

# **HL** CRYSTALLIZER PURIFIER



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*A PRODUCT OF INNOVATIVE ENGINEERING*  
**HLE ENGINEERS PVT. LTD.**



## HL CRYSTALLIZER PURIFIER

### INTRODUCTION

Crystallizer - Purifier, conventionally known as Melt - Crystallizer or Sweating - Crystallizer is an excellent equipment for obtaining **High Purity Product** based on **Freeze Concentration Method**. It can purify and recover the higher concentration Molecule from the mixture of two or more miscible compounds.

This partial selective crystallization technique is very useful especially when the other conventional separation techniques like Fractional Distillation or Extraction fail due to inseparable properties of the components. **This technique can purify compounds even with close boiling points or close freezing points.**

The technique is less energy intensive; hence, very economical. High purity levels with impurities of all kinds down to 0.01% can be achieved by this operation. **Almost everything, which can melt or freeze conveniently, can be purified with this technology. Hence, this is a promising and versatile technology for purification of wide variety of chemicals.**



### OPERATING PRINCIPLE

- Every pure compound has a definite melting point freezing point. The freezing point of a pure compound is suppressed due to presence of impurities.
- There is a definite characteristic curve for the liquid solid equilibrium for a multi- component system. When cooled, the solution behaves as per the characteristic curve.
- The higher concentration molecule crystallizes first in its pure form.
- Only the higher concentration molecule keeps crystallizing till the eutectic point is reached.
- The drainage of residual liquid partially removes impurities along with some carry over of desired compound.
- On controlled heating, the molten liquid of the pure compound washes the crystals to eliminate the impurities.
- The crystals are left over in the pure form when the occluded liquid is washed out / displaced by pure melt.

Based on the above physical properties of the compounds, programmed-controlled crystallization is carried out in the crystallizer up to the eutectic point to selectively obtain the crystals of the high concentration molecule only. The un-crystallizable mixture, known as Eutectic Oil, is drained. The partial melting, dissolution and draining of the liquor containing dissolved impurities is carried out at a controlled rate. Finally, the pure compound is molten and recovered in its pure form in liquid state.

FULLY AUTOMATED 15,000 LITRE  
CRYSTALLIZER INSTALLED IN PLANT



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### THE CRYSTALLIZER FEATURES

- Innovative Design; First of its kind in India.
- Well designed equipment with adequate heat transfer area and appropriate geometry for uniform optimum crystal growth. Design is based on years of experience for various types of compounds.
- Adequate flow of Heat transfer medium with suitable secondary heat transfer equipment.
- Total PLC controlled unit for accurate monitoring and control of critical parameters. Can be integrated with Plant DCS.  
Totally Automatic Pilot Plant is available.

- Parameters established based on pilot plant trials for individual systems.
- Sound mechanical Design.
- Choice of appropriate material of construction to suit the requirement.
- Fully indigenized System.

### APPLICATIONS

**Successfully operated for separation and purification of ;**

Acrylic Acid, Caprolactam, Chloro Anilines, Chloro Benzenes, Chloro Nitro Benzenes, Chloro Phenols, Cresols, Enantiomers, Isocyanates, Naphthyl amines, Organic Amines, Organic Acids, Perfumery compounds, Xylenes,

Many other Organic isomers as well as miscible organic inorganic compounds...

We Supply the Complete System including Crystallizer, Collection Tank, Circulation pump, Heating Medium Tank, Heat Exchanger, Control Valus, Major Instrumentation and PLC (Optional)





## STANDARD SIZES

Model	Nominal Capacity Liters	Crystallizer Size L x B x Hmm
HLC-2	2,000	1320 x 1320 x 1500
HLC-2.5	2,500	1320 x 1320 x 1750
HLC-3	3,000	1570 x 1320 x 1750
HLC-4	4,000	2640 x 1320 x 1500
HLC-5	5,000	2640 x 1320 x 1750
HLC-6	6,000	3960 x 1320 x 1500
HLC-7.5	7,500	3960 x 1320 x 1750
HLC-8	8,000	5280 x 1320 x 1500
HLC-9	9,000	4710 x 1320 x 1750
HLC-10	10,000	5280 x 1320 x 1750
HLC-11	11,000	4710 x 1570 x 1750
HLC-12	12,000	6280 x 1320 x 1750
HLC-15	15,000	6280 x 1570 x 1750

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