S-CUBE®

MASS TRANSFER PVT LTD

COST EFFECTIVE

S-CUBE MASS TRANSFER TECHNOLOGY

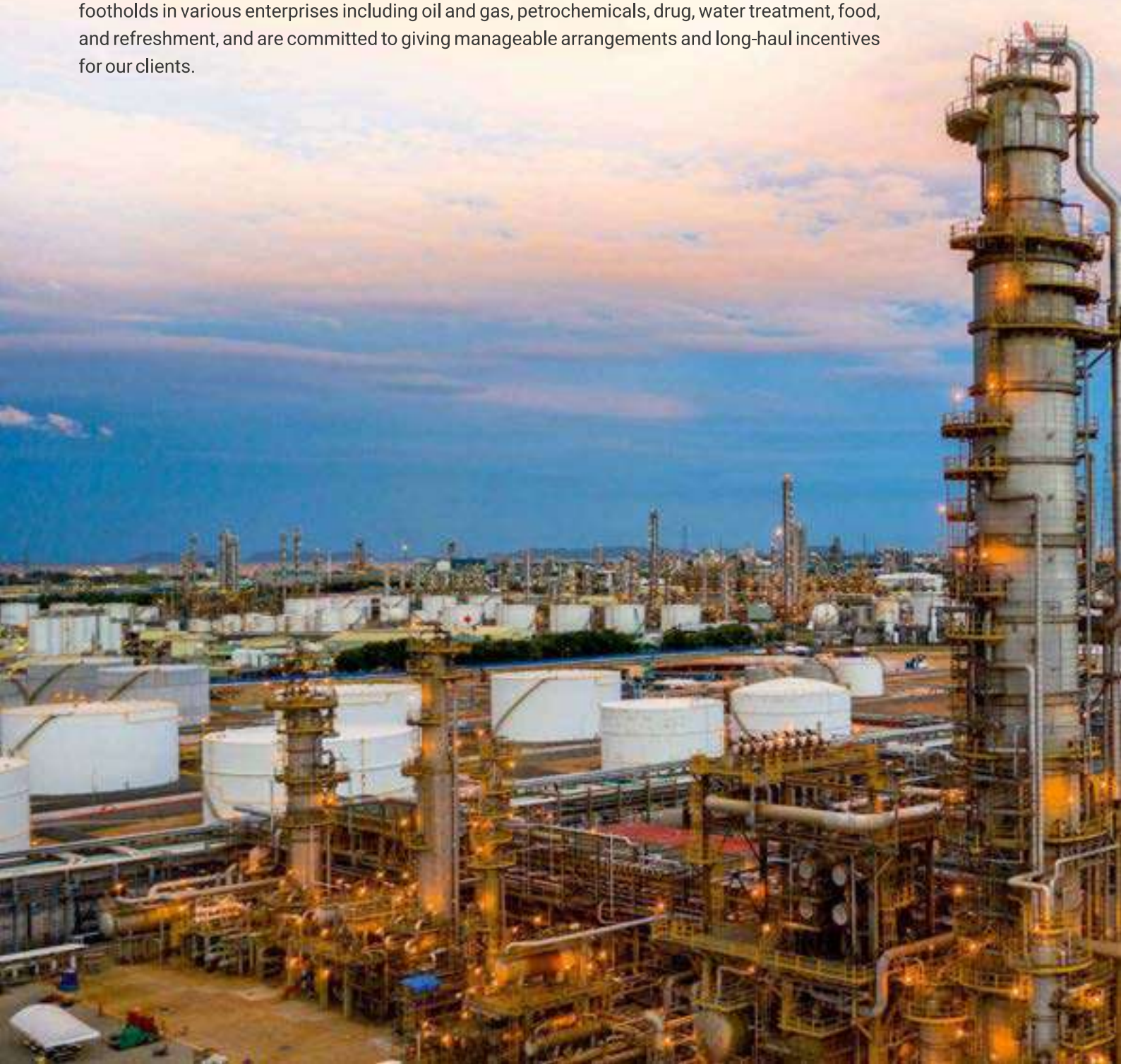
WITH TOTAL TURNKEY SOLUTION

ABOUT US

S-Cube Mass Transfer Pvt Ltd technocraft after getting the Global Consultancy experience in Turnkey Process Plants with the intent of delivering the highest quality of products and services at competitive prices and a commitment to customer service and satisfaction. Through steady devotion to these standards for more than 17 years, S-Cube Mass Transfer Pvt Ltd has acquired a shining standing as an expert in the field of Mass Transfer & Separation Technology. Our main expertise is in Biodiesel, Pharma, Oil and Gas Internals, Distillation Column Internals, etc.

Based in the industrial hub of Pune, S-CUBE has a vast clientele to which it provides distillation column solutions as well as services. The interesting area has offered us draw in representatives of superior grade and solid hard-working attitude, and simultaneously use the huge abundance of assets the city of Pune brings to the table.

S-Cube is a solid accomplice in offering creative and reasonable item answers for the execution of basic tasks and adds esteem and reinforces the serious place of our clients. We stand firm on key footholds in various enterprises including oil and gas, petrochemicals, drug, water treatment, food, and refreshment, and are committed to giving manageable arrangements and long-haul incentives for our clients.



DISTILLATION COLUMN

A Distillation Column is a cylinder that gives surfaces on which buildups and vaporizations can happen before the gas enters the condenser to carry the more unstable fluid in the main portions and the less Volatile parts in the later divisions. The fluid combination that will be handled is known as the feed and this is presented normally someplace close to the center of the section to a plate known as the feed plate. The feed plate separates the segment into a top (enhancing or rectifying) area and a base (stripping) segment. The feed flows down the column where it is collected at the bottom in the reboiler. Heat is provided to the reboiler to create vapor.

The source of heat input can be any suitable fluid, although in most chemical plants this is normally steam. In treatment facilities, the warming source might be the result of surges of different segments. The vapor brought up in the reboiler is once again introduced into the unit at the lower part of the section. The fluid eliminated from the reboiler is known as the bottoms item or basically, bottoms. The vapor climbs the section, and as it leaves the highest point of the unit, it is cooled by a condenser. The consolidated fluid is put away in a holding vessel known as the reflux drum. A portion of this fluid is reused back to the highest point of the section and this is known as the reflux. The dense fluid that is eliminated from the framework is known as the distillate or top product.

TYPES OF DISTILLATION COLUMN

There are many types of distillation columns, each designed to perform specific types of separations, and each design differs in terms of complexity.

- **Batch distillation** is an unsteady state operation. It is usually carried out in a batch still to which a column equivalent to a number of equilibrium stages.
- **Continuous columns** on the other hand, process a continuous feed stream. Unless there is a problem with the column or the surrounding process units, there are no interruptions. They are the most frequent of the two varieties and can handle high throughput. Only this type of column will be discussed.

WHERE S-CUBE HELPS IN DISTILLATION?

S-CUBE PROVIDES DESIGN FOR DISTILLATION SET UP ALONG WITH FABRICATION OF DISTILLATION COLUMN WITH COLUMN INTERNAL LIKE, PACKING, TRAYS ETC, HEAT EXCHANGER, CONTROL PANEL ETC..

IN CASE OF DESIGNING, S-CUBE HELPS YOU IN:

- Specifying the degree of separation required: Set product specification
- Selecting the operating conditions: Batch or continuous; operating pressure
- Selecting the type of contacting device: Structured Packing, Random Packing, and Trays
- Determining the stage and reflux requirements
- Calculating the size of the column: Diameter, number of Theoretical stages.
- Mechanical design: Vessel and internal fittings
- Solvent emission calculation

PROCESS DESIGN

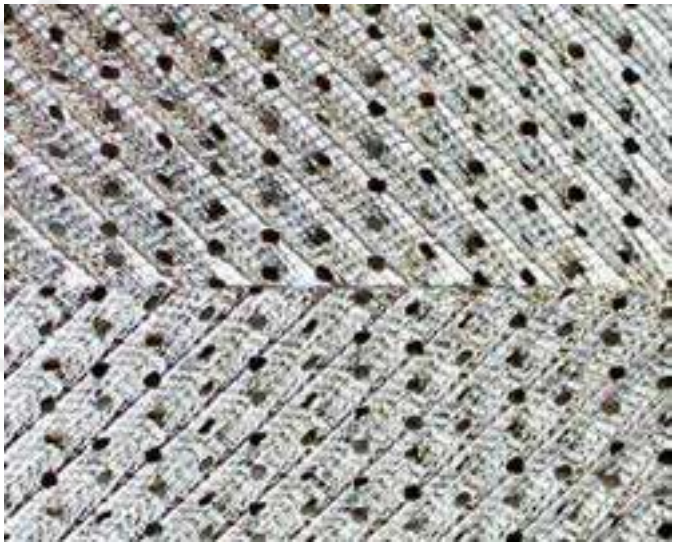
S-Cube helps you in designing the whole project. We at our facility have experienced designers to satisfy the client's needs. The decades of experience of our designers with their fluency in handling such software gives us the lead in the global market. Our all-in-one solution point of view can help clients to breathe a sigh of relief. In case of Fabrication, S-Cube Manufactures Turnkey Systens likes Columns, Heat Exchangers, Vessels, Reactors, etc.

