 emission that contribute significantly to combating climatic change.

Based on a chlorine capacity of approximately 21 million tonnes in China, ODC enables a Co_2 abatement potential of yearly up to 15 million tonnes.

*****

Algae-based Resin

Cereplast is developing a technology to produce plastics from algae that could replace 50% or more of the petroleum content in plastic resins. The company expects to launch an algae-based resin product line in coming months.

The company has been in contact with companies that will use the algae to minimize carbon dioxide (CO_2) and nitrogen oxides emissions from smoke-stacks.

Cereplast plans to harvest the algae daily and use it as biomass feedstock for biopolymer feedstock.

*****

Bio-engineered poly lactic acid (PLA)

A am, from KAIST University, South Korea and LG Chem, led by Sang Yup Lee, professor, focused on polylactic acid (PLA), a bio-based polymer, the key to producing plastics through renewable resources.

PLA is considered a good alternative to petroleum based plastics as it is both biodegradable and has a low toxicity to humans.

Until now,PLA has been produced in a two-step fermentation and polymerisation, which is both complex and expensive.

Now, through the use of a metabolically engineered strain of E. coli, the team has produced polylactic acid and its co-polymers through direct fermentation.

*****

GEM mineralogy for exploration of crude oil formations

Halliburton has released its GEM (generic engineering analysis model) tool for rapid elemental evaluation of formations with complex mineralogies, the latest addition to Halliburton's formation evaluation technologies.

GEM offers operators a complete elemental analysis solution for complex reservoirs, complementing the company's cuttings evaluation service performed while drilling. Combined with real time data acquisition software, onsite and remote visualization of formation elemental data is provided.

The GEM tool increases measurement accuracy of magnesium in carbonates and aluminum in clays and shale, as well as manganese, a common constituent of carbonates and sheet silicates, improving estimates of porosity, saturation, permeability, detection of swelling clays and rock mechanical properties.

The tool can operate for long periods downhole in conditions up to 350 deg.F and 20,000 psi.

*****

New blue pigment

Chemists at Oregon State University in USA have created a new, durable and brilliantly blue pigment.

The researchers were trying to make compounds with novel electronic properties, mixing manganese oxide, which is black, with other chemicals and heating them to high temperatures. It was then noticed that one of the samples that a graduate student had just taken out of the furnace was blue.

In the intense heat, almost 2,000 degrees Fahrenheit, the ingredients formed a crystal structure in which the manganese ions absorbed red and green wavelengths of light and reflected only blue.

When cooled, the manganese-containing oxide remained in this alternate structure. The other ingredients — white yttrium oxide and pale yellow indium oxide — are also required to stabilize the blue crystal. When one was left out, no blue color appeared.

The findings appear in the *Journal of the American Chemical Society*. — *© 2009 The New York Times News Service*

Plants to produce plastics

Metabolix has successfully engineered several crops, including sugarcane and switchgrass, to produce higher amounts of a naturally occurring chemical that may become a valuable coproduct for cellulosic ethanol.

PHA-producing switchgrass.Polyhydroxyalkanoate (PHA) is found in plants as a carbon reserve but at levels that are nearly undetectable. The company has engineered sugarcane and switchgrass to produce higher amounts of PHA—about 3.5% in both cases. The company hopes to achieve even higher levels to improve economics. The company hopes to start commercial field trials within two-to-three years.

The company estimates that, with 3% of the switchgrass recovered as PHA, one pound of the polymer is recovered for every gallon of ethanol produced.

The major hurdle to cellulosic ethanol has been getting production economics to a point that is attractive and subsidy free.

Metabolix, through its Telles joint venture with Archer Daniels Midland, is weeks away from the first commercialization of PHA, though produced via a proprietary fermentation process.

*****

PFOA substitute

Solvay plans to begin production of a chemical to replace perfluorooctanoic acid (PFOA), a processing aide for fluoropolymers that EPA has asked several companies to cut emissions of by 2010 and eliminate from product content by 2015. Solvay does not produce PFOA, but used the chemical as a surfactant in the production of certain grades of fluoropolymers.

The company says that it will use the PFOA substitute to produce polytetrafluoroethylene (PTFE). Fluoropolymers produced with the new surfactant will maintain the same performance, and the chemical will be compatible with the technologies that have been developed to prevent PFOA emissions.

Concerns about the PFOA came to light in 2000 when the Environmental Working Group (EWG; Washington) began a campaign to have EPA take a closer look at potential adverse effects of PFOA. In 2005, an EPA draft risk assessment for PFOA showed exposure to PFOA can cause cancer and immune deficiencies in laboratory animals, and could raise levels of cholesterol and triglycerides in humans.

*****

AGROCHEMICAL PAGE

Development of agri-bio inputs for brinjal

India is the world's second largest brinjal producer, accounting for nearly 26% of the global production, which is second only to China that contributes 30% of the global production.

Vadodara-based Science Ashram, supported by Gujarat Life Science (GLS), has developed twenty agri-bio inputs for the brinjal crop that not only improve productivity but also bust the myth that brinjal cannot be grown without pesticides. The technique was named Twenty 20 after it showed over 20% rise in the yield and saved 20% input cost.

Generally, brinjal crop requires 16 to 18 pesticide sprays, but the Twenty 20 model with agri-bio inputs using multi-microbial mix has worked wonderfully. Not only has its yield shot up by 20 to30% but the overall crop cost has also come down by 20%. Using bio compost treated with microbial mix on a local seed variety, Surti Ravaiya or identified as laminates by farmers because of its appearance has proved that brinjal can be grown without the use of pesticides."

GLS has made agri-bio inputs using healthy microbial mix into cow-dung, marine algae and other botanic extracts to treat land as well spray the standing crop.

Not a single spray of pesticide was used during the field trial of the vegetable at Chapad village near Padra, considered to be vegetable growers' hub in this region.

*****

Carbofuran

FMC says it plans to take legal action against EPA after the agency denied the company an administrative hearing on its decision to revoke the policy of allowing fruit and vegetables sold in the U.S. to contain limited residue of the pesticide carbofuran. EPA says the insecticide, which is used on crops including bananas, coffee, potatoes, rice, sugar, and sunflowers, presents unacceptable dietary risks to children.

FMC, the sole U.S.-based manufacturer of carbofuran, called EPA's denial of the hearing an "unprecedented" attempt to refuse challenges to agency data.

EPA says it denied FMC's petition because the "regulatory standard for holding an evidentiary hearing" was not met.

PHARMA PAGE

FAKE CHINESE DRUGS IN INDIA

Barely four months after China-made fake drugs with deceptive 'Made in India' labels were seized in Nigeria, more cases of spurious drugs are surfacing in the Indian market with alleged links to China.

Recently, seized samples of human immunoglobin injection used in the case of multiple sclerosis, bone marrow transplantation, chronic B-cell lymphocytic leukemia, pediatric HIV-1 infection among others, which were declared spurious by the drug regulator office in Rajasthan were allegedly manufactured by a Chinese company.

"The spurious drug in question was found to be sold under the brandname Iviglob Ex, which in turn is imported and marketed in India by Mumbai-based VHB Life Sciences Ltd. A case has been lodged against Mumbai-based Shri Vinayak Trading Company, which was detected in the supply chain selling the spurious drug," according to a health ministry official.

VHB Life Sciences said that the spurious drug in question was not marketed by the company , nor was it sourced by it. The food and drug authority of Rajasthan has found 28 points of differentiations between the spurious samples and VHB's original product. The spurious drug in question was found in Jaipur. But the location where the drug was manufactured remains still unclear.

The government is also learnt to have unearthed four more cases of bulk drug imports, which were traced to unregistered sources in China. The Indian players, who may be questioned in this case include Sheetal Pharma, Envee Drugs Private Ltd, CJ Shah and JB Khokhani and Co. The case has already been handed over to CBI for further investigation," the ministry official said.

Earlier in June this year, the Nigerian drug regulator seized large consignments of fake anti-malarial generic pharmaceuticals labelled `Made in India', which were later, found to be produced in China. The Chinese government has launched an in-depth investigation to zero down on the companies that could be involved in the whole racket.

In September, China formally apologized to Nigeria taking responsibility for export of fake drugs including some labeled as `made in India' by some Chinese firms and assured to take punitive action against those involved in te scandal.

Biosimilars

Biosimilars are approved version of innovator biopharma products introduced after patent expiry.

Generic pharmaceuticals producer Actavis (Hafnarfjordur, Iceland) is monitoring closely the biosimilars market and related activities within the sector.

A recent report by research and consulting firm Markets and Markets (Wilmington, DE) says that the global biosimilars market is expected to be worth $19.4 billion per year by 2014, growing at an average annual rate of about 89% in 2009-14.

Actavis, which is not currently involved in the biosimilars business, is considering entering the market by establishing joint ventures or partnership.

*****

Trials on botanical drug to combat HIV

Indian scientists have developed a 'botanical drug' that shows promise in preventing the deadly shift from HIV to AIDS. The drug reverses the symptoms of AIDS to improve health and immunity in an HIV-positive person, turning him into a `HIV controller'.

The US Food and Drug Administration (FDA) has given Pune-based Pharma company Indus Biotech the licence to conduct human trials of the new molecule `INDO2' in USA, with an Investigational New Drug (IND) application.

`INDO2' is a botanical drug, not Ayurvedic, made from a chemical derived from a plant that is commonly found all over the world, making it inexpensive.

*****

Developing body tissue

British scientists are on track to soon manufacture body tissue -- new skin, blood and even bones, a new development which will benefit people suffering from damaged eyes, broken bones or scarred skin.

A team, led by team leader Robert Brown at University College London, has already pioneered a cutting-edge, simple, technique that will enable doctors to make customised human tissue, such as corneas, skin, nerve implants and cartilage, within minutes for patients.

The scientists have developed a process that manufactures human tissue by squeezing out the water from collagen -- the protein which makes up 25% of our body weight.

Skin, bone, cartilage and ligaments are all made up of layers of collagen or connective tissue. However, this can wear out as one gets older; it can also be damaged by sporting injuries or accidents, the scientists said.

According to the scientists, the ability to develop made-to- measure layers of tissue or "spare parts" for a particular person will revolutionise reconstructive surgery as it could simplify imperfect, expensive and invasive operations such as corneal transplants, skin grafts and total knee replacements.

ENERGY PAGE

GEOTHERMAL ENERGY PROJECT IN CANADIAN UNIVERSITY

Geothermal energy is obtained by the transfer of heat from the Earth's depths to surface. A natural hot spring is a good example of geothermal energy, which can be used to generate electricity and heat homes or commercial buildings.

University of Ontario Institute of Technology (UOIT) in Oshawa on the outskirts of Toronto in Canada has invested $4 million in the ambitious project to harness geothermal energy to meet the power needs of its academic buildings and campus.

At the UOIT, the geothermal well field is situated underneath an area of the size of a football ground in the midst of the campus. It consists of 375 boreholes, each costing roughly $10,000.

The UOIT campus, which became functional in 2003 with just over 5,500 students, has eight new buildings that have been designed to be heated and cooled with this renewable energy with the aim to minimize greenhouse gas emission.

The Borehole Thermal Energy Storage System (BTESS), a technically challenging project, uses the natural space below the earth to store heat during warm periods and extracts the same energy for heating during cooler months.

In a massive operation, the borehole drilling operations were carried out using three drilling rigs, operating continuously. In the end, it turned out to be the second largest Geothermal Energy Installation in North America comprising 375 boreholes drilled 200 metres deep.

The system has the capacity to cool or heat the equivalent of over 1,000 houses. It delivers roughly 8 MW of energy

"Luckily the scientists found an almost impermeable limestone formation between 55 metre and 200 m below the surface. This homogenous, no-fractured rock gave the perfect setting to store thermal energy, as there is virtually no groundwater flux to transport the thermal energy away from the site."

The BTESS system is expected to make good economic sense as well. The break-even period for the project is seven years.

*****

Biomass projects in Haryana

The delay in land acquisition for the proposed biomass-based power projects in the Haryana state has prompted the Haryana Renewable Energy Development Agency (Hareda) to issue notices to the concerned parties to speed up the process.

As per the notice, 20-odd companies that have been allotted the projects should acquire the land by November 30 or the allotment shall stand cancelled. The independent power producers had signed MoUs with Hareda in February 2007 which was valid till August 2009 and was extended further.

The escalating land prices in cities like Karnal, Panipat, Sonepat, Kurukshetra and Rewari have been delaying the launch of these projects. It had also increased the overall project cost. So far only four out of the total 20 have initiated the process of land acquisition. The rest should follow the notice soon.

The 20 biomass-based power projects are expected to generate 183 mw of power at places like Sirsa, Panipat, Karnal, Hisar, Fatehabad, Bhiwani, Nilokheri, Jagadhari, Khanesar and Dabwali.

New Delhi-based Star Wire India has already acquired 14 acres in village Baragudha in Sirsa for a 8 MW project at a cost of around Rs.38 crore.

*****

Rooftop solar photovoltaic (SPV) systems

In-order to avail the benefits of generating power through renewable sources, many corporates have come forward to install rooftop solar photovoltaic (SPV) systems in Haryana. Rooftop SPV systems are covered under the central financial assistance scheme.

Haryana has so far sent four proposals to the Centre for approval under the scheme and many more are in the pipeline.

The proposals sent include Omaxe Auto, Gurgaon which plans to install 100 kw system; M/s Automax from Gurgaon for 100 kw; Serco BPO for setting up 25 kw system and Ram Bhagwan Charitable Institution of Cancer Management and Research, Rewari for 30 kw system. Out of these, Serco BPO has been sanctioned and the rest are expected to be approved soon.

The central financial assistance for rooftop SPV Systems is provided at the rate of Rs.75 per watt for SPV panels to a maximum of 30% of the cost of system to profit making bodies availing depreciation benefits.

In the case of non-profit making bodies, assistance at the rate of Rs.100 per watt to a maximum of 40% of the cost would be given.

The subsidy would be limited to 100 kw capacities mainly for day time use and institutions, government buildings and commercial establishments. However, the minimum capacity of installation should be 25 kw. The subsidy amount can be paid back by the beneficiary in a period of five years.

The department has also received another proposal from The Energy and Resources Institute, which plans to install a 50 kw rooftop S PV system at the Teri Gwal Pahari Retreat Center, Haryana.

ENVIRONMENTAL PAGE

ACC uses municipal waste to fire its kilns

ACC Ltd is discussing with a number of urban local bodies to co-process municipal solid waste and industrial waste in its cement kilns.

The company, which has number of cement units distributed across several States, has so far replaced about 2.5 per cent of the coal it uses to fire its kilns with about 3 lakh tonnes of 'substitute fuels and raw materials. These are primarily urban solid waste and industrial wastes.

Co-processing is not just about incinerating waste in the kilns. It is a proven technology to fuel the kilns and uses alternative raw materials which makes waste material an inherent part of cement production.

Cement kilns serve multiple uses of supporting safe disposal of waste and reducing use of natural resources like fuel and limestone. The local authorities have to speed up the clearance process to encourage this fast and effective method.

The cement kilns are ideal destinations for disposing waste as the temperatures of over 2,000 degrees centigrade in the kilns completely destroys the waste with little emission.

This has been demonstrated by scientific studies. Acidic gases are neutralised by the lime, and organic waste and minerals are reduced to ash and used in the final product, cement.

ACC has a long-term policy to use alternative fuels and raw materials and has tied up with more than 70 industrial units, including those in chemicals and automotive sector to utilise the waste generated.

ACC is also in discussions with urban local bodies like those in Coimbatore to source the segregated solid waste. It now sources waste from JUSCO (Jamshedpur) and Jabalpur Municipal Corporation and surrounding areas. Segregated, non biodegradable waste, particularly plastic waste, is sourced.

*****

Bisphenol A

A Consumer Reports investigation into levels of bisphenol A (BPA) in certain canned foods shows at least certain products contain levels that are well above what U.S. health officials consider typical average daily exposure, according to a recent report. The North American Metal Packaging Alliance (Nampa; Washington) says the levels identified in the report were "below the lowest regulatory threshold of concern set by government scientists and do not pose a health risk to consumers of all ages."

PRICE DETAILS - INTERNATIONAL

Polyethylene

European polyethylene (PE) prices for November were confirmed at a minimum of €30 per tonne down from October

*****

Monoethylene Glycol

Shell Chemicals has raised its Asian contract price for December cargoes by $60 per tonne from its November offer.

Its December ACP is $840 per tonne CFR Asia.

*****

Per chloro ethylene

In USA, rising feedstock costs pushed per chloro ethylene spot prices higher by 2 cents per lb to 36 to 40 cents per lb FOB US Gulf in November.

Sources say prices for Mont Belvieu ethane, a primary ethylene feedstock, have surged by more than 10% because of higher energy prices and increased demand as cracker operators shifted to lighter feeds.

*****

Benzene

Spot benzene prices in Asia were $830 to 840 per tonne FOB Korea, while US prices were $2.80 to 2.92 per gal FOB USG for November.

