

hydrocyclones



ERAL offers a wide range of models of cylindrical and conical hydrocyclones with a broad spectrum of configurations and adjustments for each type of hydrocyclone. In short, **ERAL** can deliver a suitable hydrocyclone for any operating conditions and classification requirement.

These units are designed for the industrial processing of sand, minerals and other sundry materials, applicable in the **Construction Industry**, for sand washing and the recovery of fine sands; the **Mining Industry**, namely for the classification of solids between 10 and 300 μm , the slurries thickening, the partial clarification of effluents and the counter-current washing circuits; and the **Food, Chemical and Energy industries**, among others, for a variety of solid/liquid separation processes.



Grinding and classification circuit tailings (copper)

Lignite treatment (30µm). Plant 500 tph

OPERATION

The feed slurry enters the cylindrical section tangentially under a determined pressure, causing it to swirl around the longitudinal axis of the hydrocyclone and descend toward the cone apex section.

With the centrifugal forces generated, the coarser particles rotate near the wall and are evacuated through the apex cone in the form of thick slurry. As the apex is small in size, only part of the suspension is evacuated, while a secondary swirling flow is created in the core of the cone and moves upward, transporting the fine particles together with most of the liquid. This suspension is discharged through a central pipe located in the upper end of the hydrocyclone. By regulating the acceleration of the swirl and varying the hydrocyclone geometry and nozzle dimensions, the cut-point can be adjusted from 10 to 500 microns.

CONSTRUCTION

ERAL manufactures a full range of hydrocyclones, with two types of construction: **Construction in Polyurethane or Polymers** (integral design), or **Construction in Steel-Rubber**, with shell manufactured in mild painted steel and exchangeable liners in different types of elastomer materials depending on the application. Special corrosion and heat-resistant hydrocyclones are also available for specific processes.

The modular construction of these units facilitates component interchangeability among hydrocyclones of different sizes and materials. The rectangular cross-section of their involute feed inlet generates a laminar flow that reduces head loss and improves classification efficiency. The feed, discharge and overflow piping are available in a range of cross-sections to adapt to different working conditions. Maintenance is simple and convenient, thanks to the hydrocyclone assembly system.

All ERAL hydrocyclones, regardless of size, are built with two types of geometry: conical and cylindrical. The conventional conical configuration is available with different cone angles and cylindrical section lengths. The flat bottom cylindrical configuration is used for coarse particle sizing.

When several hydrocyclones must be installed due to high capacity requirements, the feed slurry must be uniformly distributed in each. Specially designed radial distributors are used for this purpose, forming compact, readily installed units.

Construction	Polyurethane and Polymers						Polyurethane and Steel - Rubber						Steel - Rubber			
Diameter (mm)	10	20	40	50	75	100	150	200	250	325	400	500	625	750	1000	1250
Capacity (m³/h) [1]	0.1-0.3	0.4-0.9	0.8-3.8	3-11	4-12	10-29	20-55	23-65	30-100	60-165	85-300	160-550	220-570	230-650	300-1050	400-1400
Cut-point (µm) [2]	6	8	9-11	10-12	12-16	14-18	17-22	19-25	22-28	25-32	27-36	30-40	34-44	37-49	45-55	47-62
Pressure (kPa) [3]	125-350	125-350	100-300	100-300	100-250	100-250	75-175	75-175	50-175	50-175	50-150	50-150	50-100	50-100	25-75	25-75

- [1] Indicated figures refer to the slurry capacity range of hydrocyclone performance with different types of nozzles available and pressure loss values mentioned.
- [2] Indicated values relate to d_{50c} typical cut-point reachable in low solids concentration slurries, such as quartz sand with s.g. of 2.65 g/cm³.
- [3] Pressure loss range figures indicated are the recommended values for the hydrocyclone diameter on the basis of its classification performance and mechanical criteria.

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