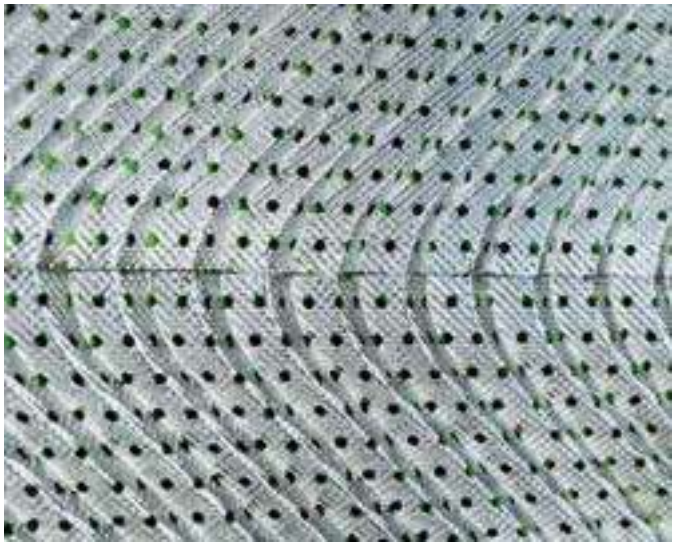
In the Case of Fabrication S-Cube Manufactures Column Packings and Internals are as follows:

Structured Packing ▶ **Random Packings** ▶ **Internals for packed Columns like Distributor, Collector, Packing support, etc...** ▶ **Mass Transfer Trays**

- Feasibility study of Process solvent recovery.
- If process is for unknown products, then S cube team will take a lab trial.
- To generate Data required for process design.
- Mass Balance and energy balance for Distillation columns and heat exchangers.
- Preparation of Process flow diagram (PFD)
- Piping and instrumentation diagram (P & ID)
- Process and Mechanical design of Necessary Equipment .
- Process design and select optimum Structured packing and Column internals.
- S-cube take Process guarantee for design equipment's.
- Revamping of existing system with new technology to get efficient result with same equipment's.

STRUCTURED PACKING





01 SCM- SHEET METAL STRUCTURED PACKING

S-Cube Mass Transfer structured packings are made up of many layers of metal sheets that have been corrugated and joined in a honeycomb-like pattern. S-Cube structured packing, It has proven excellent performance in columns with diameters up to 15 m. It is supplied in sheet metal thicknesses from 0.1 mm, 0.15mm, and 0.2 mm. This packing has high efficiency, a high throughput, a low-pressure drop, and a wide range of applications. S-Cube Mass Transfer Private Limited provides highperformance Structured Packing made of SS 304/304L, SS 316/316L, Duplex, 904L, special alloy like Hastelloy, Nickel 625,825, etc. These are technologically advanced equipment with proven performance in process columns for solvent purification all the way through distillation. Its unrivaled quality and one-of-a-kind design have increased the product's efficiency and capacity. As a result, we have established ourselves as one of the leading Manufacturers of Column Internals & packings in Pune (Maharashtra), India.

FEATURES OF STRUCTURED PACKING:

- High void volume in the packing bed
- Pressure drop at 70-80% flooding about 2 mbar/m
- High mass transfer surface area
- Very low-pressure drop, highly recommended for the vacuum distillation system
- Higher vapor load capacity compared to random packing and trays
- Pressure drop per theoretical stage 0.5-1.5 mbar/m (For Standard System)
- Minimum liquid load approx. 0.2 m3/m2h

SPECIFICATIONS OF STRUCTURED PACKING:

- Offered in specific mass transfer surface areas (m2/m3) of 125, 250, 350, 500 & 750
- Materials used are SS 304/304L, SS316/ 316L, Duplex, 904L, Hastelloy, Nickel 625,825, etc.

02 S-CUBE WIRE MESH PACKING

S-Cube Wire mesh packing has been successfully used for vacuum columns. They are generally used in small to medium diameter columns for separation requiring the maximum number of theoretical stages in minimum column height.

SCM WIRE GAUGE STRUCTURED PACKING SCM-WM-5.0M

S-Cube Wire mesh packing has been successfully used for vacuum columns. They are generally used in small to medium diameter columns for separation requiring the maximum number of theoretical stages in minimum column height.

SPECIAL FEATURES

- High number of theoretical stages per unit height
- Pressure drop per theoretical stage 0.1 – 0.5 mbar
- Minimum liquid load approx. 0.05 m3/m2h
- Small hold-up

PREFERRED APPLICATIONS

- A Large number of theoretical stages
- Vacuum from 1 mbar to atmospheric pressure

SCM WIRE GAUGE STRUCTURED PACKING SCM-WM-7.5L

SPECIAL FEATURES

- Maximum number of theoretical stages per meter
- Minimum liquid load approx. 0.05 m3/m2h
- Small hold-up

PREFERRED APPLICATIONS

- For a very large number of theoretical stages
- Vacuum from 1 mbar to atmospheric pressure
- Small overall height
- Batch and continuous columns
- Pilot and laboratory columns (reliable scale-up)

LIMITED SUITABILITY FOR

- Fouling substances
- Non-wetting liquids

PRODUCT APPLICATIONS

- Pharmaceutical products (Vitamins, etc.)
- Fragrances (Menthol, geraniol, etc.)
- Separation of isomers

SCM HC WM 5.0M

It is a further development of the well-proven. Wire gauze packing SCM HC WM 5.0M. Its geometry is the end edge with a curved S shape.

This offers the same efficiency as SCM5.0M With a 20% lower pressure drop. It is recommended for gentle distillation at a higher capacity.

SCM HC WM 7.5L

It is a further development of the well-proven. Wire gauze packing SCM HC WM 7.5L. Its geometry is ended edge with curved like S shape. This offers the same efficiency as SCM WM 7.5L.

This structure allows for 15% more capacity while keeping the same efficiency as the SCM HC WM 7.5L gauze packing.

APPLICATIONS OF S-CUBE WIRE MESH STRUCTURED PACKING:

- Ranging from laboratory columns to large scale process systems
- Solvent Recovery
- Close boiling components distillation
- Azeotropic distillation
- High vacuum process columns
- Appropriate for batch & continuous distillation systems as well
- Packings for small laboratory column diameters for preliminary assessment of separation tasks
- Highest number of theoretical stages
- Low-pressure drop

How S Cube Will help you to Choosing the Right Structured Packing

Selecting the appropriate structured packing for a specific application requires careful consideration of factors such as:

Operating Conditions: Temperature, pressure, and flow rates influence the choice of structured packing materials and design.
Component Properties: The physical and chemical properties of the substances being separated impact the selection process.
Efficiency Requirements: Different structured packing designs offer varying levels of efficiency, allowing customization for specific needs.

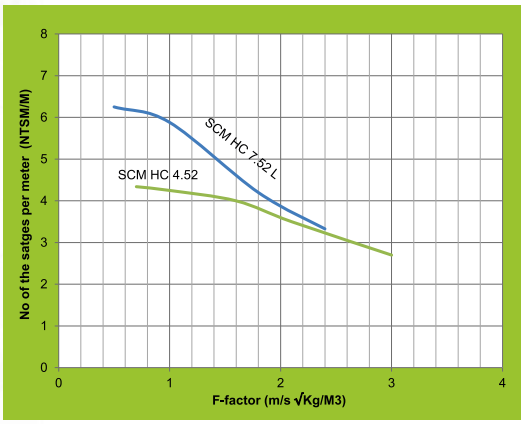
S-CUBE TECHNICAL SPECIFICATIONS:

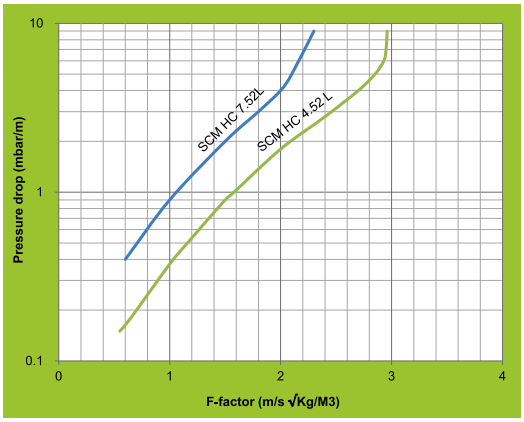
S.No.	Type of Packing	Surface Area (m2/m3)	F-Factor	NTSM	Pressure drop (mbar/m)
1	SCM 2.5 L	250	2.2	2.5	1.3
2	SCM 3.5 L	350	1.8	3.5	1.5
3	SCM 5.0 L	500	1.5	4.2	1.8
4	SCM 7.5 L	750	1.2	5.5	2
5	SCM HC 2.52 L	250	2.6	2.5	1.1
6	SCM HC 4.52 L	350	2.1	3.5	1.3
7	SCM HC 7.52 L	500	1.8	4.2	1.5
8	SCM WM 5.0 M	500	2.2	6	1.2
9	SCM HC WM 5.0 M	500	2.6	6	1
10	SCM WM 7.5 L	750	1.2	9	1.5
11	SCM HC WM 7.5 L	750	1.5	9	1.3

Note:

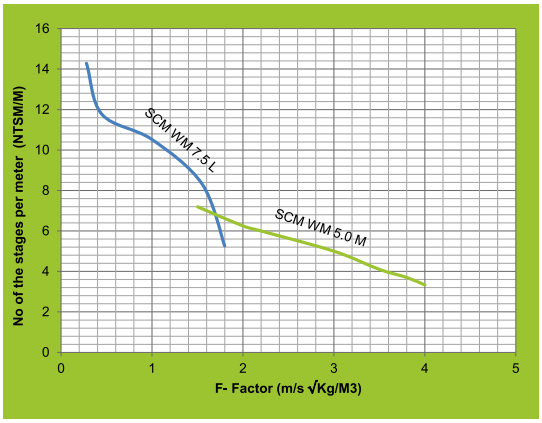
1. Above Packing efficience based on Pure organic System.
2. Efficiency decreases with increasing water composition.

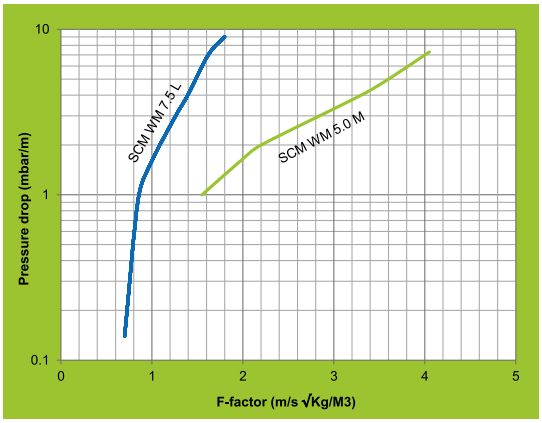
HIGH EFFICIENCY STRUCTURE PACKING GRAPH





EFFICIENCY GRAPH FOR WIREMESH STRUCTURE PACKING





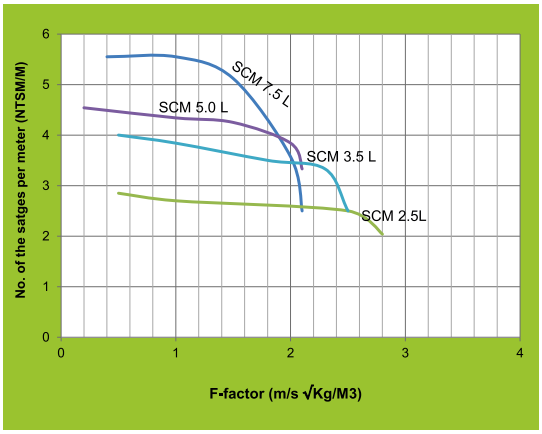
Note:

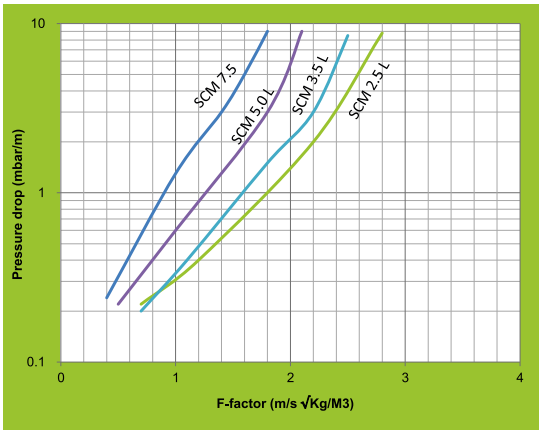
1. Above Packing efficience based on Pure organic System.
2. Efficiency decreases with increasing water composition.

How to calculate vapour density?

- Vapour density is defined as molecular weight / molar volume ... (Eq.1)
- Firstly, how to calculate molar volume?
- We can use the equation P1 x V1 / T1 = P2 x V2 / T2 ... (Eq.2)
- We know that 1 kg.mol occupies 22.4 cubic meter volume at 1 bar pressure and 0 deg C.
- Therefore P1 = 1 bar, V1 = 22.4, T1 = 273 Kelvin
- Now We Know the boiling point of the component at operation pressure
- Using the above info, we will find out the molar volume , We know about Molecular weight
- Therefore, using Eq.1, We can calculate vapour density
- What happens if we have a binary mixture?
- First we have to calculate the average molecular weight
- The boiling point of mixture we can calculate at operation pressure
- In this way, we can even calculate vapour density for multi-component mixtures.

We are familiar with the F factor, which represents the connection between Vapor Velocity and Vapor Density. Given our understanding of the F factor and Density, we are able to compute Velocity. Through this, we have the means to determine the Column Diameter, as we possess knowledge of both our Distillate rate and Reflux Rate.





EFFICIENCY GRAPH FOR STRUCTURE PACKING

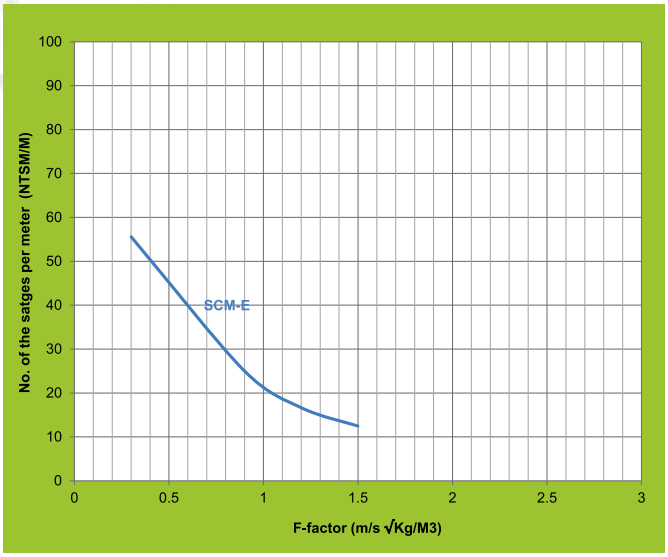
If you're interested in delving deeper into this calculation, please contact S cube Team.

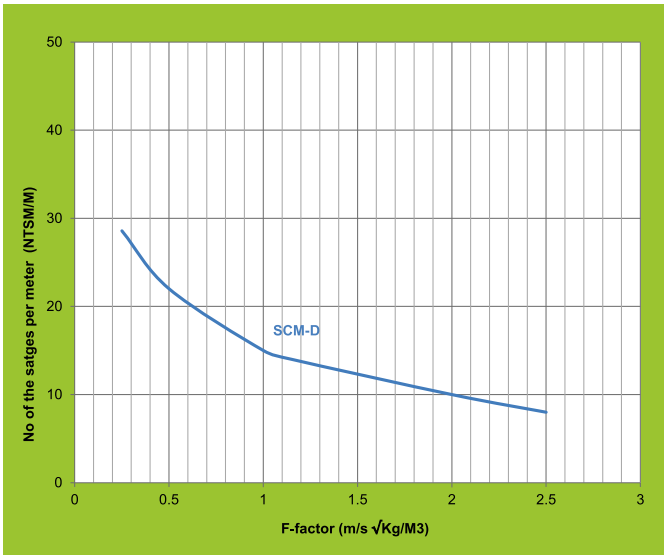
03 S-CUBE LABORATORY PACKING

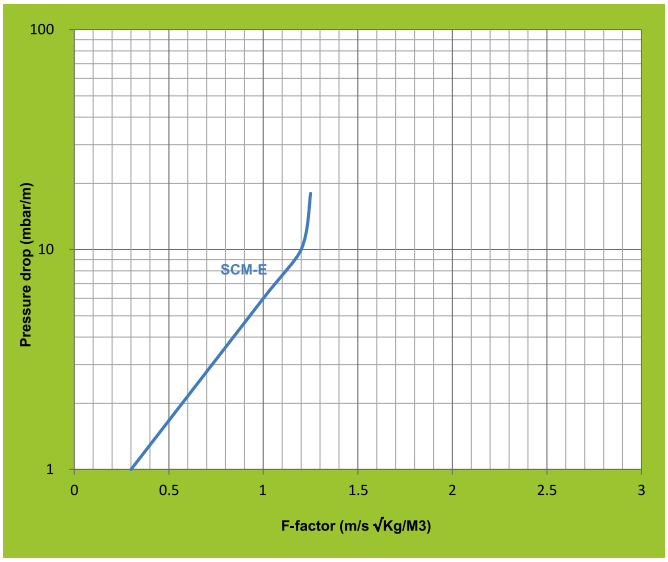
For small laboratory columns, standard structured packings are hardly suitable for use in laboratory columns of less than 50 mm diameter. SCM-laboratory packings are specially designed for this purpose.