*****

Toluene diisocyanate (TDI)

In Asia, spot TDI values have risen by $200 per tonne since October.

*****

Paraxylene

Initial US paraxylene (PX) contracts for November have settled higher, at 47.25 cents per lb DEL USG.

*****

Polyethylene Terephthalate (PET)

Producers of PET in Europe are targeting increases of €50 per tonne for November because of higher feedstock costs and tight supply.

Paraffin Wax

Chinese refineries raised prices of benchmark fully refined 58 per 60^0C (136.4 per 140^0F) solid wax by CNY200 per tonne ($29 per tonne) to CNY8,500 to 9,000 per tonne ex works.

Export offers are around $1,350 to 1,360 per tonne FOB for the solid benchmark grades.

Offers of fully refined liquid wax are around $1,200 to 1,250 per tonne FOB China.

*****

SPOT BULK CHEMICAL PRICES

	Asia	Europe	US
	$ per tonne	$ per tonne	cents per lb
Naphtha	689 to 692	658 to 668	189.25 to 191.5 per gal
Ethylene	950 to 990	900 to 920	31 to 33
Propylene	1,080 to 1,085	€680 to 700	45.25 to 46
Butadiene	1,350 to 1,390	1,400 to 1,450	72 to 74
Benzene	840 to 850	830 to 845	$2.88 to 2.96 per gal
Toluene	790 to 800	745 to 775	$2.30 to 2.40 per gal
Xylene	835 to 845	760 to 800	$2.54 to 2.60 per gal
Paraxylene	1,015 to 1,025	920 to 940	40.82 to 42.64
Orthoxylene	900 to 910	700 to 740	39 to 40
Styrene	1,045 to 1,055	990 to 1,010	45 to 46
Methanol	241 to 252	€195 to 200	95 to 100 per gal
MTBE	765 to 770	890 to 938	$2.72 to 2.83 per gal
Ammonia	340 to 350	295 to 295	$358 to 360 per tonne
Phenol	1,000 to 1,080	€1,083 to 1,128	46 to 49

CONTRACT BULK CHEMICAL PRICES

	Europe	US
	€ per tonne	Cents per lb
Ethylene	833	37.25
Propylene	740	49.5
Butadiene	900	68
Benzene	547	$2.85
Toluene	$770 to 775	-
Xylene	-	$2.53 per gal
Paraxylene	680	47.25
Orthoxylene	650	42
Styrene	813	54.4 to 56.9
Methanol	223	100 to 101 cents per gal
Ammonia	-	$355 per tonne
Ethylene glycol	-	35 to 38
Ethanol	60 to 64 per HLT	$3.00 to 3.10 per gal

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TENDER

S. NO.	NAME OF THE COMPANY	PRODUCT NAME	QUANTITY IN TONNES	TENDER NO. & DATE
1.	The Kerala Minerals & Metals Limited Sankaramangalam, Chavara-691 583 Kollam,Kerala	Hydrated lime	12600	TP/MTL/LIME/09-10 Dt.5.11.2009
2	Tamil Nadu Industrial Explosives Limited Tel Post Vellore-632 059	Anitimony tri sulphide Lead stearate Nitrocellulose Styphnic acid Guargum 4500 / 5500 CPS Zirconium powder Alcohol denatured spirit Hydrochlorid acid OPTIMEX Ammonium nitrate	30 kgs 25 kgs 100 kgs 1500 kgs 45000 kgs 60 kgs 8000 lts 60 tonnes 32 tonnes	DIPR/4309/Tender/2009
3	The Mysore Paper Mills Ltd Paper Town, Bhadravati-577 302 Karnataka	Soap stone powder 95%	17	0101PCP091427
4.	Hindustan Paper Corporation Ltd Nagaon Paper Mill, Kagajnagar,Dist.Morigaon Pin-782413	Optical whitening agent	120	NIB No. PN/C/2509100954
5	The Mysore Paper Mills Ltd Paper Town, Bhadravati-577 302 Karnataka	Pigment dye sun bright violet-BR	800 kgs	0101PCZ091455
6	Tamil Nadu Newsprint And Papers Limited Kagithapuram-639 136 Karur District,Tamil Nadu	Imported lime stone	50 000 tonnes ± 5%	2009 95134
7	Steel Authority of India Ltd Bokaro Steel Plant Bokaro Steel City-827001 Jharkhand, India	Dolomite (SMS grade)		BSL / PUR / OT /13.0/0049
8	The Mysore Paper Mills Ltd Paper Town, Bhadravati-577 302 Karnataka	<u>Single Part</u> Slimicide Methyl violet <u>Two part</u> Liquid defoamer Soap stone powder 80%	 3000 kgs 6000 kgs 240 tonnes 5000 tonnes	 0101PCZ091408 0101PDD091422 0101PCZ091420 0101PCP091414
9.	Rashtriya Chemicals And Fertilisers Ltd Administrative Building, Chembur,Mumbai-400074	Medium pressure nitric acid plant-SCR NO_X abatement catalyst High pressure nitric acid plant-SCR NO_X abatement catalyst	6200 ltrs 2484 ltrs	

S. NO.	NAME OF THE COMPANY	PRODUCT NAME	QUANTITY IN TONNES	TENDER NO. & DATE
10	National Aluminium Co Ltd Nalco Bhavan, Bhubaneswar-751061	Magnesium metal	125	NBC/MM/SXS-2227 & SX-2228/2009 Dt.16.11.2009
11.	Idcol Ferro Chrome & Alloys Ltd Ferro Chrome Project-755 020	Molasses having a density of 1.35 gm./cc	200	IFCAL:PUR(R/M)/4450 Dt.30.11.09
12	Indian Oil Panipat Refinery – Panipat	Hydrobromic acid	600000 kgs	RPRMM 96529
13.	The Mysore Paper Mills Ltd Paper Town, Bhadravathi-577 302,Karnataka	Non ferric alum Hydrogen peroxide	1200 2000	0101PCA091501 Dt. 3.12.09 0101PCZ091502 Dt.3.12.09

NEW PROJECTS - INTERNATIONAL

Company	Product	Capacity in tonnes	Start-up
AlphaPet Decatur, Alabama, US	Polyethylene terephthalate bottle-grade resin	first line of 432,000 plant	2009
	PET bottle-grade resin	Second line of 432,000 plant	2009
Anhui Wanwei/Inner Mongolia Baiyanhu Chemical Wulanchabu, InnerMongolia, China	Vinyl acetate monomer	200,000	2010
	Polyvinyl alcohol	100,000	2010
Archer Daniels Midland Decatur, Illinois, US	Propylene glycol	100,000	2010
Azot Cherepovetz Russia	Urea	500,000	2012
BASF Chongqing, China	Crude methylene di-p-phenylene isocyanate	400,000	2014
BASF/CSM Location not disclosed	Succinic acid	-	2010
BASF/Sinopec Nanjing, China	Ethylene	(x)140,000; 740,000	2011
	10 new chemical plants, including 2-propylheptanol plant	-	2011
Berry Plastics Franklin, Kentucky, US	Adhesive products	upgrade	-
BlueFire Ethanol Fulton, Mississippi, US	Cellulose ethanol	18million gal per year	-
Borouge Abu Dhabi, United Arab Emirates (UAE)	Polyethylene and polypropylene: "Borouge 3"	(x); 4.5million	2013
Bridgestone Seki, Gifu, Japan	Ethylene vinyl acetate film	(x)14,400	2011
Bridgestone Iwata, Shizuoka, Japan	Ethylene vinyl acetate film	(x)18,000, 36,000	2011
Coskata Madison, Pennsylvania, US	Cellulosic ethanol	-	2009
Daqing Petrochemical (PetroChina unit) Daqing, China	Ethylene	600,000	2013
	Polyethylene	550,000 (2 lines)	2013
	Polypropylene	300,000	2013
	Aromatics	400,000	2013

Company	Product	Capacity in tonnes	Start-up
Egyptian Propylene & Polypropylene Port Said, Egypt	Propylene	400,000	trial production: 2010
	Polypropylene	400,000	trial production: 2010
Evonik Industries Marl, Germany	2-propylheptanol	60,000	2009
ExxonMobil Chemical/SABIC Kemya and Yanpet joint ventures, Saudi Arabia	Elastomers and carbon black	(x)400,000	2013-2014
FP Pigments Leuna, Germany	Specialty pigments	-	2009
HMC Polymers Mab Ta Phut, Thailand	Polypropylene	300,000	-
	Propylene	300,000	-
Huajin Tongda Chemicals Panjin, Liaoning, China	Ethylene	450,000	2009
Idemitsu Kosan/Sumitomo Chemical/Mitsui Chemical Ichihara, Chiba, Japan	Propylene	150,000	2009
Jordan India Fertilizer Eshidiya, Jordan	Phosphoric acid	475,000	2012
	Sulfuric acid	1.5million	2012
K+S Zielitz, Saxony-Anhalt, Germany	Potassium chloride	-	2009
Kailuan Group Erdos, Inner Mongolia, China	Monoethylene glycol	400,000	2012
Lanzhou Petrochemical Gansu, China	Acrylonitrile butadiene rubber	50,000	-
Maoming Petrochemical Guangdong, China	Ethylene	(x)200,000; 1.2million	-
	Ethylene	(x)300,000; 1.5million	-
Mitsubishi Chemical (India) Haldia, India	Purified terephthalic acid	800,000	2009
Nippon Oil Mizushima refinery, Okayama, Japan	Propylene (20%) and high-octane gasoline (35%)	3,000bbl per day pilot high-severity fluid catalytic cracker (HS-FCC)	2011
Novapex Roussillon, France	Isopropanol	40,000	2010

Company	Product	Capacity in tonnes	Start-up
Ontustyk Suzak, Kazakhstan	Monoammonium/diammonium phosphate	1million	-
Pryor Chemical Pryor, Oklahoma, US	Urea ammonium nitrate	295,000	2009
PT Sentra Merak, Indonesia	Styrene butadiene rubber	(x)20%; 72,000	2009
PTT Chemical Mab Ta Phut, Rayong, Thailand	Ethylene	1million	2009
Qatar Fertilizer Co. Mesaieed Industrial City, Qatar	Urea	1,400,000	2012
	Ammonia	1,700,000	2011
	Urea	1,400,000	2011
Qatar Petrochemical Ras Laffan, Qatar	Ethylene	1.3million	2010
SABIC Wilton, UK	Low density polyethylene	400,000	close to start-up
Shanghai Petrochemical (Sinopec unit) Shanghai, China	Parazylene	600,000	2009
	Benzene	280,000	2009
Shanxi HuaYuan Shouyang, Shanxi, China	Methanol	300,000	2011
	Dimethyl ether	200,000	2011
Sinopec Yizheng Chemical Fibre Yizheng, Jiangsu, China	1,4-butanediol	50,000	2011
	Tetrahydrofuran	35,800	2011
	Gamma-butyrolactone	4,900	2011
Toray Industries St. Maurice de Baynost, France	Biaxially oriented polypropylene	20,000	2010
Tosoh Nanyo, Yamaguchi, Japan	Chlorosulphonated polyethylene synthetic rubber	(x)4,000,8,500	2010
Total Leuna, Germany	Sulfur	-	2009
Unipetrol/Synthos Kralupy nad Vltavau, Czech Republic	Butadiene	120,000	2010
Vietnam National Chemical Ninh Binh, Vietnam	Air separation unit	396,000	2012
Vinythai Mab Ta Phut, Thailand	Epichlorohydrin	100,000	2012
	Chlorine	(x)90,000	2012
	Caustic soda	(x)100,000; 372,800	2012
Yunnan Yunwei Group Qujing, Yunnan, China	BDP	25,000	2009
	Acetic acid	200,000	2009

