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Cryst-O-Dry® infrared rotary crystallizer and dryer for PET

Crystallizes and dries PET bottle flake and preform grinding in one continuous pass: 15–25 minutes instead of the 5–6 hours a conventional crystallizer and dryer need.



15–25 min
Residence time

0.22 kWh/kg
Energy, PET bottle flake

20–30 %
Less energy than two-step

300–400 ppm
Moisture after one pass

Key features

- **One machine, one step.** Crystallization and drying in a single continuous pass. Flake and preform grinding go in as they are and come out crystalline and dry, with no desiccant to buy or replace.
- **Inside-out infrared heating.** Shortwave infrared needs no transfer medium. The granule and its internal moisture are heated together while the surrounding air stays at ambient.
- **Patented rotary drum.** An internal helix and tumbler fins keep every particle moving through the heat for its whole residence time.
- **Three heating zones.** The temperature profile along the drum is set to the material: its moisture and its crystallization requirement.
- **No desiccant.** No desiccant bed to buy, regenerate or replace, and none for the volatiles from post-consumer flake to poison.
- **Quick to clean.** The heater column and cooling system pull out on a slide. A continuous air shield keeps PET fines off the lamps while running.

Cryst-O-Dry® vs conventional systems

Parameter	Conventional system	Cryst-O-Dry
Steps required	2 (crystallizer + dryer)	1
Total processing time	5–6 hours	15–25 minutes
Moisture reduction	5,000–6,000 ppm → ~300 ppm	5,000–6,000 ppm → 300–400 ppm
Heating principle	Outside-in (air medium)	Inside-out (no medium)
Desiccant required	Yes	No
Footprint	Large (2 machines)	Compact (1 machine)
Energy efficiency	Lower	Higher

The process is continuous. Material is fed and discharged without stopping, and throughput is set by drum speed and residence time — the figures are in the specification below. Conventional processing times are established industry practice, consistent with A.B. Plastech's own process comparison data.

Technical specifications: IRD1500

Model	IRD1500
Process	Continuous
Drum speed	Variable, VF drive
Volumetric capacity	133–333 litres/h, according to residence time
Throughput	litres/h × bulk density, capped by heating load ÷ energy per kg — see the table below
Drying temperature	Up to 180 °C
Energy, PET bottle flake	0.22 kWh/kg ±5%
Energy, preform grinding	0.12 kWh/kg ±5%
Heaters	Shortwave infrared, 2,000 W, 3 zones, 3–6 per zone to requirement
Heating connected load	18–36 kW
Lamp life	5,000 hours
Drum	SS-304, insulated. Contact parts SS-304
Drum dimensions	1500 mm long, 750 mm inside diameter
Drum drive	0.75 kW (1 hp), assisted power cooling
Cooling and exhaust blowers	ebm-papst
Control	PLC, HMI, switchgear and VF drive — Siemens / Schneider
Power supply	400 V AC, 50 Hz
Overall dimensions	3000 × 1250 × 1900 mm (L × W × H)
Bought-out components	Bearings SKF, NTN, Nachi, NBC · gearbox Premium, Bonfiglioli, PBL · motors Roto-motive, Siemens, ABB — or equivalent
Intellectual property	Indian Patent 297057 — grant and current standing below

Technical specifications: IRD1500

Residence time	Volumetric	At 0.4 kg/litre	At 0.6 kg/litre
10 minutes	333 litres/h	133 kg/h	200 kg/h
15 minutes	222 litres/h	89 kg/h	133 kg/h
20 minutes	167 litres/h	67 kg/h	100 kg/h
25 minutes	133 litres/h	53 kg/h	80 kg/h

Every figure in that table is inside the heating load. Where your bulk density is not 0.4 or 0.6, multiply the volumetric rate by it — then check the answer against heating load ÷ energy per kilogram , because a dense material can ask for more heat than the lamps can give. The output is the lower of the two. Throughput and energy figures are for PET. Bulk density and the moisture you have to reach decide which line of the table applies — tell us the material and the target and we will quote the rate. All specifications are subject to change without notice to improve reliability, function or design.

Patent

Patent	Indian Patent 297057
Title	Modular Drum and Method of Manufacturing Thereof
Filed	21.01.2017
Granted	24.05.2018

Where this page calls the drum patented, that is the grant above. Searchable on the Indian Patent Office public database.

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Illustrations are CAD renderings; accessories and fittings shown are illustrative and may not be standard equipment. Specification varies by model and duty and is confirmed only in our written offer. Performance figures are stated with the conditions they were measured at; results depend on your material, its moisture and bulk density, and the installation. Machines must be installed, operated and maintained as described in the manual supplied — guards and interlocks must not be removed or defeated.
Datasheet prepared from the machine page at abplastech.co.in/cryst-o-dry/. Specification is confirmed only in our written offer.