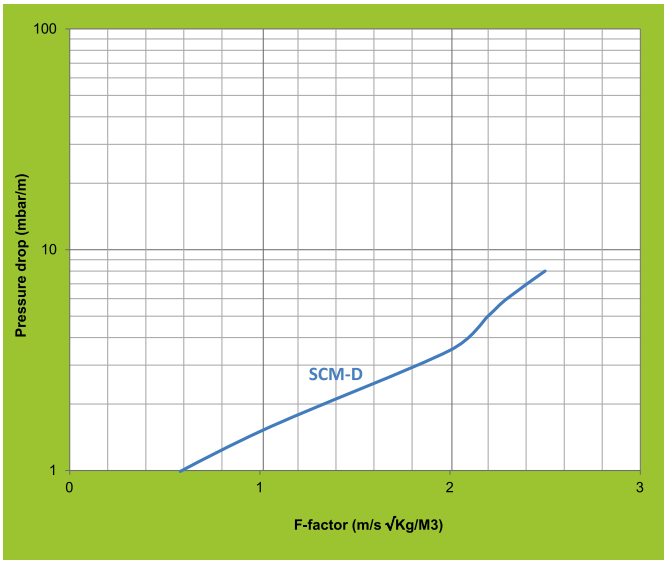
PREFERRED APPLICATION

- Laboratory columns from 25 to 150 mm
- Vacuum from 1 mbar
- Where a high number of theoretical stages is required
- Distillation of components prone to decomposition









SPECIAL FEATURES

Type SCM-E:

- Highest possible number oftheoretical stages, even with very low liquid loadings
- Same pressure drop per theoretical stage as SCM WM-5.0M gauze packing
- Small hold-up

SPECIAL FEATURES

Type SCM-D:

This packing has a coarser structure and hence a lower number of theoretical stages. Suitable for laboratory columns where a modest number of theoretical stages is required, together with low-pressure drop and high capacity.

04 S-CUBE STRUCTURED GRID PACKING

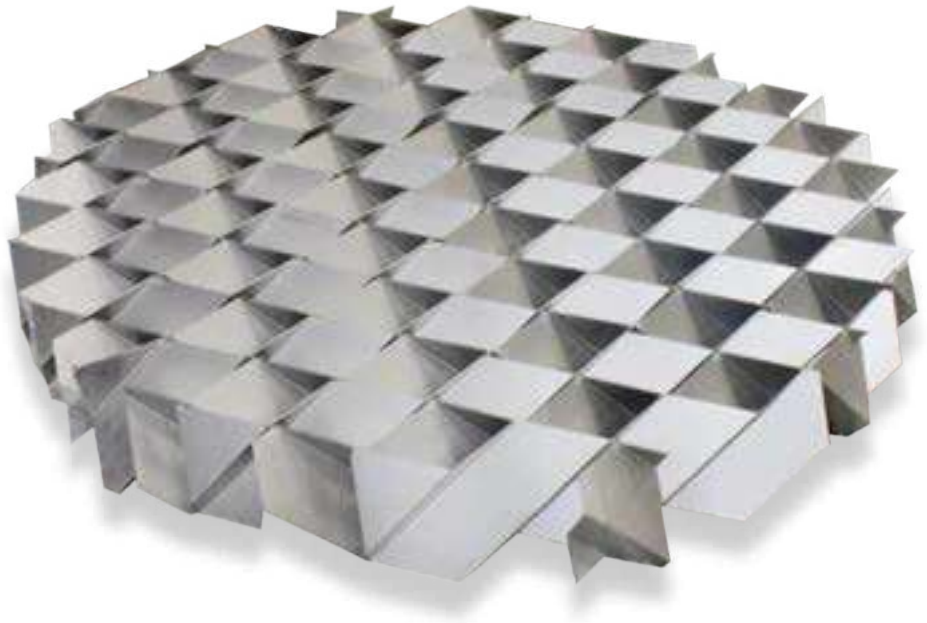
For fouling conditions, Grids are developed for severe services that are susceptible to fouling, erosion, coking, and high solids content. Grids are installed in rigid modules stacked in successive layers with a fixed orientation, thus minimizing the overall pressure drop while simultaneously increasing tower efficiency.

SPECIAL FEATURES

- Better de-entrainment and separation efficiency than a traditional grid
- The low element height. The structure allows for easy cleaning. It can be removed, unscrewed, and cleaned with a water jet
- Mechanically robust structure

MAIN APPLICATIONS

- Vacuum tower wash section
- Atmospheric column over the flash section
- Fluid Catalytic Cracker (FCC) main fractionator slurry pump around section
- FCC flue gas scrubber
- Coker main fractionator quench section
- Viscosity breaker main fractionator wash section
- Ethylene primary fractionator
- Ethylene water quench tower



05 NON-METALIC STRUCTURED PACKING FOR CORROSIVE APPLICATION

1. CERAMIC STRUCTURED PACKING

A thin liquid layer can be formed on a ceramic surface. Turbulent liquid flow and tortuous vapor flow tunnels facilitate the low-pressure mixing of liquid and vapor. Our ceramic structured packings have the same mass transfer efficiency as metal packings because of these factors. Meanwhile, they are far more corrosion and temperature resistant than metal packings. Ceramic packing's surface structure can encourage wetting and help keep liquid hold-up to a minimum. As a result, the chances of the system becoming overheated, polymerized, and coked are reduced. Deaerators, flue gas coolers, HCL absorbers, and CL2/SIO2 scrubbers all use this form of ceramic structured packing.

EXCELLENT FEATURES

- Excellent surface wetting ability, larger mass transfer area, and higher separation efficiency owing to the special surface structure;
- High compressive strength;
- Little magnifying effect;
- More fields/conditions to be applicable

APPLICATIONS

- Distillations and Absorption of strong corrosive mixtures
- Distillation of halogenated organic components

S-Cube Structured Packing	Surface Area (SQ.m./CU.m.)	F-Factor	No. of Theoretical Stages Per Meter Ht.(NTSM)*
250Y	250	2.5	2.5
350Y	350	2	3.5
500Y	500	1.6	4.5

2. S-CUBE PLASTIC STRUCTURED PACKING

S-CUBE plastic structured packing have the high mass transfer efficiency as metal packings. Meanwhile, they are much more resistant to corrosion and low temperature than metal packings.

S-CUBE PTFE/PP STRUCTUED PACKING

PTFE/PP Structured Packing is used for a corrosive applications like absorption and distillation columns and chemical reactions. PTFE/PP Structured Packing typically consists of a thin corrugated sheet. PTFE/PP sheets are arranged in a way that they force fluids to take complicated paths through the column, thereby creating a large surface area for the contact between different phases.

PTFE/PP structured packing is used as a replacement for the ceramic saddle, it is highly durable and gets more stages than the ceramic saddle.

ADVANTAGES

- It is a completely chemically inert material
- It is strong but light in weight
- It gives rise to the adequate area for both Gas & Liquid
- Streams without excessive liquid hold up and less pressure drop
- It provides good contact between liquid and gas
- It is washable and reusable
- It is unbreakable too
- It is energy conserving

ENHANCED FEATURES:

- High transfer unit count for each meter with a reduced HTU, varying based on the system.
- Minimal pressure reduction for every meter of packed height.
- Cost-effective load range reaching up to an F factor of 3 Pa.

Optimal operating temperatures:

- Roughly 80-100˚C for polypropylene.
- Approximately 120-150˚C for PTFE/PP.