CHEMICALS IMPORTED AT THE CHENNAI PORT DURING THE MONTH OF OCTOBER 2009

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CATEGORY: ORGANIC CHEMICALS			
1,1 cyclohexane diacetic acid	15917600	40000 kgs	CN
1,1-cyclohexane diacetic acid	833186.88	2500 kgs	CN
1,2,4-1h-triazole 99 pct min	803586.91	3000 kgs	CN
1,2,4-triazole	2626101	10000 kgs	CN
1,2 - dimethoxy ethane	2014489.44	14400 kgs	CN
1,2-pentanediol	9047620.40	16000 kgs	DE
1,3 difluoro benzene	3424632.05	3000 kgs	CN
1,4 butanediol	1233614	16000 kgs	US
1,4 butanediol	1233614	16000 kgs	US
1 bromo 3 chloro propane	1030806	10000 kgs	JP
10-methoxy iminostilbene	5670645	3000 kgs	CN
10-methoxy iminostilbene	5890320	3000 kgs	CN
11 beta, 16beta-hydroxy-21-iodo-2 methyl-5h-pregna-1,4-dieno	1044592.50	10 kgs	CN
1h-imidazole-4-carboxylic acid 5-(1-hydroxy-1-methylethyl)-2-	5014044	320 kgs	CN
1-1 cyclohexane diacetic acid	11780640	30000 kgs	CN
1-bromo-3-chloro propane	1168948.75	10000 kgs	CN
1-chloroethy cyclohexyl carbonate	447682.50	300 kgs	CN
1-cyclopropyl -6- fluoro-7-chloro-1,4 dihydro-4-0x0-3- quinol	116156.23	137.77 kgs	CN
1-cyclopropyl -6- fluoro-7-chloro-1,4 dihydro-4-0x0-3- quinol	6628926.77	7862.23 kgs	CN
2, 5 - dimethyl - 2, 5 - di - (tert.butylperoxy) hexyne-3	999698	500 kgs	DE
2,2,2-trifluoro ethanol	1045531.80	3000 kgs	CN
2,3-dichloro benzoyl chloride	1134129	3000 kgs	CN
2,3-dichloro benzoyl chloride	2686095	6750 kgs	CN
2,4 diamino-6-chloro pyrimdine	3283005	3000 kgs	CN
2,4 dichloro acetophenone	727484.07	2500 kgs	CN
2,4 dichloro acetophenone	727484.07	2500 kgs	CN
2,4- dichloro fluoro benzene	3809073.60	20000 kgs	CN
2,4-dichloro acetophenone	5416958.25	18000 kgs	CN
2,5 dihydroxy 1, 4-dithiane	3653089.20	7500 kgs	CN
2,5-dihydroxy-1, 4-dithiane	706838.40	1500 kgs	CN
2,6-dibromo-4-(trifluoromethoxy) aniline 99% min	5481924.48	8000 kgs	CN
2 - propoxyethyl chloride (1-propoxy-2-chloro ethane)	3735834.06	14800 kgs	CH
2 - propoxyethyl chloride (1-propoxy-2-chloro ethane)	3735834.06	14800 kgs	CH
2,-4- dichloro acetophenone	857041.56	3000 kgs	CN
2-acetyl benzo thiophene	198970	10 kgs	CN
2-acetyl pyridine purity min 99 percent	2760708.75	1000 kgs	CN
2-amino glutaramic acid	132812.48	300 kgs	CN
2-amino-6-methoxy benzothiazole	79389.03	76 kgs	CN
2-azabicyclo (2,2,1) hept-5-ene-3-one (vince lactam)	9633127.50	5000 kgs	CH
2-azabicyclo(2,2,1) hept-5-en-3-one	1378334.88	520 kgs	CN
2-bromo propionyl bromide	242975.70	300 kgs	CN
2-chloro nicotinic acid	6048688	8000 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
2-chloro nicotinic acid	7560860	10000 kgs	CN
2-chloromethyl-3,4-dimethoxy pyridine hcl 98.5% min	2885065	1000 kgs	CN
2-chloromethyl-3,4-dimethyl pyridine hcl 99 pct min	1877539.50	500 kgs	CN
2-cyano-4-bromomethyl biphenyl	1006263	1000 kgs	CN
2-cyano-4-methyl biphenyl	1011171.60	2000 kgs	CN
2-cyclopentanone carboxylic acid ethyl ester	1324344.32	1024 kgs	CN
2-ethylhexyl acrylate	2893365.90	39610 kgs	MY
2-ethyl-2-methylbutanoic acid	19669083.24	13051 kgs	US
2-furfurylamine	1517399.25	7728.27 kgs	US
2-furfurylamine	956716.57	4872.65 kgs	US
2-hydrazine-4-methyl benzo thiazole	3362391	10000 kgs	CN
2-hydrazine-4-methyl benzothiazole 98% min (hmbt)	4466826	14000 kgs	CN
2-mercapto benzothiazol yl (z)-2-amino thiazol-4-yl-(2-methoxy	2577015	3000 kgs	CN
2-methyl tetrahydrofuran	5239586.90	13260 kgs	NL
2-methyl-2-propyl 1-3,-propanediol	3264948.47	9000 kgs	CN
2-(2-chloro ethoxy) ethanol	609345.63	1000 kgs	CN
2-(2-methoxyphenoxy)ethylamine hcl	6394678.65	2700 kgs	CN
2-[3-(s)-[3-(2-(7-chloro-2-quinolinyl)ethenyl]phenyl]-3-hydro	9203625	500 kgs	CN
3,4 difluoroaniline	5471675	5000 kgs	CN
3,5-bis (trifluoro methyl) acetophenone	2574174.38	575 kgs	CN
3-cyano-2,6-dichloro-5-fluoro pyridine	2892028.95	1000 kgs	CN
3-hydroxy acetophenone	3519466.20	3000 kgs	CN
3-methoxy-1-propanol 99% min	1154026	2000 kgs	CN
3-methyl thiophene	1357970.25	1400 kgs	CN
4 ethylguaiacol (k)	213.32	0.01 kgs	GB
4130-104d pbt natural (polybutylene terephthalate)	44747.61	300 kgs	TW
4130-201d pbt natural (polybutylene terephthalate)	894952.11	6000 kgs	TW
4- hydroxy carbazole	4761342	1000 kgs	CN
4-chloro-2 trifluoro acetylaniline hydrochloride hydrate	13236653.48	7500 kgs	CN
4-chloro-(2,2)2-trifluoro acetylaniline hcl (e2)	12306421.74	5000 kgs	CN
4-dimethyl amino pyridine	1604195.63	1500 kgs	CN
4-dodecyl benzene sulfonyl azide (70% in ethyl acetate)	147541.48	160.33 kgs	CN
4-dodecyl benzene sulfonyl azide (70% in ethyl acetate)	772694.77	839.67 kgs	CN
4-fluorobenzylamine	582360.32	350 kgs	CN
4-(2r)-2-(bromomethyl)-3-methylbutyl)-1-methoxy-2-(3-methoxy	57872.39	300 gms	CN
5 difluoro methoxy 1 h 2 mercapto benzimidazole	1785669.83	1193.03 kgs	CN
5 difluoro methoxy 1 h 2 mercapto benzimidazole	459457.91	306.97 kgs	CN
5-amino-4,6-dichloro-2-methylpyrimidine	839370.60	60 kgs	CN
5-difluoro methoxy-2-mercapto 1h benzimidazole	1411222.50	1000 kgs	CN
5-difluoromethoxy-2-mercapto-1h-benzimidazole	1492275	1000 kgs	CN
5-hydroxy methyl thiazole	2963567.25	525 kgs	CN
5-methyl uridine	313377.75	150 kgs	CN
5-methyl uridine	6998769.75	3350 kgs	CN
5-methyl uridine	9911180.50	5000 kgs	CN
5-(difluoro methoxy) -2- mercapto-1h- benzimidazole	2053961.25	1000 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
5-(difluoromethoxy)-2-mercapto benzimidazole 99 pct-min	846733.50	500 kgs	CN
5-(difluoromethoxy)-2-mercapto-1h-benzimidazole	2053961.25	1000 kgs	CN
6,11-dihydro-11-0x0dibenz (b,e) oxepine-2-acetic acid methyl	1427609.75	7 kgs	CN
6-apa (6-amino penicillanic acid)	23615773.04	20000 kgs	CN
7 - amino cephalosporanic acid (7 aca)	22088700	5000 kgs	AT
7-aca (7 aminocephalosporanic acid)	25328376	6000 kgs	CN
7-chloro quinaldine	1243562.50	1000 kgs	CN
7-ethyl tryptophon	1458350.61	685 kgs	CN
9,10-difluoro-7-oxo-2, 3-dihydro-7h-pyrido (1,2,3 de)-1, 4-be	1396665.88	500 kgs	CN
Abs granules - toyolac 100-x01 black	312382.90	4000 kgs	MY
Abs granules - toyolac 100-x01 black	312382.90	4000 kgs	MY
Abs granules - toyolac 100-x01 black	312382.90	4000 kgs	MY
Abs granules-toyolac 100-x01 black	2774340.72	36000 kgs	MY
Abs xr404t-43199 (acrylonitrile butadiene styrene)	1054342.74	11900 kgs	KR
Acetal (k)	299.45	0.10 kgs	GB
Acetaldehyde w200301	165.82	0.10 kgs	GB
Acetic acid	124.77	0.50 kgs	GB
Acetonitrile	4894662	24000 kgs	JP
Acetophenone (k)	888.69	2 kgs	GB
Acetyl chloride	1041038.31	15200 kgs	DE
Acetyl chloride	1494824.24	15200 kgs	GB
Acetyl chloride	1543183.04	15200 kgs	DE
Acetyl chloride	1543183.04	15200 kgs	DE
Acetyl isoeugenol	437523.15	200 kgs	CN
Acetyl methyl carbinol (k)	54.74	0.05 kgs	GB
Acetylene black (denka black) 50% compressed	750116.90	10400 kgs	SG
Acetyl-l carnitine hcl	286171.38	200 kgs	CN
Acetyl-l carnitine hcl	649162.35	500 kgs	CN
Acrylic acid glacial	1064380.82	15600 kgs	MY
Acrylic acid glacial	515479.76	8000 kgs	MY
Acrylonitrile-butadine-styrene (abs) grade: hi121 colour:blac	1325322	18 mts	KR
Adipic acid	1537373.52	18 mts	JP
Adipic acid	1701193.50	18000 kgs	KR
Albendazole	130785.47	200 kgs	CN
Alcohol c9	1304.05	0.50 kgs	GB
Alcohol c-8	17.71	0.02 kgs	GB
Allyl amyl glycolate	206307.65	600 kgs	CN
Allyl amyl glycollate	603.73	1 kgs	GB
Allyl caproate (k)	1091.54	2 kgs	GB
Allyl cyclo hexyl propionate	547128.16	720 kgs	DE
Allyl heptoate	62680.53	170 kgs	DE
Allyl heptylate (k)	10110.42	20 kgs	GB
Allyl phenoxy acetate (k)	1304.05	0.50 kgs	GB
Alpha cypermethrin 25%	4904042.27	2900 kgs	FR
Alpha cypermethrin 25%	5073147.18	3000 kgs	FR
Alpha cypermethrin 25%	5242252.09	3100 kgs	FR
Alpha damascone	4057.05	0.25 kgs	GB

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Alpha pinene 404 (k)	19.32	0.05 kgs	GB
Amino acid fertilizer	513342.60	12000 kgs	CN
Amino guanidine bicarbonate	758573.13	5000 kgs	CN
Amyl butyrate (iso) (k)	13.68	0.05 kgs	GB
Arcton 22 (chlorodifluoromethane) R22	2565600.38	19920 kgs	GB
Artemisinin	6589795.50	500 kgs	CN
Asa-li941-9437 (acrylate stryene acrylonitile)	98908.29	1000 kgs	KR
B11628544 tvg-457 polyamic acid polymer	386212.95	612 kgs	US
Benzaldehyde	1463744.52	16.80 mts	NL
Benzaldehyde	1463744.52	16.80 mts	NL
Benzaldehyde k	1022.31	5 kgs	GB
Benzion verarome sumatra	1014.26	0.50 kgs	GB
Benzophenone (k)	1236.43	2 kgs	GB
Benzothiazol	2812164.76	19500 kgs	BE
Benzothiazol	2812164.76	19500 kgs	BE
Benzothiazol (40 plt stc 156 drums)	2757024.27	19500 kgs	DE
Benzothiazole	2715251.18	19500 kgs	BE
Benzoyl peroxide purity 32% [food grade wheat flour additives	98128.07	1000 kgs	CN
Benzyl alcohol (aa)	367.07	2 kgs	GB
Benzyl benzoate a/a (k)	3767.26	20 kgs	GB
Benzyl cinnamate a/a (k)	220.56	0.10 kgs	GB
Benzyl phenyl acetate	297.84	0.10 kgs	GB
Benzyl propionate	415.36	1 kgs	GB
Beta damascone notflavour grade (k)	615.80	0.03 kgs	GB
Beta ionone synthetic	7631.11	10 kgs	GB
Beta pinene (k)	387.20	0.94 kgs	GB
Beta thymidine	32531595	6000 kgs	CN
Beta thymidine	36325473.36	6600 kgs	CN
Beta thymidine	7705403.46	1400 kgs	CN
Betacarotene (bc-3000-os)	733849.74	100 kgs	DK
Betaine anhydrous	131817.63	500 kgs	CN
Beta-lonone r	263157.72	680 kgs	DE
Bisphenol-a	12744028.50	210 mts	TW
Bisphenol-a	19548802.50	300 mts	TW
Borax decahydrate (etidekahidrat)	1979147.52	96 mts	TR
Borax decahydrate (etidekahidrat)	1979147.52	96 mts	TR
Boric acid	1403540.19	41 mts	TR
Bromine isotank	1305687.60	15200 kgs	IL
Bromine isotank	1307405.61	15220 kgs	IL
Bromine isotank	1307405.61	15220 kgs	IL
Bulk muriate of potash	822628897	36181.72 mts	RU
Butyl acrylate	1102667.90	14400 kgs	TW
Butyl acrylate	513512.28	7200 kgs	MY
Butyl alcohol w21780-8	91.77	0.10 kgs	GB
Butyl carbitol (tm)solvent	295767.69	3.90 mts	US
Butyl cellosolve (tm) solvent	844524.63	11.10 mts	US
Butyl quinolene secondaire	3429.17	0.25 kgs	GB
Butyl-4-chlorphenyle-1,2,4-triazol-proponenitrile-12 percent(	306296.64	2000 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Caryophyllene (k)	6182.17	10 kgs	GB
Cbz-l-valine	2896074	2000 kgs	CN
Cbz-l-valine	4196853	3000 kgs	CN
Cbz-l-valine (5 plt stc 36 drums)	1325322	900 kgs	FR
Chondroitin bovine 90%	636704	500 kgs	US
Cinnamic alcohol a/a (k)	2897.89	4 kgs	GB
Cinnamic aldehyde a/a k	148.11	0.50 kgs	GB
Cinnamyl acetate (k)	6616.86	5 kgs	GB
Ciprofloxacin hcl	2791766.25	2500 kgs	CN
Cis 3 hexenol (k)	6182.17	2 kgs	GB
Cis 3 hexenyl acetate (k)	3298.77	1 kgs	GB
Cis 3 hexenyl salicylate	530.48	0.25 kgs	GB
Cis 6 nonenol	1938.37	0.01 kgs	GB
Cis jasmone (k)	137.65	0.01 kgs	GB
Cis-3-hexenyl acetate	351420.65	180 kgs	JP
Citronellal (k)	1584.18	2 kgs	GB
Citronellol	181912.72	680 kgs	DE
Citronellol	181912.72	680 kgs	DE
Citronellol	184345.71	680 kgs	DE
Citronellol	363825.43	1360 kgs	DE
Citronellyl acetate a	3235.98	5 kgs	GB
Citronellyl butyrate	1493.22	0.50 kgs	GB
Citronellyl nitrile (k)	2830.27	2 kgs	GB
Citronellyl propionate	2921.22	0.90 kgs	GB
Citronellylnitrile	463960.87	680 kgs	DE
Citronitrile	215330.04	200 kgs	DE
Citroviol	700859.07	1080 kgs	ID
Clindamycin phosphate	1580569.20	230 kgs	CN
Cobalt acetate	634216.88	1000 kgs	GB
Commercial alpha pinene	1313779.11	13.60 mts	ID
Commercial alpha pinene	1331323.42	13.60 mts	ID
Commercial alpha pinene	1372065.81	13.60 mts	ID
Commercial alpha pinene	1422583.99	13.60 mts	ID
Commercial alpha pinene (cyclo terpene)	1337180.41	13.60 mts	ID
Commercial alpha pinene (cyclo terpene)	1360579.69	13.60 mts	ID
Commercial alpha pinene (cyclo terpene)	1383981.99	13.60 mts	ID
Commercial alpha pinene [cyclo terpene]	1335139.20	13.60 mts	ID
Copolyamide jcc-6200[0-80um] [chemicals]	1760639.29	6000 kgs	CN
Coumarin	445195.38	1000 kgs	CN
Coumarin m.p	847393.03	2000 kgs	CN
Crude fumaric acid	1251693	68 mts	MY
Cyclocel r mannitol tag	1472580	5000 kgs	TW
Cyclohexyl ester	21398918	7500 kgs	CN
Cyclopentadecanolide	2722.41	1 kgs	GB
Cyclopropylamine	4012885.95	6480 kgs	CN
Cyclopropylamine	8050542.80	13000 kgs	CN
Cysteamine hcl	1451374.85	9600 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Cysteamine HCl	1578370.15	10440 kgs	CN
D (-) alpha phenyl glycine base	1134129	3800 kgs	CN
D (-) alpha phenyl glycine base	3641151	12200 kgs	CN
Daidzein	633993.03	150 kgs	CN
Decabromodi-phenyloxide- [10000 kgs]	1325322	10000 kgs	CN
Desmodur hl ba (isocynates)	734199.30	2400 kgs	DE
Diallylamine	565820.94	650 kgs	CN
Dibutyl diethyl malonate	457631	400 kgs	CN
Dichlorofluoroethane hcfc-141b	1332967.70	20 mts	CN
Dicyandiamide	1432820.34	21000 kgs	CN
Dicyandiamide	1451983.58	21000 kgs	CN
Diethyl malonate (intermediate chemical)	802731.84	8000 kgs	CN
Diisobutyl ketone (DIBK)	1363463.64	13200 kgs	KR
Dimethyl anthranilate (k)	177.90	0.07 kgs	GB
Dimethyl benzcarb	53.13	0.05 kgs	GB
Dimethyl benzyl carbinyl acetate	304603.17	1260 kgs	CN
Dimethyl benzyl carbinyl acetate (aromatic chemicals)	1081899.38	5000 kgs	CN
Dimethyl carbonate	639461.14	16000 kgs	JP
Dimethyl carbonate	640786.85	16000 kgs	JP
Dimethyl formamide	1262663.62	30.40 mts	CN
Dimethyl formamide	1947339.79	45600 kgs	KR
Dimethyl formamide	211956.62	5130 kgs	KR
Dimethyl formamide	416063	10070 kgs	KR
Dimethyl formamide	423913.24	10260 kgs	KR
Dimethyl formamide	692153	16000 kgs	DE
Dimethyl formamide	84429.98	1973 kgs	CN
Dimethyl sulfoxide	1201625.28	18000 kgs	CN
Dimethyl sulfoxide	2938506.12	36000 kgs	CN
Dimethyl sulfoxide (dmso)	452862.05	5.22 mts	US
Dimethylformamide	1893995.43	45600 kgs	CN
Dimethyl phenyl.ethyl.carbonate	242.30	0.10 kgs	GB
Diphenyl chloro phosphate	206161.20	100 kgs	CN
Diphenyl phosphate	346056.30	30 kgs	CN
Disodium carbonate light (soda ash)	5383163.45	494 mts	BG
Di- ammonium phosphate in bulk	427885481	23300 mts	JO
Di-isopropylether	2247764.09	22880 kgs	DE
Dl 2 amino butanol (intermediate chemicals)	411586.11	390 kgs	CN
Dl-lysine base 50% solution	2138354.02	3220 kgs	IT
Dl-methionine 99 percent feed grade	12369672	60000 kgs	JP
Dl-methionine feed grade	4009245.50	20000 kgs	BE
Dmpat 95% min (dimethyl phosphoramidothioate)	1713101.40	20000 kgs	CN
Dodecalactone/delta	19926.57	0.10 kgs us	
D- mandalic acid	1910672.55	1500 kgs	CN
D-calcium pantothenate (not for pharma use)	3769804.80	12000 kgs	CN
Eastman(tm) miak graco:ck0035 (methyl isoamyl ketone)	360925.21	2121.60 kgs	TW
Ebanol	11970.71	3 kgs	GB
Edible acid casein, 30 mesh(lactic acid for industiral use)	294516	500 kgs	AU
Engage * 7447 (polypropylene polyolefin elastomer)	865191.25	10000 kgs	US

