



***TULSION***<sup>®</sup>

Ion exchange resins and specialty polymers



We create our

**S** Purification **P** Catalysis **A** Adsorption **C** Extraction **E**

Separation

Adsorption

in customer processes

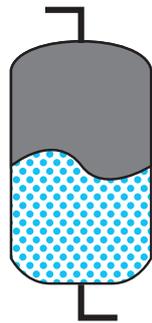
## Thermax Chemical Division

The Chemical division of Thermax Limited manufactures and markets a wide range of specialty chemicals to help improve processes and product performance. Thermax's Chemical Division is a leading global manufacturer of *Tulsion*® brand Ion exchange resins, water treatment chemicals, fire side chemicals, fuel additives, oil field chemicals, paper chemicals and construction chemicals catering to a spectrum of more than 5000 customers across 40 industry sectors. With more than 30 years of rich experience, the Ion exchange resin business unit serves customers across the globe by offering most efficient and economical solutions in a wide range of end use applications.

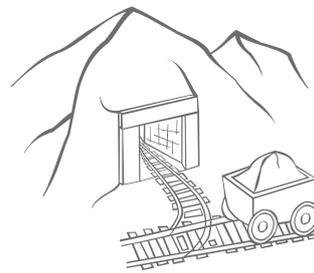
### Better quality at affordable cost

**Water treatment** is traditionally one of the largest application in the field of ion exchange resins. Though Thermax supplies resins against the required specifications, we believe more in developing and offering customer and site specific solutions in the form of a total package. Such offerings, being most efficient and economical, gives more value for money to the customers. To date, a number of customers seeking solutions to industrial, municipal, domestic and waste water related problems have benefited with Thermax products and services.

Thermax offers a complete range of products for applications such as softening, demineralization, dealkalization and condensate polishing. For high purity water requirements, especially in the semiconductor, food and nuclear industry, Thermax offers a wide range of ready to use, mixed bed resins.



### Picks up important & valuable



Selective removal of metal ions from a variety of solutions has become an important application in the recent times due to regulatory as well as economic aspects. Metal Selective **chelating resins** are widely used for such applications. Metals such as

mercury and lead are removed from water and other solutions for statutory reasons whereas gold, platinum and palladium are recovered for their value. Selectivity of the functional group for target metal ions is the most important property of a chelating resin and different functional groups are needed for removal or recycle of different target metals. Almost all of the chelating resins are regenerable and can be used for multiple cycles. In case of non-regenerable resin, loaded metal can be recovered by incineration of the exhausted resin. Thermax Limited has a wide range of chelating ion exchange resins for metal recovery, such as gold, mercury, platinum, palladium, copper, calcium, magnesium and strontium.

### Resins that extracts, purifies, supports and anchors

Thermax has exclusively developed and supplied many resin based products for various **biotech applications** such as extraction of enzymes from broth solution, purification of antibiotics, support for peptide synthesis and anchoring for cell culture development.

All these resins were developed by working closely with the end users and customized to suit specific customer and process requirement.



Unique  
selling  
propositions

Understanding  
customer needs



Offering the right  
solutions through  
products and  
services



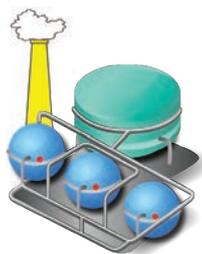
Customization and /  
or development of  
product



Inhouse application  
development center



## Initiates and accelerates customer processes



Replacement of acid catalysts (such as sulfuric acid, PTSA, MSA) used in a variety of etherification, alkylation and esterification reactions with solid **catalysts** in the form of catalytic resins has become very popular. It offers many advantages such as ease in removal of catalyst after completion of reaction, better selectivity, higher purity of end

product, recycling of catalyst without any treatment, non-corrosive and non-hazardous nature of products etc. More particularly, MTBE, TAME, Nonyl phenol, Bis-phenol A and Biodiesel are products wherein catalytic resins play an important role in the manufacturing process. By virtue of its features such as high physical / thermal / chemical stability, carefully controlled porosity / surface area / pore diameter and specific cross-linking, Thermax's catalytic grade of *Tulsion*<sup>®</sup> resins are successfully established at many customer locations.