APPLICATION AREAS:

- HCl absorbers
- SO2 absorbers
- Flue gas cleaning columns
- Sea water deaerators

PTFE COLUMN INTERNALS

PTFE-PACKING SUPPORT

PPH-PACKING SUPPORT

PPH-LIQUID DISTRIBUTOR

RANDOM PACKING

S-CUBE MASS TRANSFER IS THE LEADING MANUFACTURER, SUPPLIER, AND EXPORTER OF RANDOM PACKING

TYPES OF TOWER PACKING

SCM RASCHIG RING

The Raschig ring is a piece of tube that is used in large numbers in a packing column. Raschig rings are usually made of ceramic or metals, and they provide a large surface area within the column, allowing for interaction between liquid and gas vapors.

SCM PALL RINGS

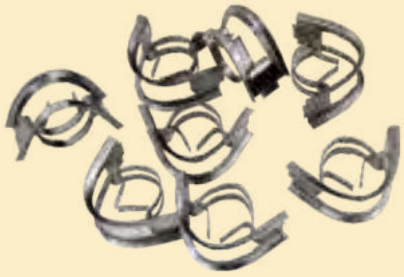
Pall rings are the most common form of random packing. Pall rings have similar cylindrical dimensions but have rows of windows which increase performance by increasing the surface area. They are suited for low-pressure drop and high-capacity applications. They have a degree of randomness and a relatively high liquid hold up, promoting a high absorption, especially when the rate of reaction is slow. The cross structure of the Pall ring makes it mechanically robust and suitable for use in deep-packed beds.

SCM PALL RING SIZES

Type of Packing	13	16	19	25	38	50	75
Number Per Cubic Meter	400,000	210,000	100,000	51,000	13,500	6,500	1,820
Specific Surface Area (M2/M3)	430	345	250	208	131	98	71
Void Fraction %	90	93.1	94	94.5	95	96	96
Packing Factor F	73	71	63	48	28	20	18

SCM IMTP SADDLES

SCM IMTP SADDLES are mainly designed for distillation operations. After knowing the advantages of intalox metal tower packing in distillation, the manufacturer has recommended its other purpose, especially in stripping, absorption, liquid-liquid extraction, and heat transfers as well. We offer different types of Intalox Saddles like Ceramic Intalox Saddles, Polypropylene Intalox Saddles, and PVDF Intalox Saddles. The range consists of Metal Intalox Saddles, IMTP Saddles, Ceramic Intalox Saddles, PVDF Intalox Saddles, and PP Intalox Saddles. Chemical, Petrochemical, Fertilizer, Chlor-alkali, Soda Ash, Sulphuric Acid, Pulp and Paper industries are some of the industries where these Intalox Saddles are used.



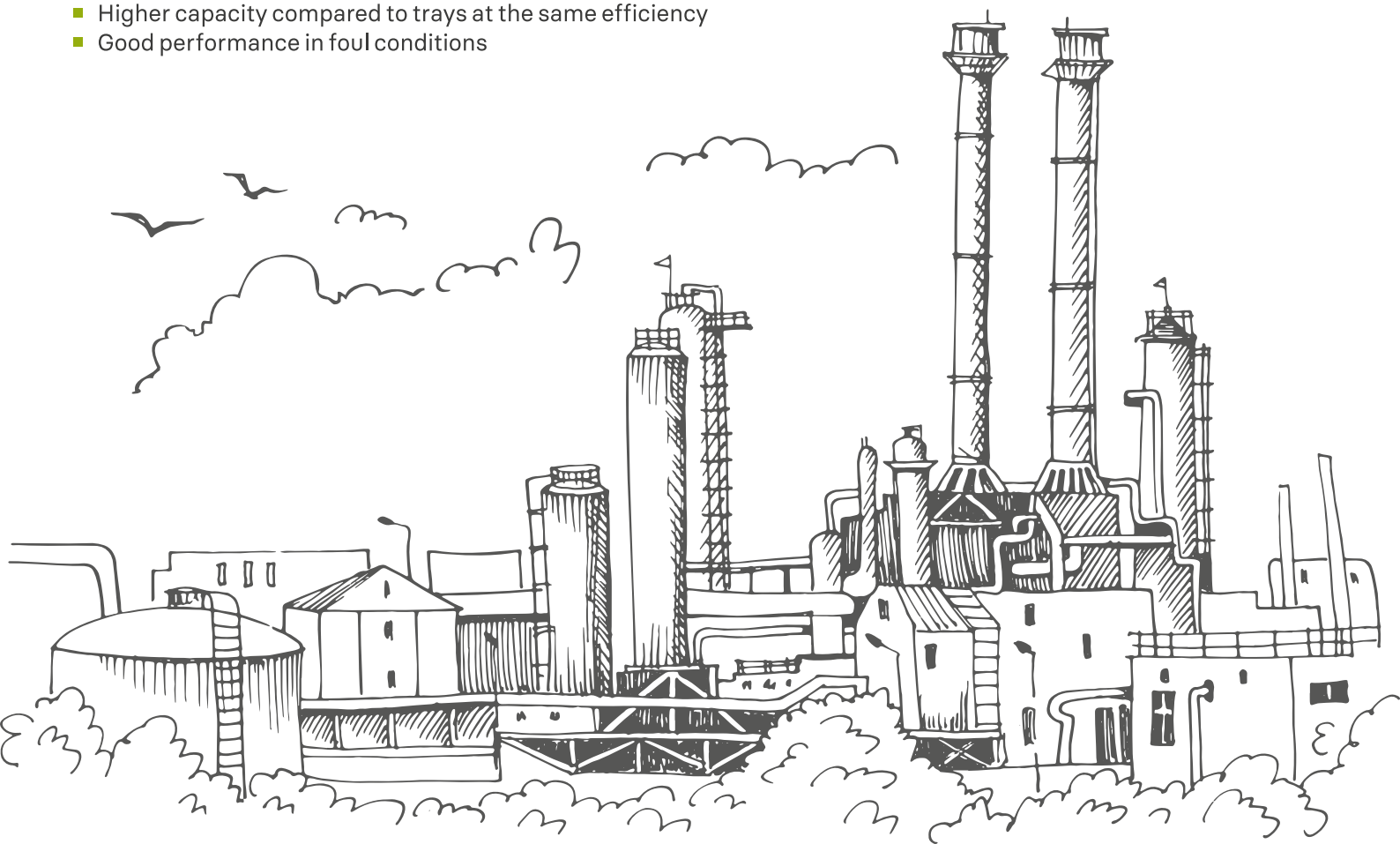
Normal Size (mm)	15	25	40	50	60	70
Specific Surface Area (M2/M3)	305	226	151	100	80	60
Void Fraction %	97	97	98	98	98	98

PLASTIC RANDOM PACKING

It has been used successfully as an inexpensive and efficient way to increase tower capacity and efficiency. There are numerous process advantages that can be realized by using plastic random column packing in many applications. Plastic random column packings are not as bulk as ceramic equivalents and therefore offer higher capacity and lower pressure drop.

PROCESS ADVANTAGES OF RANDOM PACKINGS

- Reduced pressure drop through the column
- Reduced liquid hold up through the column
- Variety of packing types for different types of processes
- Higher capacity compared to trays at the same efficiency
- Good performance in foul conditions



COLUMN INTERNALS

S-Cube Mass Transfer Pvt Ltd manufactures Column Internal that is used in distillation procedures. We use premium-grade raw materials in order to provide you best-performing column internals. In any column system, packings can give an optimum performance only when complemented with appropriately de-signed tower distributors, collectors, supports, and other column internals for optimum liquid–vapor distribution to the packed beds.

TYPES OF COLUMN INTERNALS
STRUCTURED PACKING & RANDOM PACKING

CHANNEL TYPE DISTRIBUTOR

LIQUID DISTRIBUTOR VEP

PIPE TYPE LIQUID DISTRIBUTOR

CHIMNEY TRAY

BED LIMITER

LIQUID COLLECTOR

MULTI-BEAM SUPPORT

APPLICATION AREAS OF COLUMN PACKINGS & INTERNALS:

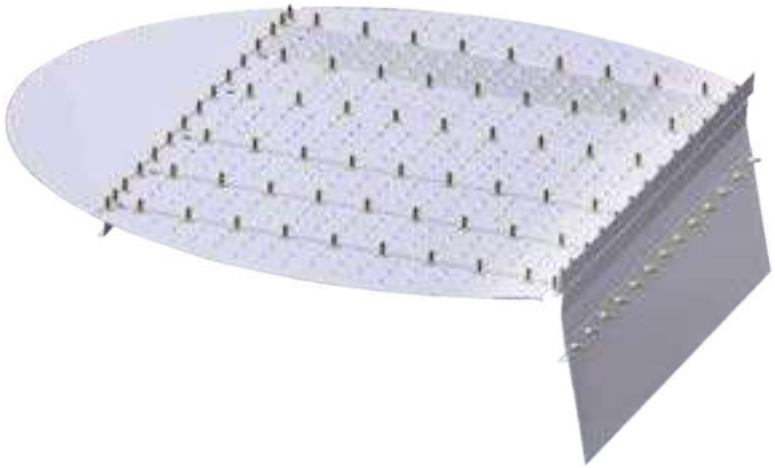
- Organic chemicals
- Petrochemicals
- Drug and Dye Intermediates
- Pharmaceuticals
- Aromatic and Essential Oils
- Agrochemicals
- Pesticides and Fertilizers
- Alcohols
- Oil and Gas Industries
- Drug Intermediates
- Bulk Drugs

DISTILLATION TRAYS

A] SCM VALVE TRAY

Valve trays are perforated sheet metal decks on which round, liftable valves are mounted. The vapors flows through valves which are installed parallel to the outlet weir.