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Escalol 557 (octyl methoxycinnamate)	2299034.72	4000 kgs	SG
Ethanol 96 syn.	305.89	2 kgs	GB
Ethoxymethylene malononitrile	118542.69	35 kgs	CN
Ethyl 2 methyl butyrate (k)	712.40	0.94 kgs	GB
Ethyl acetate	206.06	0.97 kgs	GB
Ethyl acetoacetate	24.15	0.10 kgs	GB
Ethyl acrylate	1010778.91	14400 kgs	KR
Ethyl acrylate	2148788.74	28800 kgs	KR
Ethyl benzoate (k)	33	0.05 kgs	GB
Ethyl butyrate (k)	502.30	2 kgs	GB
Ethyl caproate (k)	5.63	0.01 kgs	GB
Ethyl chloro formate (ecf)	1311577.92	16000 kgs	CN
Ethyl cyano acetate	1873234.88	16000 kgs	CN
Ethyl iso valerate (k)	2463.21	2 kgs	GB
Ethyl laurate	2299	2 kgs	GB
Ethyl maltol	403781.44	450 kgs	CN
Ethyl maltol (k)	1548.76	1 kgs	GB
Ethyl pelargonate (k)	67.62	0.05 kgs	GB
Ethyl phenyl acetate	120452.40	100 kgs	DE
Ethyl salicylate (k)	434.68	0.25 kgs	GB
Ethyl vanillin fcc (eternal pearl)	2491114.50	2500 kgs	DE
Ethyl vanillin (k)	15358.83	10 kgs	GB
Ethyl vinyl acetate grade: fpc-7340-m	2395101.38	30000 kgs	TW
Ethylbromo difluoro acetate	60310.43	27 kgs	CN
Ethylene brassylate	777.60	1 kgs	GB
Ethylene brassylate (astratone)	1406690.29	2600 kgs	CN
Ethylene propylene dine methylene-	121340.06	600 kgs	KR
Ethylene propylene dine methylene	273501.79	1800 kgs	KR
Ethylene propylenedine methylene	157570.66	931 kgs	KR
Ethylene propylenedine methylene	53385.30	328 kgs	KR
Ethylene propylenedine methylene-raw material for auto mobile	78449.27	360 kgs	KR
Ethylene propylinedine methylene-raw material for auto mobile	24462.67	130 kgs	KR
Ethylene vinyl acetate(eva co polymer) brand : eva tane grade	803169.68	9.62 mts	FR
Ethylene vinyl acetate(eva co polymer) brand: eva tane grade2	458954.10	5.50 mts	FR
Ethylenediamine	2247746.11	14400 kgs	BE
Ethyl-2-bromo butyrate	3780430	20000 kgs	CN
Ethyl-2-oxo-4-phenyl-butyrate	2885065	2000 kgs	CN
Ethyl-2-oxo-4-phenyl-butyrate	5770130	4000 kgs	CN
Euro vanillin aromatic (ethyl vanilllin)	1920060.50	2000 kgs	NO
Eurovanillin supreme fc	7441478	8800 kgs	NO
Exceed 1018ea (polyethylene granules)	6566010	88 mts	US
Expanded polypropylene beads pb 7330 30pw	505351.96	1587.40 kgs	SG
Exxonmobil ap03b (propylene copolymer)	1149051.75	16.50 mts	SG
Exxonmobil ap03b (propylene copolymer)	1502816.91	23.60 mts	SG
Exxonmobil ap03b (propylene copolymer)	598306.29	9.40 mts	SG
Fenchyl alcohol (k)	679.39	0.50 kgs	GB
Finnfix 10 carboxy methyl cellulose	1889811	14000 kgs	FI
Formic acid	766212.83	19512 kgs	FI

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Formic acid	776460.53	19512 kgs	FI
Formic acid 85%	1719659.29	38.08 mts	CN
Formic acid 85%	767789.40	19.51 mts	FI
Formic acid 85%	915905.49	19.04 mts	CN
Furfurly alcohol	1089161.78	18400 kgs	TH
Furfuryl alcohol	479418.22	7900 kgs	TH
Furfuryl alcohol	685750.11	11300 kgs	TH
Furfuryl alcohol 98% min	1133886.60	20 mts	CN
Galaxolide 50% ipm (musk yinghai 50% in ipmo)	1400261.17	4995 kgs	CN
Gamma linolenic acid 20% min	13108.14	19.52 kgs	CN
Gamma linolenic acid 20% min	322653.74	480.48 kgs	CN
Genistein	328300.50	40 kgs	CN
Geraniol 60	139855.83	680 kgs	DE
Geraniol 60	141726.33	680 kgs	DE
Geraniol 60	279711.66	1360 kgs	DE
Geraniol extra	186375.20	680 kgs	DE
Geranyl butyrate	3710.20	1 kgs	GB
Geranyl formate (k)	4127.51	2 kgs	GB
Geranyl tiglate	5868.50	1 kgs	GB
Glass fiber-x523	19634.40	200 kgs	KR
Glissopal 2300 (polyisobutylene)	4547106.43	60.22 mts	BE
Glucose 30% injection 30% (50 amp/box)	506817.42	4248 box	CN
Glycine tech	184047.25	2000 kgs	CN
Glyoxylic acid	1099309.25	17000 kgs	CN
Griseofulvin	696395	200 kgs	CN
Hexa hydrophthalic anhydride (hhpa)	571242.87	5.28 mts	TW
Hexa hydrophthalic anhydride [hhpa]	1904142.90	17.60 mts	TW
Hexyl alcohol (k)	15.49	0.03 kgs	GB
Hexyl caproate	36.68	0.03 kgs	GB
Hexyl isobutyrate	149.16	0.10 kgs	GB
Hfc-227 heptafluoropropane gas	2186392.65	4000 kgs	CN
Hfc-227 heptafluoropropane gas	3279588.98	6000 kgs	CN
Hydrazine hydrate 100 pct	1610020.80	16 mts	KR
Hydrazine hydrate 100%	1711142	16000 kgs	KR
Hydrazine hydrate 100% min	1631554	16000 kgs	KR
Hydroquinone	123260.40	600 kgs	JP
Hydroxy ethyl hydrazine	2437382.50	2500 kgs	CN
Hydroxy propyl methyl cellulose (hpmc) 60 rt15(e-15)	1591760	5 mts	CN
Hydroxy propyl methyl cellulose (hpmc) 60 rt15(e-15)	1750936	5.50 mts	CN
Hydroxypropyl methyl cellulose (hpmc) 60rt5 (e5)	3298579.20	10500 kgs	CN
Hydroxypropyl methyl cellulose (hpmc) 75rt100000 (k100m)	3669669.36	10500 kgs	CN
Hyoscine -n- butylbromide	1771880.88	25 kgs	CH
Hyoscine -n- butylbromide	3543761.75	50 kgs	CH
Hypromellose phthalate (anycoat-p)grade hp55	2356128	1500 kgs	KR
Hypromellose phthalate(anycoat-p) hp-55 (hss.inv.no.034705 dt	2435392.80	1500 kgs	KR
Hydroxy ethyl hydrazine	1462429.50	1500 kgs	CN
Imidazole	1629655.20	8000 kgs	DE
Iminodibenzyl	2748816	5000 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Iminodibenzyl	2785580	5000 kgs	CN
Imipenem cilastatin mixture	10197212.50	50 kgs	KR
Isoamly acetate	482507.30	3420 kgs	SG
Isoamyl benzoate	2303.82	1 kgs	GB
Iso e seper tocopherol "pfg"	36807.72	50 kgs	ES
Iso eugenol 00098903	144269.33	220 kgs	GB
Iso propyl alcohol (ipa)	373965.91	6203 kgs	TW
Iso propyl alcohol (ipa)	397719.34	6597 kgs tw	
Iso propyl myristate	82539.60	350 kgs	ID
Isoborneol	2972648.16	16 mts	CN
Isoborneol	746137.50	4 mts	CN
Isocyanate millionate mr 200	1451370	20 mts	JP
Isophorone	783412.56	7600 kgs	DE
Isophthal dehyde 99% min	560597.98	700 kgs	CN
Isotretinoin	10564923.20	32 kgs	DE
Isovalerianate benzyle	41393.55	25 kgs	SG
Kathon wt / 125kg (chloromethyl-isothiazolinone and methyl-is	686446.50	6000 kgs	CN
Lactose hms impalpable grade	2299305.40	40000 kgs	NL
Lactose (hms impalpable grade)	2299305.40	40000 kgs	NZ
Lactose (pharmatose 200m)	1228200.40	20000 kgs	NL
Lactose (pharmatose 200m)	1228200.40	20000 kgs	NL
Lactose (super tab 21 an)	3070001.15	15300 kgs	DE
Lactose (super tab 11 sd)	2281196.58	12240 kgs	DE
Lactose (super tab 11 sd)	2281196.58	12240 kgs	DE
Lactose (super tab 11sd)	2281196.58	12240 kgs	DE
Lactose (super tab 30 gr)	2193794.42	12240 kgs	DE
Lactose (super tab21 an)	3070001.15	15300 kgs	DE
Lauric acid 1299	803838.80	16 mts	MY
Lauric acid 99% cc12-99% min) kortacid 1299	3167642.80	70 mts	MY
Lauric acid 99% min	4052540.16	96 mts	MY
Leucoxene 92% (minerals ores)	3629958.94	105 mts	AU
Levafix brilliant red ca (10042177)	205187.81	150 kgs	DE
Levofloxacin hemihydrate	1939957.50	1000 kgs	CN
Levulinic acid	29451.60	0.20 mts	CN
Levulinic acid	353419.20	2.40 mts	CN
Lexan polycarbonate ls1 natural 111	2037830.84	17812 kgs	NL
Lg chem abs grade lg709w (poly poroplyene granules)	158302.35	1.50 mts	KR
Lidocaine hcl	27358.38	10 kgs	ES
Ligno sulphonate technical powder	4071192.84	286 mts	RU
Linalool	1222653.72	6120 kgs	DE
Linalool	826004.06	4080 kgs	DE
Linalool	950952.89	4760 kgs	DE
Linalool	950952.89	4760 kgs	DE
Linalyl acetate	155504.45	720 kgs	DE
Linalyl acetate	155504.45	720 kgs	DE
Linalyl acetate	157584.24	720 kgs	DE
Lipofer dispersible (iron pyrophosfate)	676509.92	300 kgs	ES

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CHEMICALS IMPORTED			
Lipoid e 80(lecithin)	318315.85	15 kgs	DE
Lipoid purified soybean oil 700	84884.23	200 kgs	DE
Liquid bromine (super isotank)	1476997.74	17700 kgs	IL
Liquid bromine (super isotank)	1476997.74	17700 kgs	IL
L- camphor sulphonic acid	2259553.06	2300 kgs	CN
L-arginine base	1619838	4000 kgs	CN
L-camphor 10 sulfonic acid monohydrate	7755588	8000 kgs	CN
L-carnitine fumarate	1254147.30	1000 kgs	CN
L-carnitine fumarate	662661	500 kgs	CN
L-carnitine hcl	248712.50	250 kgs	CN
L-carnitine l-tartarate	863032.38	1000 kgs	CN
L-histidine base	140025.14	50 kgs	CN
L-lysine monohydrochloride 98.5% (feed grade)	2298103.50	33000 kgs	TH
L-lysine monohydrochloride 98.5% (feed grade)	3401659.80	49500 kgs	TH
L-lysine sulfate 65% feed grade	2094965.94	55.50 mts	CN
L-proline	746137.50	1000 kgs	CN
L-threonine feed grade	1288507.50	15000 kgs	US
L-threonine(feed grade)	485969.07	5500.20 kgs	ID
L-threonine(feed grade)	626110.39	7086.32 kgs	ID
L-threonine(feed grade)	655016.54	7413.48 kgs	ID
L-tryptophan	223841.25	100 kgs	CN
L-valine methyl ester hcl	736290	500 kgs	CN
Maleic anhydride	3227790.83	63 mts	MY
Maleic anhydride	5379651.38	105 mts	MY
Maltol	871276.50	1000 kgs	CN
Mannitol 25c	323967.60	3000 kgs	TW
Martoxid mds-6 {microfined calcined alumina}	3936310.88	105 mts	DE
Mefenamic acid	736290	2500 kgs	CN
Mefenamic acid	736290	2500 kgs	CN
Melamine	288506.50	5 mts	NL
Melamine	4622134.10	79.80 mts	ID
Menthone iso menthone racemic	120594.82	180 kgs	DE
Meta bromoanisole	5841234	14000 kgs	CN
Metallurgical grade silicon	3641536.82	40000 kgs	CN
Metallurgical grade silicon	3641536.82	40000 kgs	CN
Methional (k)	80.50	0.01 kgs	GB
Methocel e50 premium lv hydroxypropylmethylcellulose (foc)	166892.40	200 kgs	US
Methyl 2 nonenoate	57.96	0.01 kgs	GB
Methyl 3-oxo pentanoate	125763.96	193 kgs	CN
Methyl 3-oxo pentanoate	89272.86	137 kgs	CN
Methyl acetophenone	12557.53	10 kgs	GB
Methyl carbazate	98172	40 kgs	CN
Methyl cedryl ketone	603757.80	1000 kgs	CN
Methyl cinnamate	183.53	0.25 kgs	GB
Methyl heptenone pure	5457.70	5 kgs	GB
Methyl hexyl ketone	3823.61	5 kgs	GB
Methyl iso eugenol	144.89	0.05 kgs	GB
Methyl octine carbonate	1222.75	0.10 kgs	GB

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Methyl sulphide	16.10	0.01 kgs	GB
Methyl trans -2-oct	122.26	0.01 kgs	GB
Methylene chloride	156688.88	5000 kgs	KR
Methylene chloride	313377.75	10000 kgs	KR
Methylene chloride	626755.50	20000 kgs	KR
Methylene chloride	687204	21.60 mts	CN
Methylene chloride	687204	21.60 mts	CN
Methylene chloride	94013.33	3000 kgs	KR
Methylene dichloride	421816.40	21200 kgs	GB
Methyl-3-oxo-4- androstene -17-carboxylate	6963950	500 kgs	CN
Methyl .2 butyric acid	89.35	0.05 kgs	GB
Methyl .napthal .ketone.crystal	3912.15	5 kgs	GB
Microcrystalline cellulose mcc-101	2247157.08	21800 kgs	TW
Mono ammonium phosphate (12-61-00)	2704748.44	75 mts	CN
Mono annonium phosphate - map fertilisers (12-61-0)	2560743.90	72 mts	CN
Mono propylene glycol80 drums - each 215 kgs	1174418.51	17.20 mts	SG
Mono propylene glycol80 drums - each 215 kgs	1174418.51	17.20 mts	SG
Mono silicon ingots	563205.40	100.80 kgs	US
Monoammonium phosphate (12-61-00)	5409496.88	150 mts	CN
Monosodium glutamate	2819861.42	43 mts	CN
Monosodium glutamate	2889475.17	43 mts	CN
Monosodium glutamate	2915708.40	44 mts	CN
Monosodium glutamate purity 99% up, 60 mesh	1401896.16	21 mts	CN
Monosodium glutamate (ajinomoto brand) regular crystal	2213541.25	35.60 mts	TH
Monosodium glutamate-(ajinomoto brand) (regular crystal)	2184327	35.60 mts	TH
Monosodium glutamate-(ajinomoto brand) (regular crystal)	3276490.50	53.40 mts	TH
Mop-2-([2-methyl-2-propenyl]oxy)phenol xylene	2487.13	5 ltr	CN
Musk 50 (hexahydro hexamethyl cyclopent a benzopyran)	638118	2000 kgs	IL
Musk ketone (aromatic chemicals)	290993.63	500 kgs	CN
N,N-dicyclo hexyl carbodimide 99% min	2163798.75	6000 kgs	CN
N,N-dicyclohexylcarbodiimide	4647939.20	12800 kgs	CN
N,N-dimethyl formamide dimethylacetal	41232.24	6 kgs	CN
N – butylchloride	1361384.58	15.30 ton	DE
N - methyl pyrrolidone	2081226.20	16 mts	US
N -propyl bromide (intermediate chemical)	940133.25	9000 kgs	US
N2 1s ethoxy carbonyl 3 phenyl propyl n6 trifluoro acetyl	8607725	2500 kgs	CN
N2 1s ethoxy carbonyl3 phenyl propyl n6 trifluoro acetyl	8607725	2500 kgs	CN
Nan 101 (food grade phosphate for sea food)	1760573.61	20000 kgs	TH
Naphthalene 78.5 deg. Molten (manu.of leather chemical)	835475.03	19.76 mts	DE
Naphthalene 78.6 c cnp 331 (manu.of leather chemical)	797650.83	19.92 mts	NL
Neo-heptanoyl chloride, fm1	2545145.46	7200 kgs	HU
Nitroethane	54829.06	1.12 mts	US
Nitroethane	791266.32	16.12 mts	US
Nitrogen inflater ds-3500a	604030.50	20 pcs	CN
Nitromethane 99% min	1484360.64	18000 kgs	CN
Norit 1240x activated carbon	192798.90	1000 kgs	NL
N-acetyl cytosine	2919884.75	2000 kgs	CN
N-butyl chloride	1390685.01	15300 kgs	DE