## Purifying the most precious commodity of the world

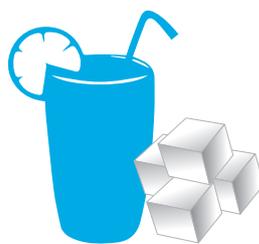


We all require water because 60% of our body, 70% of our brain and 80% of our blood is made of water. Though water covers most of our planet, only 3% of it is fresh water and only 1% of fresh water is accessible for human use as remaining is in the form of ice. In short, less than 0.007% of all water on earth is available

for drinking purpose. This precious commodity is further diminishing due to various reasons such as changing climatic conditions, increasing population, growing industrialization and unwise wastage of water. In this scenario, demand for **remediation of ground water** to make it fit for drinking purpose is increasing rapidly. Ground water, depending upon its location and surroundings, contains various types of impurities such as organics, color, fluoride, arsenic, iron, perchlorate, nitrates, chromium, hardness, radio-nucleotides etc. which are harmful for human consumption.

Thermax has developed resins to remove almost all such impurities and they are being used at many locations across the globe.

## Enhances taste and appearance



Ion exchange resins have many specialty applications in **food and beverage** sector such as sugar refining, liquid glucose de-ashing, fruit juice treatment etc. Thermax has its strong foothold in these applications and is a leader in developing some of the applications in the Indian market.

Sugar syrup decolorization involves usage of both styrenic and acrylic resins. *Tulsion*<sup>®</sup> resins are successfully operating at numerous customer locations in India, South East Asia and Europe. Similarly, *Tulsion*<sup>®</sup> resins have been successfully established in various de-ashing applications across the globe.

*Tulsion*<sup>®</sup> adsorbent resins are used in a variety of applications for fruit juice treatment to remove acidic impurities, suspended matter and more importantly the removal of organic compounds which impart bitter taste to the juice. As a result of *Tulsion*<sup>®</sup> adsorbent resins treatment, a clear and pleasant tasting juice is obtained.

*Tulsion*<sup>®</sup> resins are appropriately post treated for compliance with necessary regulatory norms for food grade applications.

## Extracting the precious

Ion exchange resins are extensively used in **mining sector** for various applications such as extraction of metal from leach solution of ores, separation of metal ions, recovery of valuable metals from waste solutions etc. Large volumes of resins are employed for extraction of metal which is carried out by conventional column process or by "Resin in Pulp (RIP)" technique. A variety of important features such as excellent mechanical strength, good selectivity, appropriate particle size, controlled porosity & surface area and high exchange capacity without compromising kinetics make the resins fit for mining applications. Thermax offers a range of Ion exchange resins for extraction of valuable metals like gold and uranium with both RIP and column techniques.



Customized packing options



On-time delivery



On-time service and technical support



# Customer Reach



## Certifications

Ion exchange business unit is ISO 9001-2008, ISO 14001-2004 and OHSAS 18001-2007 certified. Many of the *Tulsion*<sup>®</sup> resins are also certified for Halal, Kosher and REACH.

## Catering to customer needs

- Ability to provide effective customized solutions in water management problems.
- Ability to manufacture and supply tailor made products as per customer requirements.
- Dedicated R&D set-up for product and application development.
- Pilot plant set-up for scaling up activities, looked after by process engineering group.
- Sophisticated manufacturing plants for intermediate and final products.
- Highly efficient quality assurance and control laboratory equipped with latest testing equipment.

1. *Thermax offers all ion exchange resin products under brand names Tulsion and Tulsimer, which are registered in India and USA.*
2. *Details of individual product literature and MSDS are available on request.*



Thermax Inc.  
21800 Haggerty Road, Suite 112,  
Northville, MI 48167, USA  
Email: [customerservice@thermax-usa.com](mailto:customerservice@thermax-usa.com)  
Phone: +1 248 468 0541  
[www.thermax-usa.com](http://www.thermax-usa.com)

Thermax Limited  
Environment House, Chemical Divison, 90-92,  
BG Block, MIDC, Bhosari, Pune - 411026, India.  
Email: [enquiry@thermaxglobal.com](mailto:enquiry@thermaxglobal.com)  
Phone: +91 20 6715 6000  
[www.thermaxglobal.com](http://www.thermaxglobal.com)

Registered Office: Thermax Ltd., D-13, MIDC, Industrial Area, R.D. Aga Road, Chinchwad, Pune-411019, India.