Vapour flows lifts the caps, thus self creating a flow area for the passage of vapour. The lifting cap directs the vapour to flow horizontally into the liquid, thus providing better mixing than is possible in sieve trays. Valve trays combine high capacity and excellent efficiency with a wide operating range.



Fixed Valve Trays & Floating Valve Trays Advantages:

- Excellent liquid / vapors contacting
- Higher capacity
- Higher flexibility than sieve trays
- Can handle higher loadings
- Low-pressure drop than bubble cap

FIXED VALVE TRAY

FLOATING RECTANGULAR VLAVE TRAY

FLOATING ROUND VALVE TRAY

B) SCM SIEVE TRAY

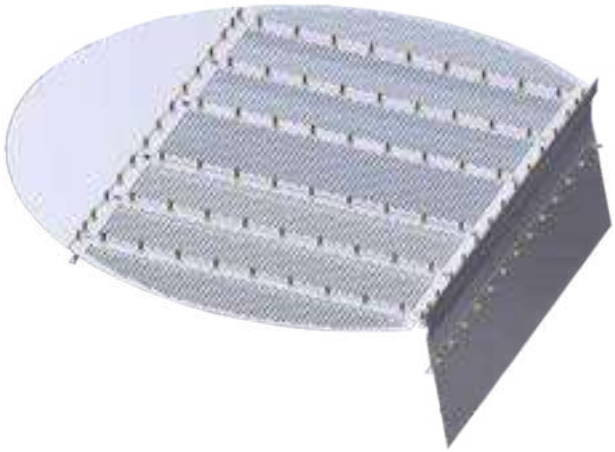
Sieve trays are flat perforated plate in which vapour rises through small holes in tray floor, & bubbles through liquid in fairly uniform manner. They have comparable capacity as valve trays. Vapour passes straight upward through the liquid on the plate. The arrangement, number and size of the holes are design parameters.

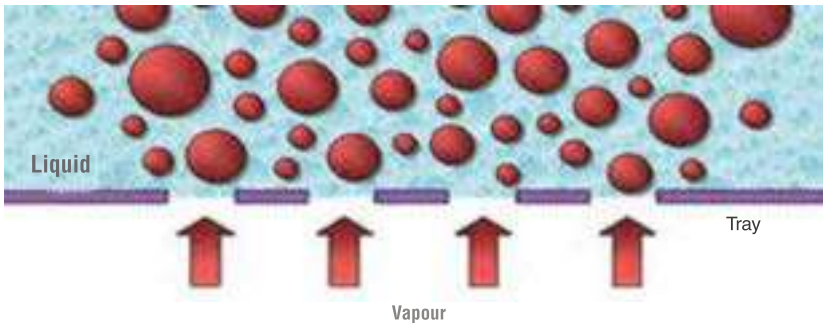
SCM SIEVE TRAY ADVANTAGES

- Simple Construction Low Entrainment
- Low Cost Low Maintenance Cost
- Low Fouling Tendency

SCM SIEVE TRAY DISDVANTAGES

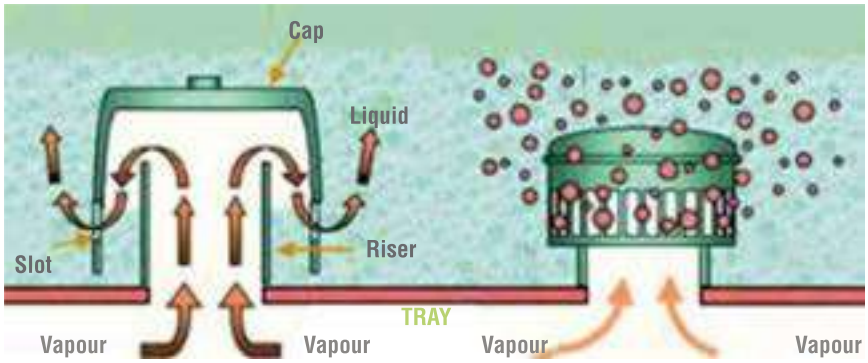
- Less-flexible to Varying Loads Than





C) SCM BUBBLE CAP TRAY

Riser or chimney fitted over each hole, and a cap that covers the riser. The cap is mounted so that there is a space between riser and cap to allow the passage of vapour. Vapour rises through the chimney and is directed downward by the cap, finally discharging through slots in the cap, and finally bubbling through the liquid on the tray.



D) SCM CARTRIDGE TRAYS

Cartridge trays are typically used for small flanged columns where physically installing the trays inside the column is not feasible. Column diameters range between 300 to 800 mm (12" to 30"). Cartridge trays are assembled in bundles for easy and fast installation. They can be equipped with all types of trays decks and downcomers.

OIL & GAS INTERNALS

Separators are the devices that are used in Oil-Gas Separation from the liquid in the good stream. Its basic working principle is related to the different densities of all three phases. This separator vessel consists of different parts or can also be called Separator Internals. Based on different priorities these vessels are classified into many configurations.