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
N-butylchloride	1361384.58	15.30 ton	DE
N-caproic acid	338249	1000 kgs	CN
N-heptane	914630.75	5000 kgs	DE
N-heptane 99%	2133561.62	8631 kgs	KR
N-heptane 99% (organic chemical)	3508710.91	22400 kgs	IT
N-methyl-o-phenylene-diamine dihydrochloride	601303.50	700 kgs	CN
N-methyl-o-phenylene-diamine dihydrochloride	609345.63	700 kgs	CN
N-propyl bromide	1925034.75	18000 kgs	US
N-(1,1-dimethylethyl)-3-oxo-4-aza -androst-5-ene-17b-carboxam	10549563.12	270 kgs	CN
N-(4-amino-1-benzyl-3-hydroxy-5-phenyl-pentyl)-3-methyl2-(2-o	14783749.46	703.20 kgs	CN
N-(4-amino-1-benzyl-3-hydroxy-5-phenyl-pentyl)-3-methyl2-(2-o	2219755.80	105.50 kgs	CN
O,O-di ethyl thio phosphoryl chloride	1682195.40	20000 kgs	CN
Ortho diethoxy benzene	1962561.30	6000 kgs	US
Osyrol (aroma chemical)	162198.93	40 kgs	GB
Pancuronium bromide	870493.75	1 kgs	IT
Para amino phenol	4644034.31	39420.90 kgs	CN
Para amino phenol	4780477.69	40579.10 kgs	CN
Para amino phenol	6706647.45	54000 kgs	CN
Para amino phenol	9424512	80000 kgs	CN
Para cresyl acetate	158.94	0.03 kgs	GB
Para cres.meth.ether	8656.05	15 kgs	GB
Para cres.phe.acetate	1907.26	0.25 kgs	GB
Para cymene (k)	28.53	0.05 kgs	GB
Para hydroxy benzaldehyde	285482.81	750 kgs	CN
Para methoxy acet	29.34	0.01 kgs	GB
Para tolyl aldehyde	9.45	0.01 kgs	GB
Paraformaldehyde	73704.55	2000 kgs	ES
Paroxetine carbinol	5301288	500 kgs	CN
Pentaerythritol min 98%	1728278.29	33.09 mts	TW
Pentaerythritol min 98%	360906.71	6.91 mts	TW
Perchloro ethylene	1540475.48	39.96 mts	DE
Perchloro ethylene	2310713.22	59.94 mts	DE
PET chips (shinpet grade)	131314.87	2200 kgs	TW
PET chips - polyester chips	857843.28	23296 kgs	AE
Phenoxanol	1677.41	1 kgs	GB
Phenyl acet pure	951.19	0.50 kgs	GB
Phenyl acetaldehyde 100%	29905.68	40 kgs	DE
Phenyl acetaldehyde 100%	29996.32	40 kgs	DE
Phenyl acetic acid	4988.23	5 kgs	GB
Phenyl ethlyl isobutyl.	1266.62	1 kgs	GB
Phenyl ethyl acetate	182256.52	800 kgs	CN
Phenyl ethyl acetate.	3667.81	10 kgs	GB
Phenyl ethyl cinnamate	271.42	0.10 kgs	GB
Phenyl ethyl formate	35.05	0.01 kgs	GB
Phenylethyl phenylacetate	82.08	0.10 kgs	GB
Phenylethyl propionate	1745.88	1 kgs	GB
Phenyl propyl alcohol	1119.91	0.50 kgs	GB
Piperazine anhydrous	4333263.60	18000 kgs	SE

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Piperazineanhydrous(piperazinechips)(20pltstc 80 drms)	1342992.96	7600 kgs	BE
Pmentha -8-thiol-3-one	493.93	0.01 kgs	GB
Poly tetra fluoro ethylene (b 40 green)	369492.65	500 kgs	DE
Poly tetra fluoro ethylene (b 40)	109716.70	150 kgs	DE
Polyacrylamide	50612.99	0.55 mts	CN
Polyamide66 j-1/25/hs black125	333784.80	2000 kgs	KR
Polyamide-dsc201 g3 bk [pa 66 gf15% balck]	411867.90	3000 kgs	KR
Polybor di sodium octoborate [indl lubricant] raw material	8188.07	108.14 ltr	US
Polyphenylen sulphide staple fiber 2.2dtex/65mm	335548.70	604.95 kgs	CN
Polysantol (974656)	163.83	0.01 kgs	GB
Polyvinyl alcohol jp 20y	191435.40	2 mts	JP
Polyvinyl alcohol jp 27	196344	2 mts	JP
Polyvinyl alcohol ss 200h	478588.50	5 mts	JP
Polyvinyl alcohol ss200h	574306.20	6 mts	JP
Potassium clavulanate and cellulose microcrystlline 1:1 oral	1710156.24	260 kgs	IT
Potassium clavulanate with avicel 1:1	2353673.70	350 kgs	SI
Potassium clavulanate with avicel (1:1)	4049595	300 kgs	CN
Potassium tert butoxide	306960.97	500 kgs	CN
Potassium titanate 344 (raw material for brake lining)	111417.16	100 kgs	JP
Pottasium diphenylsulfone sulfonate (kss) f-535 (flame retar	287412.17	300 kgs	US
Prenyl acetate	10302.48	10 kgs	GB
Primojel (sodium starch glycolate)	2879130.24	12.60 mts	NL
Promaxon d (calcium silicate hydrate) - raw materials forbrak	403766.14	1500 kgs	BE
Propenyl guaethol (k)	79.88	0.01 kgs	GB
Propionic acid	1068111.36	16000 kgs	CN
Propionic acid	1082396.80	16000 kgs	CN
Propiophenone	1536208.38	6400 kgs	TW
Propylene glycol (usp grade)	540877.22	8.60 mts	KR
Purified isophthalic acid	1014747	20 mts	BE
Purified terephthalic acid	22750993.72	504 mts	TH
Pvc agglomerates	3005646.24	102.14 mts	AE
Pvp k 30 (tech grade) (polyvinyl pyrolidone)	2297224.80	9000 kgs	CN
Pyridine-2,3-dicarboxylic acid	72156.42	60 kgs	CN
Pyridostigmine bromide	1374408	200 kgs	CN
Pyrrolydine (organic chemical)	6900279.60	13600 kgs	NL
Reprocessed polycarbonate granules	53793.19	1.20 mts	SG
Reprocessed polycarbonate granules	708277.06	15.80 mts	SG
Reprocessed polycarbonate granules	762070.25	17 mts	SG
Rose oxide co	18779.21	5 kgs	GB
R-2-(4-methoxy 3-(3-methoxy propoxy)-phenylmethyl-3-methyl-1-	252694.73	1300 gms	CN
R-propylene carbonate	1066479.20	1675 kgs	CN
R-propylene carbonate	194194.72	305 kgs	CN
Salicylic acid	591935.75	5000 kgs	CN
Sbs-styrene butadiene styrene oil bound copolymer thermoplast	1193280.66	13000 kgs	TW
Selenium, pillets purity 99.5 pct	1109343.60	500 kgs	MX
Shikimic acid	4446979.50	600 kgs	CN
Shikimic acid	5421932.50	1000 kgs	JP
Shikimic acid	6018842.50	1000 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Shin -etsu silicone kbm 403 (foc)	1054.39	1 kgs	JP
Shin -etsu silicone kbm 573 (foc)	1114.64	1 kgs	JP
Shin -etsu silicone kbm 603 (foc)	1114.64	1 kgs	JP
Silver paste gpmg 53-11 (1.5kg/can)	984835.45	30 kgs	JP
Silymarine	1963440	500 kgs	CZ
Sodium benzene sulphinate (anhydrous photo grade)	25461.34	50 kgs	CN
Sodium boro hydride	2424946.88	2500 kgs	CN
Sodium boro hydride	4064320.80	4000 kgs	US
Sodium boro hydride	4064320.80	4000 kgs	US
Sodium boro hydride	5831416.80	6000 kgs	CN
Sodium borohydride	1963440	2000 kgs	CN
Sodium borohydride 98% min	1969653.77	2010 kgs	CN
Sodium diacetate	1135007.70	15000 kgs	GB
Sodium hexa meta phosphite (shmp)	53994.60	1000 kgs	CN
Sodium meta bisulphite (industrial grade)	626261.18	50 mts	CN
Sodium perborate-monohydrate	1238568.98	23.94 mts	SI
Sodium perborate-monohydrate	1340015.09	23940 kgs	SI
Sodium perborate-monohydrate	1340015.09	23940 kgs	SI
Sodium stearate ns soap (synthetic rubber and chemicals)	58903.20	300 kgs	JP
Solbin-m5 (vinyl chloride vinyl acetate copolymer)	825725.50	4000 kgs	JP
Sorbic acid	115917.34	500 kgs	BE
Specflex ne 150 isocyanate	1690049.19	18800 kgs	DE
Specflex ne 150 isocyanate da	1624551.75	18800 kgs	DE
Specflex ne 388 isocyanate da	1737506.31	18800 kgs	DE
Specflex ne 388 isocyanate da	1737506.31	18800 kgs	DE
Specflex ne 388 isocyanate da	1737506.31	18800 kgs	DE
Specflex ne 388 isocyanate da	1737506.31	18800 kgs	DE
Standart aluminium powder special pcr 212 graco:ma2106	233690.27	150 kgs	DE
Stearic acid 45 pct	847015.29	16.50 mts	MY
Styrene butadiene styrene (sbs) - taipol tpe-3201	1057606.96	9.45 mts	TW
Styrene monomer	146.71	0.05 kgs	GB
Suprasec 2444 (isocyanate)	1145971.77	11117.24 kgs	NL
Suprasec 2444 (isocyanate)	1855450.80	18000 kgs	NL
Suprasec 2444 (isocyanate)	1855450.80	18000 kgs	NL
Suprasec 2444 (isocyanate)	1855450.80	18000 kgs	NL
Suprasec 2444 (isocyanate)	1855450.80	18000 kgs	NL
Suprasec 2444 (isocyanate)	709479.37	6882.76 kgs	NL
Suprasec 2449 (isocyanate)	1496982.86	14522.45 kgs	NL
Suprasec 2449 (isocyanate)	1855450.80	18000 kgs	NL
Suprasec 2449 (isocyanate)	1855450.80	18000 kgs	NL
Suprasec 2449 (isocyanate)	358467.94	3477.55 kgs	NL
Suprasec 2456 isocyanate	377756.16	3840 kgs	NL
Surfynol 104pg surfactant	229801.06	208.25 ltr	US
Syn hydrid sodium bis [2 methoxy ethoxo] dihydrido aluminate	557408.90	1000 kgs	CZ
Synthetic musk (aromatic chemicals)	537219	3000 kgs	CN
S-6(epoxide)ethyl(3r,4s,5s)-4,5-epoxy-3(1-ethyl-propoxy)cyclo	5399460	200 kgs	CN
Terpinyl acetate	1897271.62	6000 kgs	US
Tert-butylamine	966994.20	4860 kgs	BE

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Tertiary butyl hydro peroxide enox tbhp	1283304.38	16000 kgs	CN
Tert- butyl peroxy benzoate - enox tbpb	1923385.82	16000 kgs	CN
Tert-butyl-4- bromomethyl-2-biphenyl carboxylate	797647.50	250 kgs	CN
Tetrahydro citral	3178.77	0.50 kgs	GB
Tetrahydrofuran	1427813.57	14400 kgs	MY
Tetrahydro furan	305451.27	3600 kgs	TW
Tetra hydro geraniol	244.52	0.25 kgs	GB
Tetra hydro linalool	7743.17	5 kgs	GB
Tetrahydrofuran	1239185.16	14400 kgs	TW
Tetrahydr furan	1239185.16	14400 kgs	TW
Tetrahydro linalool	337572.50	1360 kgs	DE
Tetrahydro phthalic anhydride	801650.13	10.20 mts	TW
Tetrahydrofuran	1342992.96	14400 kgs	TW
Tetrahydrofuran	1378334.88	14400 kgs	TW
Tetrahydrofuran	1432584	14400 kgs	JP
Tetrahydrofuran	2685985.92	28800 kgs	TW
Tetrahydrofuran(THF)	1225945.47	14.40 mts	TW
Tetrahydrolinalool	499675.85	2040 kgs	DE
Tetrahydrolinalool	832793.08	3400 kgs	DE
Thioacetamide 99% min	3541168.58	3000 kgs	CN
Thionyl chloride - iso tank	294530.73	20001 kgs	DE
Thionyl chloride - iso tank	294530.73	20001 kgs	DE
Thymidine 3`-ICAA CPG 1000	8430.02	1 pac	US
Thymol crystals	76.62	0.10 kgs	GB
Timberol	29049.09	10 kgs	GB
Toray 100-x01 natural (ABS)	1280371.95	18000 kgs	MY
Tranexamic acid [drugchemical]	5497632	2000 kgs	CN
Trans 2 cis 6 nonadien -al	1609.76	0.01 kgs	GB
Trans 2 hexenal	240.45	0.10 kgs	GB
Trans 2 hexenol	96.99	0.03 kgs	GB
Trans 2 trans 4 dec	10758.92	0.05 kgs	GB
Trans 4 decenal	3040.21	0.10 kgs	GB
Trans-2-hexenal	144803.70	100 kgs	IL
Trans-2-trans-4-nonadienal	293.43	0 kgs	GB
Tri ethyl silane	2417485.50	810 kgs	CN
Tri ethyl silane	2536867.50	1000 kgs	CN
Tri ethyl silane	2847758.13	1000 kgs	CN
Tri ethyl silane	3551614.50	1400 kgs	CN
Tri ethyl silane	5849718	2000 kgs	CN
Triazole 1 2 4	704874.96	1080 kgs	FR
Trichloro aceto nitrile 99%	850169.52	800 kgs	CN
Trichloroethylene	878571.93	21280 kgs	RU
Trichloroethylene	878571.93	21280 kgs	RU
Triethyl citrate	198.02	0.50 kgs	GB
Triethyl orthoformate	1769241.24	14400 kgs	CN
Triethylsilane	3710901.60	1200 kgs	CN
Triethylsilane	4290290.63	1500 kgs	CN
Triethylsilane	4412831.40	1550 kgs	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Triethylsilane	4675441.50	1500 kgs	CN
Triethylsilane	927725.40	300 kgs	CN
Triethylamine anhydrous	1072038.24	11200 kgs	BE
Triethylsilane	5620347	2000 kgs	CN
Trimethyliodosilane	10385157.74	7020 kgs	DE
Troxerutin	1589272.88	1500 kgs	CN
Tungsten carbide powder containing less than 97%	466037.24	91 kgs	US
Valero nitrile valethene	2650644	12000 kgs	CN
Vanillin fcc (eternal pearl)	736290	1000 kgs	DE
Vinyl acetate monomer	696341.85	15.20 mts	TW
Vinyl acetate monomer	705655.06	15.20 mts	TW
Vulkacit nz/eg-c(zinc dibenzyldithiocarbamate)	111323.72	600 kgs	BE
Wannate 8002 (isocyanate)	515730.24	5.76 mts	CN
Wannate 8629 (isocyanate)	1203370.56	13.44 mts	CN
Zirconium acetate solution grade za-30e	456709	1800 kgs	JP
Zirconium acetate solution grade za-20e	76648.98	400 kgs	JP
(2s,3as,7as)-octahydro-ih-indole-2-carboxylic acid	1357227.90	35 kgs	CN
Isoamyl phenyl acetate	92.57	0.05 kgs	GB
(S,s,s) 2-azabicyclo- (3,3,0) octane -3- carboxylic acid benz	12435625	500 kgs	CN
(S,s)2,8 diazabicyclo[4,3,0]nonane	9571770	300 kgs	CN
(S)-2-amino butyramide-hcl	13815979.38	5500 kgs	CN
(S)-5-chloro-a- (cyclopropyethynyl) -2- amino-a-(trifluoromet	13143958.20	734 kgs	IN
(S)-(-)-4-chloro-3-hydroxy butyronitrile [s-chbn]	802556.10	500 kgs	KR
- Xylitol crystaline - [xylitol c 25 kgs bag]	1442532.50	10000 kgs	FI
CATEGORY: INORGANIC CHEMICALS			
Activated alumina size: 5-8 mm	258661	5000 kgs	CN
Activated carbon carbochem ca-50s	895365	12 mts	CN
Activated carbon wv-a-1100 10x25	244136.19	1200 kgs	US
Activated carbon wv-a-1100 8x35	809409.96	4800 kgs	US
Alumina cl5000 (calcined)	1033751.16	18 mts	DE
Alumina ct 800 (calcined)	731381.40	20 mts	DE
Alumina ct 800 (calcined)	731381.40	20 mts	DE
Alumina ct800 (calcined)	73138.14	2 mts	DE
Alumina ct800 (calcined)	731381.40	20 mts	DE
Alumina ct800 (calcined)	731381.40	20 mts	DE
Aluminium oxide a46 (finishing materials)	111059.80	1050 kgs	KR
Aluminium oxide zrsk 100/150	291269.15	3000 kgs	IT
Ammonium chloride	158206.40	10000 kgs	DE
Ammonium chloride	232794.90	24 mts	CN
Ammonium chloride	301050.42	22 mts	HK
Barium carbonate	1325322	100 mts	CN
Barium carbonate	1343047.50	100 mts	CN
Barium sulfate 307 (raw material for brake lining)	21069.81	300 kgs	JP
Bengara sr550 (iron oxide)	143569.23	500 kgs	JP
Black iron oxide 247 (raw material for brake lining)	59669.70	200 kgs	JP

