

STATIC MIXER

SMV Model

High efficiency

► Product Introduction

OMORIS-SMV Model static mixer is considered a high mixing efficiency design that creates a homogeneous mix in just a few pipe diameters. It is made of corrugated plates that are stacked on top of each other in an alternating-crossing fashion to form open intersecting channels that are at a 45° angle relative to the pipe axis. Adjacent mixing elements are oriented 90° relative to each other to create 3-dimensional mixing.



► Operating Principle

Mixing :

Blending of miscible components regardless of the volume, density, viscosity and properties of the media.



Dispersing and Contacting:

Dispersing two or more products for scrubbing processes, reactions, mass transfer.

Contacting of liquids with gases to create high mass transfer surface area and high rates of absorption, reaction, vaporization and condensation.



► Structure

SMV mixing element design is unique among static mixers.

It has the ability to “dial-in” the desired degree of mixing and pressure drop simply by varying mixing element geometric parameters.

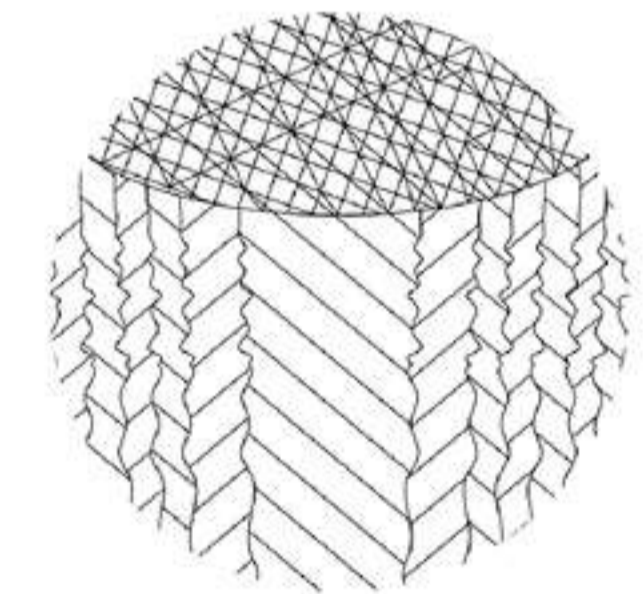
This is accomplished by varying the number of mixing layers (corrugated plates), corrugated plate angle relative to the pipe axis, mixing element L/D and the use of spacers between mixing elements to enhance homogeneity with little pressure drop.



Applicable to viscosity ≤ 102 CP.

liquid-liquid, liquid-gas, gas-gas mixing, emulsifying, reaction, absorption, extraction, enhanced heat transfer process.

DH ≤ 3.5 is especially suitable for cleaning medium, DH ≥ 5 can be used for medium with a small amount of non high viscosity impurities.



$$\Delta P = f \frac{\rho C}{2 \epsilon^2} w^2 \frac{L}{dh} \quad Re \epsilon = dh \rho c \frac{W}{\mu \epsilon}$$

► Flowing Type And Reynolds Numbers

		SMV-2.3	SMV-3.5	SMV-5
Void rate	ϵ	0.880	0.909	1
Laminar flow section	Scope	$Re \epsilon < 23$	$Re \epsilon < 23$	$Re \epsilon < 150$
	Relation formula	$f = 139 / Re \epsilon$	$f = 139 / Re \epsilon$	$f = 150 / Re \epsilon$
Transient flow section	Scope	$23 < Re \epsilon < 150$	$23 < Re \epsilon < 150$	
	Relation formula	$f = 23.1 Re \epsilon^{-0.428}$	$f = 73.7 Re \epsilon^{-0.631}$	
Turbulence section	Scope	$150 < Re \epsilon < 200$	$150 < Re \epsilon < 2400$	$Re \epsilon > 10$
	Relation formula	$f = 14.1 Re \epsilon^{-0.39}$	$f = 10.7 Re \epsilon^{-0.35}$	$f = 1$
Total turbulence section	Scope	$Re \epsilon > 2400$	$Re \epsilon > 2400$	
	Relation formula	$f = 1.09$	$f = 0.702$	