SCM CYCLONE INLET DEVICE

SCM BI-VANE INLET DISTRIBUTOR

SCM MULTI-CYCLONE DEVICE

SCM DUAL PERFORATED BAFFLE PLATE

SCM MIST ELIMINATOR

SCM PLATE PACK

SCM SAND JETTING SYSTEM

SCM MATRIX COALESCER PACK

SCM VANE INLET DEVICE

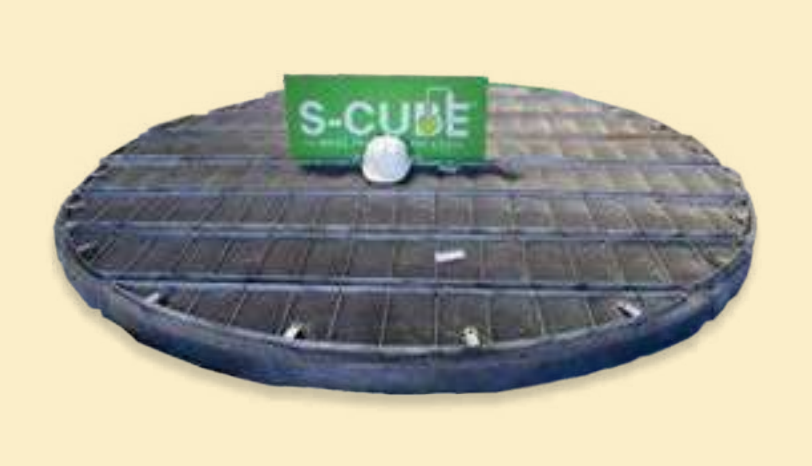
DOUBBLE POCKET VANE PACK

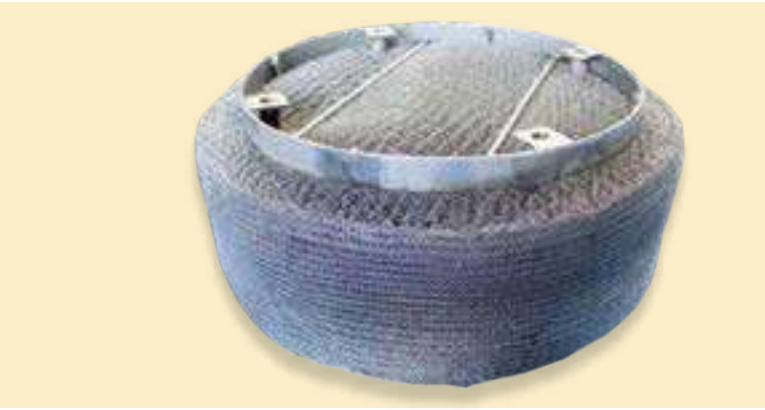
SCM SINGLE PERFORATED BAFFLE PLATE

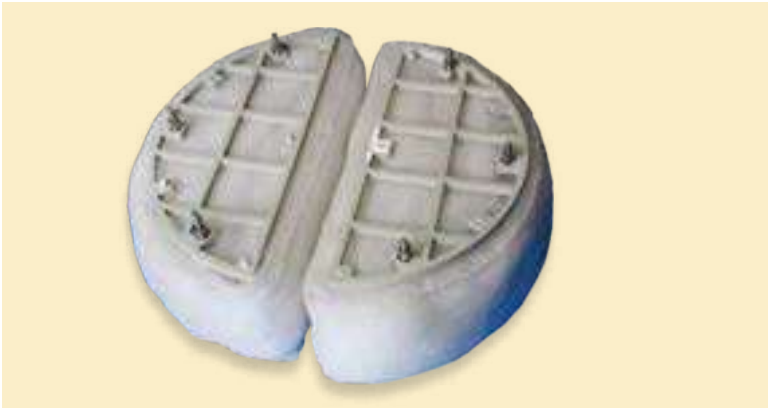
SCM PLAIN VV

S-CUBE MIST ELIMINATOR

Mist elimination, or the removal of entrained liquid droplets from a vapor stream, is one of the most commonly encountered processes regardless of unit operation. Unfortunately, mist eliminators are often considered commodity items and are specified without attention to available technologies and design approaches. The engineered mist eliminator may reduce liquid carryover by a factor of one hundred or more relative to a standard unit, drop head losses by 50% or more, or increase capacity by factors of three or four. This manual summarizes cost effective approaches to reducing solvent losses or emissions, extending equipmentlife and maintenance cycles using proven and cost effective technologies and techniques.



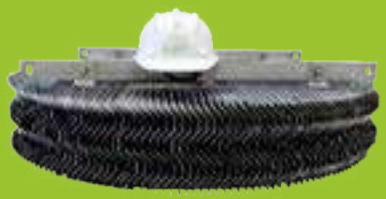




VANE TYPE MIST ELIMINATOR

In the Mist Eliminator device, the more the passes, the more will be the efficiency of separation. That's why different types of devices can be a choice as per the process requirement.

SCM PLAIN VV



Comprises plate type vanes for entrained droplet separation.

SCM SINGLE HOOKED V

Comprises one extra vane for better effective mass transfer.

SCM DOUBLE HOOKED V

Comprises two extra supporting vane plates with respect to angle of vanes to get more optimized results.

STATIC MIXER

One of the most crucial unit procedures is mixing. The quality of mixing and dispersion, as well as the rate at which it is achieved, has a significant impact on product quality, yield, and overall process economics. A static mixer is a set of mixing devices that are put in a pipe or duct. They have no moving parts and are utilized in continuous operations to produce precise mixing and dispersion. The mixing isn't done at random. Rather, it follows a set of rules. As a result, the outcome is predictable. Depending on the process goal, the scaling-up methodology is well defined. Static mixers are small, durable, and require little maintenance. They work well in a variety of situations. When compared to dynamic mixers, the operating and investment expenses are cheap. S-Cube-made Static Mixer has specialized features of having narrow residence time distribution, intensive heat transfers, and Uniform drop size. In static mixers, radial mixing not only equalizes concentrations and temperatures, but also velocity distribution. The uniform residence time is ensured by the equal velocity. If immiscible liquids or gases and liquids are involved, S-Cube mixers can produce a dispersion with a defined mean drop or bubble size and restricted size distribution.

S-CUBE STATIC MIXERS PROPERTIES & SPECIFICATION:

When the relevant components are immiscible and a liquid component forms the continuous phase, dispersions are formed. Uniform energy dissipation in the overall mixer volume and simultaneous distribution of the components over the full pipe cross-section are used to produce the appropriate mean drop size and narrow drop size distribution. Chemical reactions can be carried out under precisely regulated circumstances in plug flow and loop reactors with static mixing devices, which is especially important for extremely exothermic and endothermic processes. S-Cube mixers create plug flow and considerably improve heat transfer both within the fluid and with contacting surfaces for temperature control, in addition to swiftly mixing and/or dispersing feed components.

S-CUBE MIXERS PORTFOLIO

1) SCM-MX MIXER

For more than a decade, the S-Cubes SCM-MX mixer has been the industry standard in static mixing applications. It is made up of a grid of inclined bars in a variety of sizes. This design divides the ingredients to be blended into layers and distributes them across the pipe's full crosssection.

2) SCM-MV MIXER

Corrugated plates produce open, crossing channels in which flow is separated into multiple substreams in the SCM-MV mixer. These mixers are most commonly utilized in transitional and turbulent flow regimes to increase mass transfer between immiscible liquids. Gas mixing applications are the best fit for these mixers.

APPLICATION OF S-CUBE STATIC MIXER

- Blending of miscible liquids or gases is achieved by both the continuous splitting and radial transposition of the flow. Depending on the physical properties of the fluids, the flow may be laminar, transitional or turbulent. In the presence of turbulence, mixing is enhanced by the generation and control of large scale turbulent eddies.
- Dispersions are created when the involved components are immiscible and a liquid component forms the continuous phase. The desired mean drop size and a narrow drop size distribution are achieved through uniform energy dissipation in the total mixer volume and the simultaneous distribution of the components over the entire pipe cross-section.
- Diluting of strong acids and bases
- Adding additives, catalysts and inhibitors to process streams
- Mixing of different liquid streams to attain uniformity of concentration and temperature
- Dispersing of alkali in hydrocarbons Optimized gas/liquid distribution at the inlet of two-phase reactors to improve the efficiency of the reactor
- Liquid/liquid dispersion for extraction reactions
- Plug flow reactor for homogenous or dispersed-liquids systems

BENEFITS OF S-CUBE STATIC MIXER

- Uniform concentration and temperature distribution
- Low pressure drop
- Longer catalyst lifetime
- Excellent mixing and flow characteristics (plug flow) with low shear
- Narrow residence time distribution
- Excellent in-line cleaning and sterilization ability

S-CUBE SPECIAL MIXERS

1) SCM JACKETED MIXER

A jacketed static mixer is a unique form of mixer that includes a heating or cooling jacket. These mixers are utilized in situations where heat must be supplied or removed during the mixing process.

2) SCM TEFLON LINED MIXER

The Teflon static mixers are predominantly used for applications involving aggressive chemicals and high-temperature mixing. S-Cube offers Teflon static mixers with a variety of options and configurations to suit nearly any application.

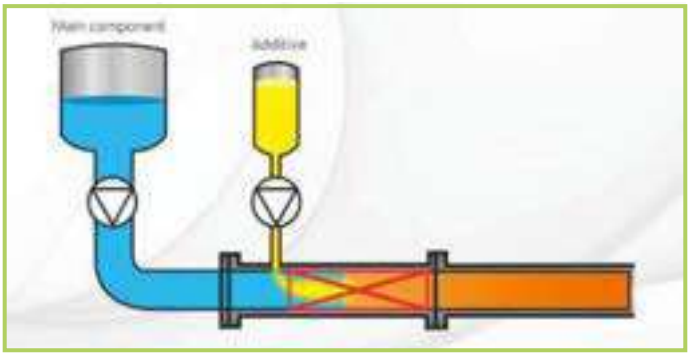
S-CUBE'S MIXERS

IT'S ARE WIDELY USED IN THE FOLLOWING OPERATIONS

- Gas-liquid contacting
- Seawater deoxygenation
- Homogenization of products
- Aeration of water
- Contacting multipurpose mixers
- Mixing of bitumen or heavy crude oils
- Pasteurization
- Seawater desalination
- Natural gas blending with other gases
- Production of organic acids
- Dilution of heavy oil with gas oil

S-CUBE has excelled in the business of static mixers for more than 20 years and has built up a reputation as an international supplier of top quality static mixers. Over the years we have achieved comprehensive technical expertise in the field of static mixing to provide mixers that enable perfect homogenization and dispersion of liquids and gases without using moving parts.

Our mixers are developed keeping the customer requirements under consideration so as to ensure that what we deliver is exactly according to the customer requirements.



A static mixer is a precision engineered device for continuous mixing of fluids. They consist of an arrangement of mixing elements installed in a pipe or duct. They function without moving parts and are used to achieve specific dispersion and mixing in a continuous process. They are capable of mixing materials with equal or different viscosities and volume flow rates. The fluid flow is provided by pumping.

- Mixing for every volume flow, density, viscosity and substance specific properties.
- Liquid – liquid mixing
- Miscible liquids
- Non miscible liquid
- Liquid – gas mixing
- Gas-gas mixing
- Parameters for mixer design
- Flow rate of components to be mixed
- Component viscosities
- Surface tension and specific gravity

BIODIESEL

Smart technologies serve a wide range of stakeholders, including the economy, the environment, and government policy. The biodiesel industry's role is not to replace petroleum diesel, but to assist in the development of a balanced energy policy that benefits the entire world. Biodiesel is one of several alternative fuels aimed to increase the life and cleanliness of diesel engines by extending the utility of petroleum. The ultimate goal is to use a community-based biodiesel production strategy to help establish a better, more self-sufficient community. From the farmers who raise the feedstock to the local businesses who produce and distribute the fuel to the ultimate user, a community-based biodiesel distribution program benefits local economies.