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Black silicon carbide sic: 97%, lumps 0-15mm	928523.95	21 mts	RU
Black silicon carbide sic: 97%, lumps 0-15mm	928523.95	21 mts	RU
Black silicon carbide sic: 97%, lumps 0-15mm	928523.95	21 mts	RU
Black silicon carbide sic: 97%, lumps 0-15mm	928523.95	21 mts	RU
Black silicon carbide (sic: 97%, size: lumps: 0-15mm)	215435.09	4.87 mts	RU
Black silicon carbide (sic: 97%, size: lumps: 0-15mm)	713079.99	16.13 mts	RU
Black silicon carbide (sic: 97%, size: lumps: 0-15mm)	928515.08	21 mts	RU
Brown aluminium oxide (crude)	550744.92	17 mts	CN
Brown fused alumina 0.-1mm 1mt in big bag	804028.68	26 mts	CN
Brown fused alumina 1.-3mm	363359.12	11.75 mts	CN
Brown fused alumina 1.-3mm 1mt in big bag	316972.85	10.25 mts	CN
Cabosilm-5p (colloidal silicon dioxide)	503106.25	500 kgs	DE
Caco3 (calcium carbonate)	333882.97	19000 kgs	KR
Calcined bauxite (50 mts)	670115.94	50000 kgs	CN
Calcium carbide	1892458.09	64.80 mts	CN
Calcium carbide	3253037.42	112.50 mts	CN
Calcium carbide	599340.06	22 mts	CN
Calcium carbide	649139.63	22.50 mts	CN
Calcium carbide	6849920.24	225 mts	CN
Calcium carbonate	143009.69	23 mts	MY
Calcium carbonate lh-2300	163947.24	20 mts	TW
Calcium carbonate lh-2300	163947.24	20 mts	TW
Calcium carbonate lh-2300	163947.24	20 mts	TW
Calcium carbonate omyacarb 2t-ip	286019.38	46 mts	MY
Calcium carbonate sp3 fc1567	159038.64	20000 kgs	MY
Calcium carbonate yh 303	229876.61	13800 kgs	CN
Calcium carbonate yh 303	229881.66	13800 kgs	CN
Calcium carbonate (coated) product:aum 2st	305916.38	50 mts	MY
Calcum carbide size 25-50mm	1263473.64	44 mts	CN
Carbon black	559580.40	10 mts	CN
Carbon black 453 (raw material for brake lining)	11012.49	40 kgs	JP
Carbon black n 375	884510.53	19.20 mts	KR
Carbon black n 550	989082.90	26000 kgs	RU
Carbon black seast g 116	1113268.66	6600 kgs	JP
Cobalt hydroxide	1036696.32	640 kgs	CN
Compound of cadmium hydroxide	712811.18	2916 kgs	SE
Compound of cadmium hydroxide	733344.84	3000 kgs	SE
Compound of nickel hydroxide	2640072.35	3987 kgs	SE
Compound of nickel hydroxide	2647356.22	3998 kgs	SE
Expansive mortar (calcium hydroxide)	362451.02	26 mts	CN
Lithium hydroxide	100900.83	200 kgs	DE
Lithium hydroxide	1591760	5000 kgs	CN
Magnesium oxide specials vac pack 1 kg	734326.56	8800 kgs	IL
Magnesium oxide	509860.63	5000 kgs	IL
Magnesium sulphate injection 1g 10ml	248125.85	1968 box	CN
Neolight sp (calcium carbonate collodal)	362254.68	18 mts	MY
Palladium chloride solution	921093.83	60 ltr	DE

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Potassium hydroxide 90 pct	1076693.38	14925 kgs	KR
Potassium nitrate (to be used as fertiliser for floriculture	965004.50	20000 kgs	CN
Pottasium chlorate	1111271.69	25 mts	CN
Pottasium chlorate	1111271.69	25 mts	CN
Pottasium chlorate	1111271.69	25 mts	CN
Pottasium chlorate	1229056.88	25 mts	CN
Pottasium chlorate	1229056.88	25 mts	CN
Pottasium chlorate	2458113.76	50 mts	CN
Pottasium chlorate	2458113.76	50 mts	CN
Pottasium chlorate	2458113.76	50 mts	CN
Pottasium chlorate	2458113.76	50 mts	CN
Pottasium chlorate	3687170.64	75 mts	CN
Pottasium chlorate	3687170.64	75 mts	CN
Puralox hp 14/150 (alumina calcined)	252923.59	700 kgs	DE
Puralox sba-150 (alumina calcined)	1311835.85	4899 kgs	DE
Silicon oxide powder 251 (raw material for brake lining)	36296.26	200 kgs	JP
Silver nitrate solution	14165676.98	3893 kgs	DE
Silver nitrate solution	6211356.44	1707 ltr	DE
Siralox 1.5/100 (alumina calcined)	420953.55	816.50 kgs	DE
Soda ash sodium carbonate (dense)	2650644	225 mts	FR
Soda ash sodium carbonate (dense)	5890320	500 mts	IT
Soda ash dense	522729.40	44.60 mts	AE
Soda ash light	102421.67	10 mts	RO
Soda ash light	1775807.25	200 mts	CN
Soda ash light	1997222.49	195 mts	RO
Soda ash light	2031759.43	210 mts	CN
Soda ash light	2390099.29	269.02 mts	CN
Soda ash light	3052523.55	315 mts	CN
Soda ash light	346347.04	38.98 mts	CN
Soda ash light	4070070.01	420 mts	CN
Soda ash light	5017374.66	422 mts	RO
Soda ash light	5224098.75	525 mts	CN
Soda ash light	5698393.74	494 mts	BG
Soda ash light	742180.32	80 mts	CN
Soda ash light	986829.61	83 mts	RO
Soda ash light 99% min	1174246.58	109.73 mts	UA
Soda ash light 99.2%	835663.90	100 mts	CN
Soda - ash dense	9375426	1000 mts	TH
Sodasolvay - sodium carbonate dense - soda ash	2650644	225000 kgs	FR
Sodasolvay - sodium carbonate dense - soda ash	2650644	225000 kgs	FR
Sodasolvay - sodium carbonate dense - soda ash	294516	25000 kgs	IT
Sodasolvay - sodium carbonate dense - soda ash	472195.20	40000 kgs	BG
Sodasolvay - sodium carbonate dense - soda ash	5890320	500000 kgs	IT
Sodasolvay - sodium carbonate dense - soda ash	590244	50000 kgs	BG
Sodium bicarbonate food grade	929060.62	108000 kgs	CN
Sodium bicarbonate industry grade	835663.90	100 mts	CN
Sodium carbonate dense (soda ash)	3463546.32	371.25 mts	KE
Sodium carbonate dense (soda ash)	6143794.73	658.54 mts	KE

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Sodium carbonate dense (soda ash)	783297.91	83.96 mts	KE
Sodium carbonate [soda ash light]	441774	50 mts	CN
Sodium carbonate [soda ash light]	8464389.84	958 mts	CN
Sodium chlorate	1168246.80	40 mts	CN
Sodium sulphate 99%	390131.75	106.30 mts	CN
Sodium sulphate 99%	68630.89	18.70 mts	CN
Sodium sulphate anhydrous	1256575.80	319 mts	CN
Sodium sulphate anhydrous	1787585.71	300 mts	CN
Sodium sulphate anhydrous	19695.55	5 mts	CN
Sodium sulphate anhydrous	290981.81	52 mts	CN
Sodium sulphate anhydrous 99% min (packed in pp bags of 50 k	417507.46	100 mts	CN
Sodium sulphate anhydrous 99% min	994850	250 mts	CN
Sodium tripoly phosphate	1501540.74	46 mts	CN
Sodium tripoly phosphate	1501540.74	46 mts	CN
Sodium tripoly phosphate	1501540.74	46 mts	CN
Sodium tripoly phosphate	1521623.08	46 mts	CN
Sodium tripolyphosphate	1616631.25	50 mts	CN
Sodium tripolyphosphate tech grade	4297752	120 mts	CN
Sodium tripolyphosphate (tech grade)	876711.56	25 mts	CN
Sodium tripolyphosphate - tech grade	4297752	120 mts	CN
Soduim sulphate anhydrous	142723.67	24.95 mts	CN
Titanium dioxide 500r second grade	555835.67	5 mts	JP
Titanium dioxide rutile tipure r-706	2174153.93	20000 kgs	TW
Titanium dioxide rutile tronox ti02 cr-828	1119004.25	10 mts	AU
Titanium dioxide r-996 , graco:pt0364	1835498.25	20000 kgs	CN
Titanium(iv)chloride (89545-spec)	234013.65	270 ltr	FR
Ti-pure rutile titanium dioxide r-902+4w22	10505010	100000 kgs	TW
Zinc oxide	925210.50	10000 kgs	MY
Zinc oxide	925210.50	10000 kgs	MY
Zirconium oxide fzo1098/04	489848.04	350 kgs	US
Zirconium oxide grade rsz-sn8	945903.57	1000 kgs	JP
Zno zinc oxide usp-1	720664.58	2494.80 kgs	US
CATEGORY: DRUGS			
Alpha lipoic acid usp-32	1666373.75	1000 kgs	CN
Amoxicillin na/k clavulanate sterile 5:1	14553415.11	588.43 kga	GB
Amoxicillin trihydrate compacted oral	3480864	2000 kgs	AT
Amoxicillin trihydrate powder	4402211.25	3000 kgs	EG
Amoxycillin trihydrate compacted	1987983	1500 kgs	OM
Amoxycillin trihydrate powder	4746192	3000 kgs	EG
Amoxycillin trihydrate powder	662661	500 kgs	OM
Amoxycillin trihydrate (micronised)	4914559	3800 kgs	OM
Amoxycillin trihydrate [compacted]	9699787.50	7500 kgs	OM
Amprolium hcl	2666198	2000 kgs	CN
Avilamycin	7325811.54	362 bag	GB

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Azithromycin	6184836	1000 kgs	CN
Azithromycin amine	2984550	500 kgs	CN
Azithromycin usp 32	1644381	250 kgs	CN
Azithromycin usp 32	1644381	250 kgs	CN
Cefotaxime powder injection 1g 10ml-(50 vial/box)	130769.14	10000 nos	CN
Chloroform	740216.88	46.40 mts	RU
Chloroform (dry methene)	159365.88	9000 kgs	GB
Crospovidone - 10 [polyvinyl pyrrolidone] usp 30	1103041.20	2000 kgs	CN
Dexamethasone	736290	10 kgs	CN
Dexamethasone	785376	10 kgs	CN
Docusate sodium-usp (re-import)	345616.95	350 kgs	IN
Doxycycline monohydrate bp 2007	2089185	700 kgs	CN
Enoxaparin sodium bp/ep	21735280.80	27 kgs	CN
Epichilorohydrin	2838191.79	36480 kgs	KR
Epichlorohydrin	17798190.91	251.80 mts	RU
Ergocalciferol (vitamin d2)	1320663.38	4.50 kgs	CZ
Fenofibrate (drug chemical)	4712256	3000 kgs	CN
Gliclazide bp	4073910.75	900 kgs	CN
Gliclazide bp	452656.75	100 kgs	CN
Gliclazide bp 2007	905313.50	200 kgs	CN
Guaiacol (jade)	4297752	16000 kgs	CN
Kollidon 30 usp/bp geismar	1231126.88	1500 kgs	US
Kollidon * va 64	264630.10	280 kgs	US
Kollidon *cl usp	2256319.80	2520 kgs	US
Nevirapine usp	15903864	2000 kgs	CN
Norfloxacin usp 31	522296.25	500 kgs	CN
Paracetamol bp	2837170.80	17000 kgs	CN
Progesterone bp (list 3 slno 58)	3226895.46	300 kgs	CN
Phenoxymethylpenicillin potassium bp2007	2039523.30	1500 kgs	CN
Reimport of dicloxacillin sodium (compacted).	195925.48	75 kgs	IN
Sodium saccharin 8-12 mesh	2249287.68	8.20 mts	CN
Sodium saccharin 8-12 mesh	493746.08	1.80 mts	CN
Sodium saccharin bp	2686095	10 mts	CN
Sulphadoxine	2845271	2000 kgs	CN
Sulphadoxine bp2007	3466698.75	2500 kgs	CN
Sulphamerazine (animal feed supplementary)	810802.75	1000 kgs	CN
Trimethoprim bp	4123224	5000 kgs	CN
Trimethoprim bp	4178370	5000 kgs	CN
Vancomycin hcl usp	15544531.25	250 kgs	CN
Vitamin e acetate ip	3730687.50	2000 kgs	CN
Vitamin e usp	1816182	1000 kgs	CN
CATEGORY: DYESTUFF			
Foron navy rd-s (disperse dyes)	910287.75	3000 kgs	ID
Zenith black 201aa [dyes]	164376.42	1000 kgs	SG

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
CATEGORY: FIBRE, FABRIC & YARN			
Nylon 6 chips	12909618	125 mts	RU
Nylon 6 chips	286516.80	3000 kgs	US
Nylon 6 chips	4376812.47	54.70 mts	US
Nylon 6 chips	4463579.26	55.11 mts	US
Nylon 6 chips (akulon f 130-c1)	1057276.84	9750 kgs	CN
Nylon 6 chips (akulon f 130-c1)	1057276.84	9750 kgs	CN
Nylon 6 chips (akulon f 130-c1)	569302.91	5250 kgs	CN
Nylon 6 chips (akulon f 130-c1)	569302.91	5250 kgs	CN
Nylon 6 chips (akulon f130-c1)	3681450	30000 kgs	CN
Nylon 6 chips (black) rp	1216552.33	18500 kgs	TW
Nylon 6 chips (pa 6 granules natural rv 2.8 +/- 0.15)	422686.89	4125 kgs	DE
Nylon 6 chips (pa 6 granules natural rv 2.8 +/- 0.15)	422686.89	4125 kgs	DE
Nylon 66 chip epr 27	1949906	14000 kgs	CN
Nylon 66 chips stabamid 26ae1k	1705662.75	15 mts	KR
Nylon multifilament yarn 210 denier(high tenacity)	2534064.75	17500 kgs	ID
CATEGORY: METAL			
0.995% purity of one kilo gold bars	155141800	100 kgs	CH
0.995% purity of one kilo gold bars	777279264.	500 kgs	CH
2.5g oval gold coin 999.9 (1000 pcs)	3947752.84	2.50 kgs	CH
8082 copper powder	307007.42	2000 lbs	US
995% purity of one kilo gold bars	474375890.	300 kgs	AE
995% purity of one kilo gold bars	78905622.29	50 kgs	AE
99.50% purity of one kilo gold bars	311656009.	200 kgs	AU
Aluminimum alloy ingot adc 12	2318179.88	25.64 mts	TH
Aluminium alloy ingot adc-12	3888676.59	40.40 mts	JP
Aluminium alloy ingots	1529183.94	19 mts	AE
Aluminium alloy ingots	2128811.72	25.36 mts	AE
Aluminium alloy ingots	4430859.22	42.38 mts	BH
Aluminium alloy ingots	4603616.41	51.39 mts	TH
Aluminium alloy ingots	4649221.72	51.48 mts	TH
Aluminium alloy ingots	6957214.03	77.03 mts	TH
Aluminium alloy ingots ac4b	2461561.74	25876 kgs	TH
Aluminium alloy ingots adc 12	4469405.41	50.48 mts	TH
Aluminium alloy ingots lm-25	1723237.75	19 mts	AE
Aluminium alloy ingots lm-25	1948428.88	19 mts	AE
Aluminium alloy ingots lm-25	2429760.74	24.07 mts	AE
Aluminium alloy ingots lm-25	2719788.79	26.94 mts	AE
Aluminium extrusions scrap "tread"	1674102.57	20.67 mts	NZ
Aluminium ingots	1579607.11	19.16 mts	GB
Aluminium scrap tale	1473593.13	22.64 mts	AU
Aluminium scrap talk	2509534	18.86 mts	SA
Aluminium scrap tense	1291823.67	20.91 mts	AE
Aluminium scrap tense	1410936.06	20.48 mts	SA
Aluminium scrap tense	3122495.90	49.82 mts	IT
Aluminium scrap tense	3319339.63	46.20 mts	GB
Aluminium scrap tense	3402682.36	47.36 mts	GB

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Aluminium scrap tense as per isri	1505711.44	23.16 mts	SA
Aluminium scrap tense as per isri	1506351.17	21.92 mts	KW
Aluminium scrap tense as per isri	1575071.57	22.92 mts	KW
Aluminium scrap tread	1195276.46	16.24 mts	AE
Aluminium scrap tread	1492275.76	18.15 mts	AE
Aluminium scrap tread	1505421.94	20.38 mts	BE
Aluminium scrap tread	1770331.75	23.98 mts	ES
Aluminium scrap tread	1811673.94	24.54 mts	ES
Aluminium scrap "tablet"	1914267.99	22.50 mts	AE
Aluminium scrap "taint tabor"	1173027.64	18.14 mts	KW
Aluminium scrap "taint tabor"	1207623.54	18.68 mts	KW
Aluminium scrap "taint tabor"	1432606.38	20.07 mts	SA
Aluminium scrap "taint tabor"	1470438.04	21.11 mts	SA
Aluminium scrap "tense"	1751811.47	26.68 mts	IL
Aluminium scrap "tense" as per isri	1126035.90	17.72 mts	GB
Aluminium scrap "tense" as per isri	1231576.55	18.56 mts	GB
Aluminium scrap "tense" as per isri specs.	2259350.04	34.87 mts	DE
Aluminium scrap "tread"	1399852.22	21.72 mts	SE
Aluminium scrap "tread"	1778709.72	20.61 mts	SA
Aluminium scrap "tread"	549419.28	7.89 mts	NZ
Aluminium scrap "tread"	667181.82	9.59 mts	NZ
Aluminium scrap 'tread'	1207574.50	14.82 mts	BG
Aluminium scrap (taldon)	838635.29	16.70 mts	NZ
Copper scrap	6141181.37	21.03 mts	MY
Lead ingots 99.97% min. Purity	1340768.15	15600 kgs	NG
Lead ingots 99.97% min. Purity	1829804.74	21290 kgs	NG
Lead ingots 99.97% min. Purity	5156800.59	60000 kgs	NG
Lead ingots (99.97% purity)	11726008.44	102.16 mts	DE
Magnesium ingot	1914354	15 mts	CN
Magnesium ingot	1914354	15 mts	CN
Magnesium ingot	1914354	15 mts	CN
Magnesium ingot	247926.71	1.94 mts	CN
Magnesium ingot	382151	2.99 mts	CN
Magnesium ingot 99.95 pct	475033.40	3273 kgs	CN
Platinum metal (catalysts)	138922752	71.240 kgs	FR
Platinum metal(catalysts)	14907044.41	7.300 kgs	FR
Remelted lead ingot	1176399.98	17.18 mts	SD
Remelted lead ingot	1598087.99	23.09 mts	PK
Remelted lead ingot	1977710.05	25.22 mts	DZ
Remelted lead ingot	3170877.06	44.86 mts	AE
Remelted lead ingot	3176796.83	45.90 mts	PK
Remelted lead ingot	3309240.68	43.92 mts	AE
Remelted lead ingot	3346990.27	47.85 mts	PK
Remelted lead ingot	3429878.11	49.03 mts	PK
Remelted lead ingot	3559392.75	47.24 mts	AE
Remelted lead ingot	3620337.93	49.50 mts	AE
Remelted lead ingot	3677687.56	48.81 mts	AE
Remelted lead ingot	3950715.01	50.38 mts	DZ

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Remelted lead ingot	3974240.51	50.68 mts	DZ
Remelted lead ingot	4487024.89	61.35 mts	AE
Remelted lead ingot	5039961.50	66.89 mts	AE
Remelted lead ingot	5332307.90	70.77 mts	AE
Remelted lead ingot	6019435.81	85.16 mts	AE
Remelted lead ingot	7170875.57	101.45 mts	AE
Remelted lead ingots	1655938.30	25.36 mts	PK
Remelted lead ingots	3430549.37	45.53 mts	AE
Remelted lead ingots	3474498.52	50.38 mts	DZ
Remelted zinc ingots	3566777.74	50.11 mts	TR
Round gold coin 999.9 (10g,2g,4g,5g,8g)rectangular gold bar99	92292754.78	59.15 kgs	CH
Sg-92 premix powder (copper powder)	1572250.10	9000 lbs	US
Shredded aluminium scrap "taint/tabor" as per isri	3328973.25	47.76 mts	GB
Silicon metal	1619838	20 mts	CN
Silicon metal 553 grade (si : 98.5% min, size: 10-100 mm)	1193232.89	15385.46 kgs	CN
Silicon metal 553 grade (si : 98.5% min, size: 10-100 mm)	1753890.55	22614.54 kgs	CN
Silicon metal (size 10-100mm) (99% min)	1776913.20	20 mts	CN
Unrefined lead ingot	5604337.60	77.41 mts	NG
Zinc flake paste (geomet 720ex)	965390.27	940 kgs	KR
Zinc ingots	4668108.61	49.02 mts	KZ
Zinc ingots	4752858.85	49.91 mts	KZ
Zinc ingots	6068669.95	98.92 mts	JP
Zinc scrap scrub as per isri	1431234.37	19.25 mts	AE
Zinc scrap scrub as per isri	185913.23	2.50 mts	AE
CATEGORY: PAINT			
522b00296(taa) black silver (paint)	277685.61	990 kgs	CN
522d00295(taa) coffee brown (paint)	80189.48	198 kgs	CN
522e00305 (taa) m9 stone grey v2 (paint)	149853.31	396 kgs	CN
B6a281-22 bb-60-5a281 alpate m (paint)	68781.16	154 kgs	ES
B6a298-22 bb-60-5a298 sparkle (paint)	49165.93	88 kgs	ES
B6a375-22 bb-60-5a375 alpate7 (paint)	60927.76	132 kgs	ES
B6a493-22 bb-60-5a493 alpate2 (paint)	56982.80	110 kgs	ES
B6b160-3v5 base bicapa msb az 6 (paint)	30276.26	35 kgs	ES
B6g169-3v5 base bicapa msb am.6 (paint)	7868.34	7 kgs	ES
B6g528-3v5 base bicapa irgacolo (paint)	4573.40	3.50 kgs	ES
B6r256-3v5 base bicapa msb ro.6 (paint)	6624.75	7 kgs	ES
B6r456-3v5 base bicapa red dpp (paint)	2522.05	3.50 kgs	ES
B6t070-22 base bicapa msb bl 2 (paint)	7853.40	22 kgs	ES
B6v058-3v5 base bc monast.gre (paint)	6825.23	10.50 kgs	ES
B6z110-3v5 base bicapa msb negr (paint)	29857.86	98 kgs	ES
C6s028a-18 intermedio matizante (paint)	21338.66	72 kgs	ES
C9255-22 8b-converter for bc (paint)	83866.99	352 kgs	ES
C9999-22 bb-converter for bc (paint)	45001.80	176 kgs	ES
Catiofin black cc liq (pigments)	154431.92	810 kgs	IT
Cuprous oxide paint grade red 25 kg net graco : kt2031	1714068.58	6000 kgs	NO

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Gum pigment carbon black (pd2117-u)	216802.28	150 kgs	GB
Gum pigment carbon red iron oxide(pd2720-u)	18148.83	20 kgs	GB
Gum pigment carbon yellow (pd2202-u)	41402.01	20 kgs	GB
Indinor black 3422 (pigment)	428.44	3 kgs	PT
Indinor black 3422 (pigment)	63837.86	447 kgs	PT
Indinor brown 3866 (pigment)	13196.01	60 kgs	PT
Indinor ochre 3858 (pigment)	14352.81	60 kgs	PT
Indinor white 3801 (pigment)	38238.45	150 kgs	PT
Ke-color-bl (pigment)	27431.07	10 kgs	JP
Paint and thinner th0276	39105.21	280 kgs	AE
Paint and thinner pvdf topcoat ral 1019	58911.74	80 kgs	AE
Paint and thinner pvdf topcoat ral 7043	18689.24	23 kgs	AE
Paint and thinner th0327	169117.34	740 kgs	AE
Paint, top coad 3k griggio	261529.84	484 kgs	ES
Paint and thinner pvdf topcoat ral 9010	1108632.70	1617 kgs	AE
Paint and thinner pvdf topcoat ral 9022	224575.63	268 kgs	AE
Paint and thinner yj2443 s clear coat	299129.46	380 kgs	AE
Paint and thinner yp130-white	502781.27	900 kgs	AE
Pearl pigment - chaos super pear (c-109s)	47245.28	25 kgs	KR
Pigment (biofin kt ocra)	13415.69	60 kgs	IT
Pt-42-6609(pigments)	29098.18	52 kgs	KR
Sicotan yellow k2111fg (pigments)	251067.01	400 kgs	DE
Turquoise (green) a base coat - xpb66769s	386824.61	590 kgs	CN
T/p cinqusia violet rt 201d(pigments)	56228.99	72 kgs	KR
T/p paliogen maroon l-3980hd(pigments)	367202.55	240 kgs	KR
CATEGORY: PESTICIDE			
Bifenthrin technical	12855623.40	2910 kgs	CN
Carbofuran technical	10107023.38	15838.80 kgs	US
Cartap 98%	3304469.52	10000 kgs	CN
CATEGORY: PLASTIC			
Borstar fb 2230 lld polyethylene	3207279.24	49.50 mts	AE
Exceed 1018 ea (ILDPE)	1871312.85	24.75 mts	US
Exxonmobil pp 7033e3 5050823 (polypropylene)	4530546.90	66 mts	SG
HDPE granules grade b2555	1607415	24.75 mts	SG
HDPE granules grade egda - 6888	2137695.30	33.50 mts	KW
HDPE granules grade egda - 6888	2434164.92	38146 kgs	KW
HDPE granules grade egda - 6888	772378.03	12104 kgs	KW
HDPE granules grade epda-5040	1071486.02	17463 kgs	KW
HDPE granules grade epda-5040	1954665.88	31857 kgs	KW
HDPE granules grade epda-5040	49331.43	804 kgs	KW
HDPE granules grade epda-5040	7731.05	126 kgs	KW
HDPE granules grade hd b1258	1993246.11	33 mts	SA
HDPE granules grade hmw 50100	2053647.14	34 mts	QA

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CHEMICALS IMPORTED			
HDPE granules grade marlex hhm tr-144	28506.32	450 kgs	QA
HDPE granules grade marlex hhm tr-144	3132907.94	49456 kgs	QA
HDPE granules grade marlex hhm tr-144	69302.03	1094 kgs	QA
HDPE powder	4691300.84	102.20 mts	AE
HDPE titanex hf0961	3421040.44	52.50 mts	MY
High density polyethylene (grade marlex hhm 5502bn)	2138527.54	34 mts	QA
High density polyeteylene marlex hxm tr-571(HDPE granules)	3226956.31	49.50 mts	QA
High density polyethylene	13081517.72	204000 kgs	QA
High density polyethylene acp grade:5831d	2364650.17	42068.87 kgs	SA
High density polyethylene acp grade:5831d	417696.57	7431.13 kgs	SA
High density polyethylene grade	4334195.83	68 mts	QA
High density polyethylene grade: hb5301	9568838.98	148.50 mts	AE
High density polyethylene grade: 2b029h	1514286.06	24750 kgs	SA
High density polyethylene grade: hb 5003	3067793.19	49500 kgs	IR
High density polyethylene grade: hb5301	3061493.82	49500 kgs	IR
High density polyethylene grade: hb5301	3061493.82	49500 kgs	IR
High density polyethylene grade: hb5301	3061493.82	49500 kgs	IR
High density polyethylene grade: hb5301	3061493.82	49500 kgs	IR
High density polyethylene grade: hb5301	3061493.82	49500 kgs	IR
High density polyethylene grade: hb5301	3061493.82	49500 kgs	IR
High density polyethylene grade: hta001hd	3280171.95	49500 kgs	SA
High density polyethylene grade: hta001hd	3280171.95	49500 kgs	SA
High density polyethylene grade: hta001hd	6317368.20	99000 kgs	SA
High density polyethylene grade:53050e	982018.46	16500 kgs	BE
High density polyethylene innoplus grade: hd5000s	2350237.68	36000 kgs	TH
High density polyethylene (HDPE) grade-hb 5003 (plastic granu	2979327.04	49.50 mts	AE
LDPE lf2119	10341465.75	173.25 mts	IR
LDPE reprocessed granules	1569425.62	32 mts	MY
LDPE reprocessed granules	711145.98	14.50 mts	SG
LDPE reprocessed granules	784712.81	16 mts	CN
Linear low density polyethylene grade: em13pa	1214878.50	20625 kgs	SA
Linear low density polyethylene grade: em14pn	242975.70	4125 kgs	SA
Linear low density polyethylene grade: em14pn	2915708.40	49500 kgs	SA
Linear low density polyethylene granules	1162263.26	20127 kgs	US
Linear low density polyethylene granules	1163822.42	20154 kgs	US
Linear low density polyethylene granules	1167460.45	20217 kgs	US
Linear low density polyethylene granules	1181608.33	20462 kgs	US
LLDPE borstar fb2230 (granules)	3250174.95	49.50 mts	AE
LLDPE flexible film (stretch film) 0.030 x500mm x1087 meter-m	1263493.10	15193 kgs	MY
Low density polyethylene grade: fps 117d	1730281.50	25000 kgs	CA
Low density polyethylene grade: tansnee ld 1925 as	2045972.15	33000 kgs	SA
Low density polyethylene "lotrene" grade:fb5026	1089341.06	16500 kgs	QA
Low density polyethylene (LDPE) lotrene fb 5026	1105539.44	16.50 mts	QA
Low density polyethylene (LDPE) "lotdrene" fb 3003	337005.44	5 mts	QA
Low density polyethylene (LDPE) "lotrene" fb5026	1113638.63	16.50 mts	QA
Low density polyethylene (LDPE) "lotrene" fd0474	775112.50	11.50 mts	QA
Polypropylene granule	8107289.19	115.50 mts	SG
Polypropylene granule grade exxonmobil ap3aw	3996671.20	56.94 mts	SG

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CHEMICALS IMPORTED			
Polypropylene granule grade exxonmobil ap3aw	636065.48	9.06 mts	SG
Polyethlene 722 low density	4801394.81	74.25 mts	US
Polypropylene block copolymer cosmoplene grades ax 668	1146067.20	16000 kgs	SG
Polypropylene block copolymer cosmoplene grades ax 668	286516.80	4000 kgs	SG
Polypropylene grade : hp456j	5675987.90	99000 kgs	SA
Polypropylene grade : hp456j	5675987.90	99000 kgs	SA
Polypropylene grade:hp 500n	5296870.26	99000 kgs	SA
Polypropylene granules grade 1128n	2589261.81	42885.77 kgs	OM
Polypropylene granules grade 1128n	399339.30	6614.23 kgs	OM
Polypropylene granules grade 7033e3	3353064.66	49.50 mts	SG
Polypropylene granules grade h4540	2210538.92	35.60 mts	KP
Polypropylene hang tag	224575.01	99400 pcs	HK
Polypropylene homopolymer grade:tasnee pph4120	936266.47	16.50 mts	SA
Polypropylene profax pl309	2505739.61	50000 kgs	MX
Polypropylene tj909lsf 454b	146129.02	1300 kgs	TH
Polypropylene tsoppc6bs r299	216371.09	2000 kgs	JP
Polypropylene (pp-t20 (bk))	1099951.83	17000 kgs	KR
Polypropylene (pp-t40 (bk))	84113.96	1000 kgs	KR
Polypropylene (pp-t40 (na))	126170.95	1500 kgs	KR
Polypropylene-dsc501 bk [pp base black]	286516.80	4500 kgs	KR
Polypropylene-dsc501m6bk [pp talc 30% black]	421567.69	7500 kgs	KR
Polypropylene-dsc501m8bk [pptalc 40% black]	56209.03	1000 kgs	KR
Polypropylene-dsc502g6bk [pp gf 30% black]	1560173.51	20500 kgs	KR
Polypropylene-dsc502m4bk [pptalc 20% black]	1233862.71	20500 kgs	KR
Potty-97% polypropylene 3% plasticise	1915.28	10 pcs	GB
PP chips rp (polypropylene)	339492.56	7000 kgs	TW
PP copolymer jm-370s	48501.74	500 kgs	KR
PP h4540 (poly propylene)	3040583.18	53.40 mts	KR
PP Ph4540(poly propylene)	2027055.46	35.60 mts	CN
Polypropylene tsoppc6bs rig3	1514597.61	14000 kg	JP
Reprocessed plastics granules (LDPE)	519035.63	10.70 mts	SG
CATEGORY: RESIN			
700-314 natural toray abs resin	1387815.75	18000 kgs	MY
ABS resin	689431.05	11 mts	SG
ABSresin ah2003	427048.20	3 mts	TW
Asahi nylon 14g25 t3389 (nylon resin)	2740373.21	17000 kgs	TH
Calibre polycarbonate resin 201-15	712728.72	6 mts	KR
Calibre polycarbonate resin 303-15	1187881.20	10 mts	KR
Cr905-x980-135 acrylic resin	2262271.98	14401.44 kgs	US
Cr905-x980-135 acrylic resin	879772.43	5600.56 kgs	US
Delrin (r) 500tl nc010 - acetal resin	31539.42	75 kgs	US
Developmental polypropylene resin da (dtf 1803.01su)	1669199.91	19600 kgs	NL
Developmental polypropylene resin da(dtf 1602 esu)	655448.58	8800 kgs	NL
Dowlex * 4056.01g polyethylene resin	1749425.04	24.75 mts	NL
Epoxy hardener kh-721 - (polyamide resin)	135756.12	800 kgs	KR