ENZYMATIC BIODIESEL PROCESS

- We can use oil having 0-100% FFA in this technology & high-quality glycerine in this technology is produced.
- Methanol consumption is less & low-quality methanol like aqueous methanol
- Low energy consumption & less than a tenth of the energy consumed in the chemical process.
- 1 kg enzyme can produce > 3000 kg of biodiesel
- A higher purity/higher value glycerol is derived from the enzymatic biodiesel process compared to conventional production methods

S-CUBE BIODIESEL PATENTED TECHNOLOGY (PATENT NO. 376907)

Based on the customer choice and requirement technology is suggested. S- Cube Mass transfer Team is capable enough to handle the Process and knows the different technology available in the market. A combination of different technology was proposed so that clients do have flexibility in the operation.

- Filtration
- Conventional (Traditional)
- Degumming / Bleaching
- Winterization

Biodiesel can be used entirely (B100) or in mixtures with petroleum diesel. B## denotes a blend, with the percentage of biodiesel corresponding to the percentage of biodiesel in the blended fuel. B20, for example, is a 20% blend of biodiesel with 80% diesel fuel. When biodiesel is first used in a car, it can cause deposits in the fuel tank, which can clog the fuel filter. After this initial period, a user can switch between biodiesel and petroleum diesel as needed or preferred, without having to make any changes.

78% LESS LIFECYCLE GREENHOUSE GAS THAN PETROLEUM DIESEL

PILOT PLANTS

A pilot plant is a pre-commercial manufacturing system that uses new manufacturing technology and/or produces small quantities of new technology-based items, mostly to learn about the new technology. The information gathered is then applied to the development of full-scale production systems and commercial goods, as well as the identification of new research goals and the support of investment decisions. Other (non-technical) goals include increasing public acceptance of new technologies and challenging government rules. In the sense that pilot plants are normally smaller than full-scale production facilities, but are built in a variety of sizes, the phrase "pilot plant" is a relative term.

S-CUBES' PILOT PLANT

The whole skid-based project of S-Cube provides utilities like heater, chiller, etc. S-Cube Mass Transfer Pvt Ltd is capable of cost-effective & single-sourced solutions. The global experience with knowledge of the market makes S-Cube a leading company in the field of mass transfer equipment and separation technologies.

PROCESS EQUIPMENT

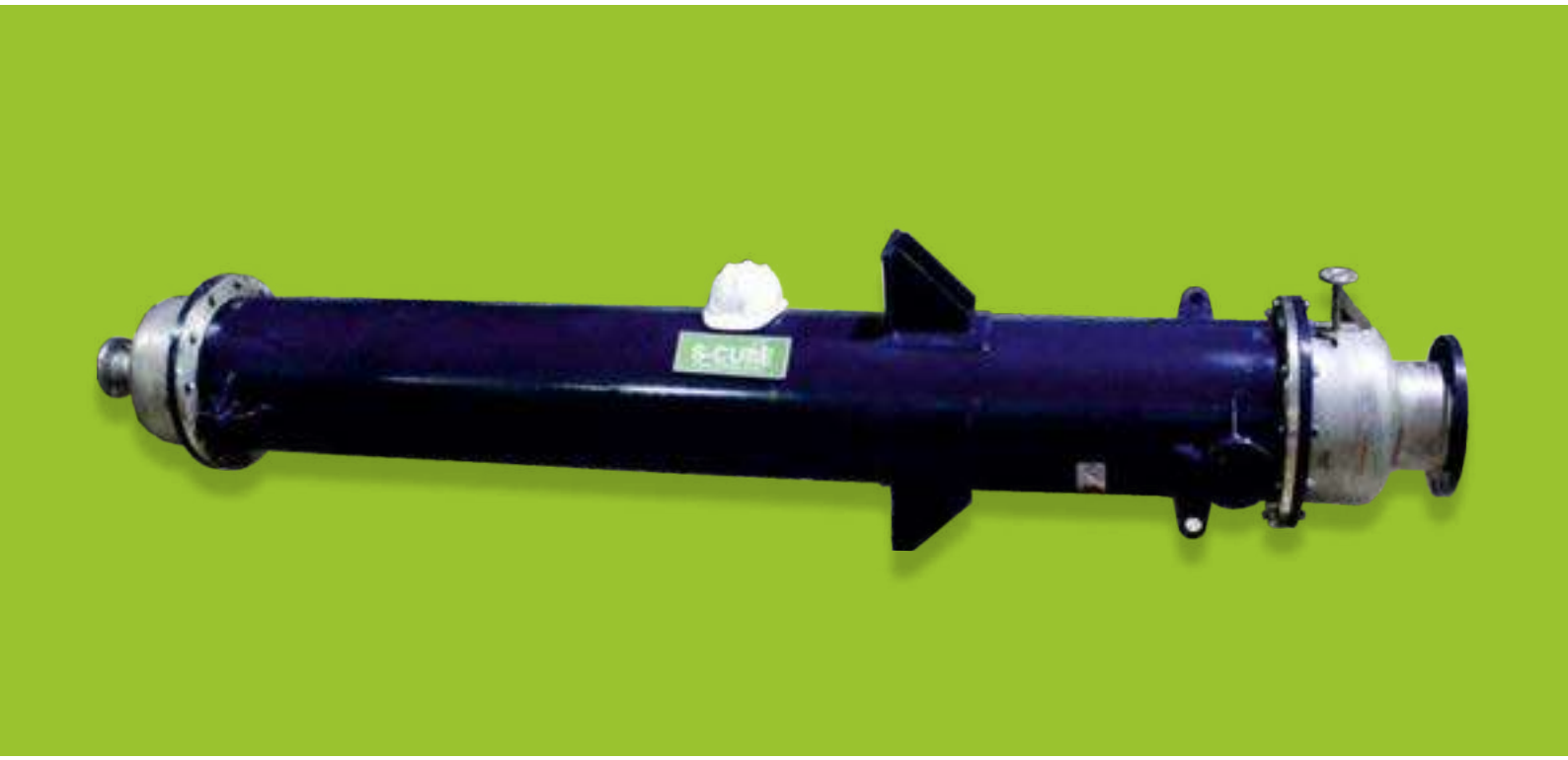
DISTILLATION COLUMN

We have successfully completed a project of the Vegetable Oil Refining Column for one of our most valued customers.

WATER TESTING FACILITY

PROCESS PLANT

HEAT EXCHANGER



TW 500

S-Cube successfully completed and exported Turnkey Skid Unit of Tote & Drum Washing System For USA Business Partner. S-Cube is bringing new innovation to Indian industry to satisfy Global need. This is completely AI and IOT based system with advanced Technology.

SRH 55

Made in india turnkey flash still for solvent recovery system with atex panel gets dispatch to usa. S cube mass transfer pvt ltd ready to launch new products range in the indian and global market to meet the process industry requirements. It is very important to reduce carbon emissions in process industry. optimization of various parameters using modern mathematical tools as well as process control techniques lead to achieve these goals. We not only reduce carbon emissions but also get added advantage of reduction in both capex and opex. S-cube mass transfer pvt. Ltd. Provides optimized designs both in reactions and mass transfer to process industry

TANK

INDUSTRIAL APPLICATIONS

S-CUBE® MASS TRANSFER PVT LTD

CHEMICAL INDUASTRY

FOOD INDUSTRY

WATER & WASTEWATER TREATMENT

OIL, GAS & PETROCHEMICALS

OTHER INDUSTRIES

Natural Gas Processing
Pharmaceuticals
Pulp & Paper Processing
Cosmetics & Detergents
Potable Water Treatment
Power Plants
Energy
Catalyst Manufacturer and Catalytic Reactors
Pollution Control
Minerals & Ore Processing
Vegetable Oil Processing
Reverse Osmosis Feed Pre-treatment
Scrub Noxious Gases with caustic

S-CUBE®
MASS TRANSFER PVT LTD

CERTIFIED ISO 9001-2015 COMPANY

'Driven by Values, Delivering on Vision'

S-Cube Mass Transfer Pvt Ltd. is the fastest-growing company ensuring customers with the finest product line and high-end patented technology. Our work is followed by our passion which reflects in the perfection of our service line. Our Vision is to exceed the expectations of our partners and clients by keeping quality and ethical dealing as a priority. More often vision exceeds to reducing carbon emission and solvent purification without contaminating any essentials a bit. After all Company Does Stands for its quote:

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