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Epoxy hardener kh-816 - (polyamide resin)	263396.39	1260 kgs	KR
Epoxy hardener kh-819 - (polyamide resin)	582570.83	2520 kgs	KR
Epoxy resin yd-128	1417661.25	15000 kgs	KR
Epoxy resin - 3a ke 5523- 26g6	213893.64	990 kgs	JP
Epoxy resin - 3b ke 5523- 26g6	64816.25	300 kgs	JP
Fluoropolymers resin-sl-901cl	42173.47	10 kgs	JP
Furan resin sqg-300	675045.52	10.32 mts	CN
Hc 61-8414(acrylic resin)tianjin	822229.77	5940 kgs	KR
Joncryl 74-a (acrylic resin)	45159.12	400 kgs	US
Joncryl 77 (acrylic resin)	191435.40	2000 kgs	US
Joncryl 89 (acrylic resin)	185545.08	2000 kgs	US
Joncryl - 624 (acrylic resin)	104062.32	1000 kgs	US
Joncryl - 631 (acrylic resin)	67329.36	653.17 kgs	US
Joncryl - 678 (acrylic resin)	298442.88	2000 kgs	US
Joncryl - 682 (acrylic resin)	82071.79	400 kgs	US
Kronocol sm18 (melam for maldeh resin)	652756.31	5250 kgs	RO
K-resin styrene butadiene copolymer kr99hg	1537373.52	18 mts	KR
LDPE resins	139279	14 mts	ZA
LLDPE resin (6201)	388830.90	6.88 mts	SG
Lexan polycarbonate resin exl1112t-bk1d750	225795.60	2000 kgs	CN
Low density polyethylene resin d777c coating	3457102.44	49.95 mts	TH
Nylon resin (nylon 66 -38 pct mineral filled and 10pct glass	75395.24	500 kgs	KR
Nylon resin (pa66 reinforced with 30pct of glass fiber, heat	278558	2000 kgs	KR
Nylon resin (pa66-38 pct mineral filled and 10 pct glass fill	398414.70	3000 kgs	KR
Nylon resin (technyl a218mt15v25 bk21n)	171611.63	1000 kgs	KR
Phenolic resin 633 (raw material for brake lining)	191988.12	510 kgs	JP
Plastic resin-cp-1901 (pp granules)	14725.80	150 kgs	KR
Plastic resin-cp-1903 (pp granules)	29451.60	300 kgs	KR
Plastic resin-cp-1905 (pp granules)	14725.80	150 kgs	KR
Pmma resin grade : hi855m (np) (poly methyl methacrylate)	35795.97	0.25 mts	KR
Pmma resin grade : ih830 (4006) (poly methyl methacrylate)	845150.48	8250 mts	KR
Pmma resin grade : ih830 (np) (poly methyl methacrylate)	573128.14	6000 mts	KR
Poly propylene resin (p6-30fg-0600)	118048.80	1000 kgs	KR
Polyacetal resin "iupital" f30-03	450305.30	6 mts	TH
Polyacetal resin kepital f10-03h natural	456499.80	6 mts	KR
Polyacetal resin kepital f20-51u black	127623.60	1 mts	KR
Polyacetal resin kepital f25-03 natural	400357.69	5.62 mts	KR
Polyacetal resin kepital fg2025 natural	346056.30	3 mts	KR
Polyacetal resin kepital ts-25a natural	191435.40	1 mts	KR
Polyacetal resin "iupital" f20-03	825559.72	11 mts	TH
Polybutylene terephthalate oxide resin valox eh7025ag-bk1066	2193644.25	18000 kgs	KP
Polycarbonate resin (polycarbonate-clear, novarax)	193620.73	500 kgs	JP
Polycarbonate (resin) optical grade iupilon h4000 n282	1623595.20	16 mts	TH
Polyester resin uralac p 4035 graco:rp3336	323650.46	3500 kgs	CN
Polyester resin uralac p 5301 graco:rp3074	434690.11	4375 kgs	CN
Polyethylene terephtalate, pet resin	59710.78	2182 lbs	US
Polypropylene resin st868m	2369872.08	34000 kgs	TW
Polytetrafluoroethylene ptfe resin 9493	223449.29	167.70 kgs	AU

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
PP resin "cosmoplene" az564g	1837779.84	32 mts	SG
PP resin "cosmoplene" az564g	1837779.84	32 mts	SG
Prime virgin ocean pvc suspension resin	2478352.14	51 mts	TW
PVC resin powder grade p-1000	2677150.44	54 mts	KP
PVC resin powder grade p-1000	4521593.25	90 mts	KP
PVC resin powder grade s65	14180400	288 mts	TW
Pvc resin powder grade s65	2316010.80	48 mts	TW
PVC resin s65d	5345329.05	108 mts	TW
PVC resin s65d(180-mts)	8908881.75	180 mts	TW
PVC resin suspension s-65d	4285207.80	90 mts	TW
Resin phenolic with hexa fb 8145-01 (010876)	134081.10	1250 kgs	ES
Silicone resin-impregnating agent so (silicone in primary for	167600.89	150 kgs	NL
Ultramid b3ugm210 grey 22920 nylon 66 resin	814782.15	3000 kgs	DE
Xylan 1610/g5025 grey black (resin)	380898.27	10 drm	GB
Zytel 408hs bk009 - nylon resin	84881.35	500 kgs	JP
Zytel (r) 45hsb nc010 - nylon resin	136570.21	500 kgs	US
Zytel (r) 70g25hslr bk099 nylon resin	307278.36	2000 kgs	KR
CATEGORY: RUBBER / RUBBER CHEMICALS			
Acrylonitrile butadiene rubber kumho knb-35l	167134.80	2.10 mts	KR
Acrylonitrite butadiene rubber - raw material for auto mobile	50287.99	300 kgs	KR
Acrylonitrite butadiene rubber -raw material for auto mobile	184281.16	1200 kgs	KR
Bromo butyl rubber (b iir)	5187015.79	28560 kgs	GB
Buna ep g 5450 f [ethylene propylene rubber]	829897	6148 kgs	NL
Butyl rubber - exxon butyl - 268	13618419.84	81600 kgs	FR
Butyl rubber - exxon butyl 268	13618419.84	81600 kgs	FR
Chloroprene rubber grade : denka dcr 40a	501707.40	3000 kgs	JP
Chloroprene (chlorobutadiene) rubber (cr) shoprene grt	2518051.24	16 mts	JP
Chloroprene (chlorobutadiene) rubber (cr) shoprene wb	47213.46	0.30 mts	JP
Chloroprene-(chlorobutadiene) rubber (cr) - shoprene grt	340801.52	2 mts	JP
Ctp (pvi) rubber chemcials	596910	3000 kgs	CN
Denka ps40a sl (chloroprene rubber)	2473934.40	16000 kgs	JP
Exxon butyl rubber npb 06-1	7522167.30	52326 kgs	US
Exxon butyl (synthetic rubber nbp-01)	18518697.80	122094 kgs	US
Exxon chlorobutyl 1066 (butyl rubber)	3239072.42	17.14 mts	US
Fluoro silicone fe 251-u (synthetic rubber)	383838.95	100 kgs	JP
Fluoro silicone fe 261-u (synthetic rubber)	767677.89	200 kgs	JP
Iar 9610-2 polyacrylate rubber	987468.91	1782 kgs	KR
Intol sbr 1502 (synthetic rubber)	1229532.13	17407 kgs	GB
Iornh610 chloroprene based rubber (manufacturing for auto mo	485368.27	549 kgs	KR
Isc 515-1 chloroprene based rubber	680434.80	3035 kgs	KR
Isc515-1 chloroprene based rubber (manufacturing for auto mo	225148.57	1010 kgs	KR
Isc620 chloroprene based rubber (manufacturing for auto mobi	255253.30	1093 kgs	KR
Isr 650 chloroprene based rubber	139619.19	1077 kgs	KR
Keltan 4551a (EPDM rubber)	100144.53	900 kgs	NL

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Keltan 5508 (EPDM rubber)	85283.14	750 kgs	NL
Keltan 8340a (EPDM rubber)	1515284.82	12600 kgs	NL
Keltan ace de8270c (EPDM rubber) (foc)	10111.72	50 kgs	NL
Keltan de8642a (EPDM rubber) (foc)	10111.72	50 kgs	NL
Kep-980 (EPDM rubber)	1516757.40	12000 kgs	KR
Kumho sbr 1502 (synthetic rubber)	3559971.24	50400 kgs	KR
Kumho sbr 1502 (synthetic rubber)	3559971.24	50400 kgs	KR
Kumho sbr 1502 (synthetic rubber)	7119942.48	100800 kgs	KR
Kumho sbr 1502 (synthetic rubber)	9367964.93	134400 kgs	KR
Kumho sbr1502 (synthetic rubber)	5854978.08	84000 kgs	KR
Litex s61 (010887) SBR latex	1595105.93	18800 kgs	DE
Litex s61 (010887) SBR latex	386280.01	4700 kgs	DE
Natural rubber grade sir-20	7806866.51	100800 kgs	ID
Natural rubber rss 3	31954986	300000 kgs	TH
Natural rubber rss 3	8344620	100000 kgs	TH
Natural rubber rss 3	8344620	100000 kgs	TH
Natural rubber rss-3	10769251.25	100000 kgs	TH
Natural rubber rss-3	10769251.25	100000 kgs	TH
Natural rubber rss-3	25770150	300000 kgs	TH
Natural rubber rss-3	32307753.75	300000 kgs	TH
Natural rubber rss-3	32307753.75	300000 kgs	TH
Natural rubber rss-3	8197362	100000 kgs	TH
Natural rubber sir 20	7973602.56	100800 kgs	ID
Natural rubber sir 20	7973602.56	100800 kgs	ID
Natural rubber sir 20	7973602.56	100800 kgs	ID
Natural rubber smr20	3503091.11	40.32 mts	MY
Neocis br 40 pbd neodeyium (poly butadiene rubber)	5664362.91	80697 kgs	IT
Neocis br 40 pbd neodeyium (poly butadiene rubber)	5669837.96	80775 kgs	IT
Neoprene latex gr572	262723.74	560 kgs	JP
Nipol n21 (synthetic rubber)	1785871.40	18900 kgs	JP
Perkadox bc-40mb (rubber chemicals)	389168.15	1000 kgs	NL
Polychloroprene rubber-raw material for auto mobile parts	88192.16	533 kgs	KR
Santocure tbbs-grs-2mm (rubber chemicals)	1865343.75	10000 kgs	BE
Sbr 1712e (synthetic rubber)	1557344.25	25200 kgs	TW
Sbr powder 168 (raw material for brake lining)	7753.69	100 kgs	JP
Silicone rubber silopren hs-n (silicone in primary forms)	2106450.01	12960 kgs	DE
Silicone rubber tse221-4u-20kgs(silicone in primary forms)	37452.05	320 kgs	JP
Silicone rubber tse221-5u-20kgs(silicone in primary forms)	103508.27	900 kgs	JP
Silicone rubber tse221-5u-20kgs(silicone in primary forms)	66705.33	580 kgs	JP
Silicone rubber tse2523u-20kgs(silicone in primary forms)	45608.32	240 kgs	JP
Silicone rubber tse2527u-20kgs(silicone in primary forms)	44679.09	240 kgs	JP
Solution sbr grade se slr 4601 (synthetic rubber)	541065.89	5760 kgs	DE
Styrene butadiene copolymer latex deb 3111	3941016.77	100.36 mts	NL
Styrene butadiene copolymer latex deb 3111	3940231.39	100.34 mts	NL
Styrene butadiene rubber SBR-1502	2184451.84	33600 kgs	KR
Styrene butadiene rubber SBR -1502	2184451.84	33600 kgs	KR
Styrene butadiene rubber SBR-1502	4294043.28	64.80 mts	RU
Styrene butadiene rubber SBR-1705	3196930.58	52.68 mts	RU

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CHEMICALS IMPORTED			
Styrene butadiene rubber SBR-1705	3196930.58	52.68 mts	RU
Styrene butadiene rubber-1712	1992341.84	33600 kgs	KR
Styrene butadine rubber-raw material for auto mobile parts	227107.06	2100 kgs	KR
Synetic rubber jsr n220s	99236.29	1.05 mts	JP
Synhetic rubber jsr ep96	98191.70	0.84 mts	JP
Synthetic butyl rubber bk 1675n edbrisic	2389393.42	16.65 mts	PL
Synthetic rubber acrylonitrile butadiene rubber kumho knb 35l	154939.05	2.10 mts	KR
Synthetic rubber denka chloroprene dcr-40a (polychloropre ru	4172.31	50 kgs	JP
Synthetic rubber jsr ep 27	294575.09	2.52 mts	JP
Synthetic rubber jsr ep 96	294575.09	2.52 mts	JP
Synthetic rubber jsr n220sh	1550332.22	16.80 mts	JP
Synthetic rubber jsr n220sh	99236.29	1.05 mts	JP
Synthetic rubber nipol sbr 1723	1312008.18	16800 kgs	JP
S-5206 (EPDM rubber)	1611002.52	12000 kgs	KR
S-5890 (EPDM rubber)	1488483.86	12000 kgs	KR
CATEGORY: WAX			
74 degree copper wax mix	89299.78	57.50 kgs	GB
78 degree copper wax mix	46591.19	30 kgs	GB
82 degree copper wax mix	139773.57	90 kgs	GB
Fully refined paraffin wax	2258569.58	37500 kgs	CN
Fully refined paraffin wax	391485.39	6500 kgs	CN
Indine f 1682 [pull up wax]	71121.37	600 kgs	PT
Indinor 1065 c [pull up wax]	3266.87	25 kgs	PT
Indinor 1354 [pull up wax]	80332.87	500 kgs	PT
Indinor 7884/32 [pull up wax]	53840.88	200 kgs	PT
Indinor b 1255 [pull up wax]	123819.74	600 kgs	PT
Indinor ba 7817/24 [pull upwax]	28919.83	100 kgs	PT
Indinor ba7817/15 [pull up wax]	28348.58	100 kgs	PT
Indinor f 1050 [pull up wax]	71121.37	600 kgs	PT
Indinor s1021 [pull up wax]	39987.92	175 kgs	PT
Joncryl wax26 (wax emulation)	106025.76	1000 kgs	US
Liquid wax	438684.28	4000 kgs	CN
Lubricating agent (paraffin wax)	989701.02	1680 kgs	DE
Lustral wax bb (wax for pull up)	242574.02	1000 kgs	IT
Lustral wax bsh (wax for pull up)	128207.29	500 kgs	IT
Lustral wax cf (wax for pull up)	120922.79	1000 kgs	IT
Lustral wax pn (wax for pull up)	91948.67	495 kgs	IT
Melio wax po-405 (wax for pull up finish)	80736.65	320 kgs	CA
Micro crystalline wax rubber anti ozonant(okerin 2122 h)	2043794.97	23750 kgs	CN
Micro crystalline wax dnw 170s	1208742.75	18 mts	KR
Normal paraffin	11652156.62	307021 ltr	IR
Normal paraffin	11652156.62	307021 ltr	IR
Normal paraffin	11797960.67	310862.77 ltr	IR
Paraffin craft wax	539875.57	85 box	CN
Paraffin wax 58.6 deg.c	2666400	40 mts	CN

NAME OF THE CHEMICAL	VALUE IN RS.	QUANTITY	COUNTRY
CHEMICALS IMPORTED			
Sp sft wax 04 (wax for pull up)	360583.01	990 kgs	IT
Wax cw 7005 (wax emulsion)	18361.56	30 kgs	IT
Wax emulsion (af 4192/a)	14511.45	40 kgs	IT
Wax emulsion (af 4192/a)	18139.32	50 kgs	IT
Wax emulsion (au softy feel)	11216.76	30 kgs	IT
Wax emulsion (biofin mx neutro g)	117009.71	360 kgs	IT
Wax emulsion (biofin wax 1040)	57305.44	180 kgs	IT
Wax emulsion (biofin wax bhs)	191018.12	600 kgs	IT
Wax emulsion (ex 032m)	169872.86	480 kgs	IT
Wax emulsion (ex 07302/b)	26120.62	120 kgs	IT
Wax emulsion (lcw 3509)	29985.40	180 kgs	IT
Wax emulsion (lcw 3512)	25765.24	240 kgs	IT
Wax emulsion (lcw 3588)	157256.78	360 kgs	IT
Wax emulsion (lcw 3765)	80316.46	240 kgs	IT
Wax emulsion (spk 72840)	18657.58	120 kgs	IT
Wax emulsion (wax ebf)	87068.73	600 kgs	IT
Wax for pull up (af 4567)	12660.50	30 kgs	IT
Wax for pull up (biofin wax 02f)	169872.86	480 kgs	IT
Wax for pull up (biofin wax 1042)	143041.48	600 kgs	IT
Wax for pull up (biofin wax 340/d)	38499.78	200 kgs	IT
Wax for pull up (biofin wax 530)	270090.74	1600 kgs	IT
Wax for pull up (biofin wax h08)	135933.83	600 kgs	IT
Wax for pull up (biofin wax oil 630)	116387.79	300 kgs	IT
Wax for pull up (ex 06282f)	22988.81	90 kgs	IT
Wax for pull up (ex 07311)	63968.86	180 kgs	IT
Wax for pull up (lcw 3526)	59437.73	360 kgs	IT
Wax for pull up (lcw 3536)	41313.22	360 kgs	IT
Wax (black synthread stitching wax)	67471.79	135.70 kgs	US