

Tomato paste processing plant İ½ concentrate production, evaporation and aseptic paste

Target application: tomato paste processing plant

Reference configuration: 60 t/h fresh tomato to 28İ½30 İ½Brix aseptic paste

This page covers concentrate production: the evaporation and aseptic paste section, from hot break to 28İ½38 İ½Brix bulk paste in drums or IBCs. For the fresh-tomato side of the factory İ½ reception, washing, sorting, extraction İ½ see the tomato processing plant; for repacking aseptic bulk paste into retail glass, cans or sachets, see the tomato paste rework line. A paste plant lives on two numbers: yield per tonne processed and energy cost per degree Brix. MCF Technology sizes the plant on the tonnage actually contracted in the growing area and delivers it with the technical and financial dossier industrial lenders ask for.

SCOPE OF SUPPLY

- Water dumping reception, roller washing, destoning and optical sorting
- Hot break (85İ½95 İ½C) or cold break (65İ½75 İ½C) with enzyme inactivation
- Turbo-extractor and refiner sized on the target particle size
- Falling-film or forced-circulation evaporator, double to quadruple effect
- Tubular steriliser with wide gaps and validated holding section
- Aseptic filling into 220 L bag-in-drum, 1000 L IBC or retail packaging
- Automatic CIP/SIP, utility skids, water recovery and campaign supervision

TYPICAL OUTPUTS

Tomato paste 28İ½30İ½ Brix (industrial) İ½ Double concentrate 36İ½38İ½ Brix İ½ Pulp and fine purİ½e İ½ Passata in g Aseptic drums for export

PROCESS, STEP BY STEP

1. Reception, washing, sorting İ½ 10İ½200 t/h fresh tomato (Compact / Industrial / High Capacity)

Water dumping, roller and brush washing, destoning, then optical sorting removes green, mouldy and foreign material before crushing.

2. Hot break or cold break İ½ Hot break 85İ½95 İ½C İ½ cold break 65İ½75 İ½C

Crushing with immediate enzyme inactivation. Hot break preserves viscosity for concentrated paste; cold break gives brighter colour and lower viscosity for sauces.

3. Extraction and refining İ½ 0.6İ½1.2 mm sieves

Turbo-extractor and refiner separate skins and seeds and set the final particle size of pulp, purİ½e or fine passata.

4. Multi-effect evaporation İ½ Double to quadruple effect İ½ 28İ½30 or 36İ½38İ½ Brix

Falling-film or forced-circulation evaporation under vacuum with vapour recovery: this is the single largest driver of energy cost per tonne processed.

5. Sterilisation and cooling İ½ Tubular steriliser, 95İ½110 İ½C, controlled holding

The concentrate is sterilised in a tubular exchanger with wide gaps for fibres, held for the validated time, then cooled to filling temperature.

6. Aseptic filling İ½ 220 L bag-in-drum İ½ 1000 L IBC İ½ retail packs

Sterile filling under steam barrier, batch traceability and thermal validation records İ½ the documents auditors and banks ask for.

7. CIP, utilities and campaign support İ½ Automatic CIP/SIP, steam, cooling towers, water reuse

Automatic cleaning circuits, utility skids, water recovery after treatment, plus operator training and on-site supervision through the first campaign.

DIMENSIONS AND BUILDING ENVELOPE

Process building footprint	2,000  3,000 m  for the concentration and aseptic section
Clear height	9  12 m under beam, 12  18 m for the evaporator tower
Evaporation bay	450  700 m  including vacuum unit, condensers and pump gallery
Aseptic filling room	120  200 m  controlled area, 4.5 m clear height
Bulk paste storage	600  1,200 m  per 10,000 t of 30  Brix paste
Heaviest single lift	18  26 t (evaporator body)

LAYOUT FUNCTIONAL ZONES IN FLOW ORDER

1  Feed buffer	Pulp buffer tanks from the break section, feed pumps and inline  Brix control
2  Evaporation	Double / triple effect falling-film, forced circulation or MVR train
3  Standardisation	Brix trim loop with inline refractometer,  0.3  Brix at steady state
4  Sterilization	Tubular or scraped-surface steriliser, hold cell $\geq$ 90 s, flash cooling
5  Aseptic filling	220 L bag-in-drum, 1,000 L IBC, 3  20 L bag-in-box
6  Utilities & CIP	Steam, condensate recovery, cooling towers, CIP/SIP skid

UTILITIES AND CONSUMPTION

Installed power	1,400  2,100 kW for the concentration and aseptic section
Steam	10  18 t/h at 8  12 bar (multi-effect); 4  8 t/h with MVR
Cooling water	800  1,400 m  /h circulating on condensers and flash coolers
Compressed air	600  1,000 Nm  /h at 7 bar, oil-free for the aseptic zone
Steam consumption per tonne	0.22  0.32 t steam per tonne of evaporated water, effect count dependent
Manning	10  16 operators per shift including QC

INSTALLATION, SITE CONDITIONS AND SCOPE BOUNDARIES

- Scope of supply: process equipment, automation, mechanical and electrical erection, commissioning, FAT/SAT, HACCP validation and operator training.
- Excluded from the ranges: land, civil works, building steelwork, external utility generation and import duties.
- Installation, commissioning and after-sales service are delivered worldwide by MCF crews, with remote diagnostics on the SCADA.

TECHNICAL FAQ

How is the capacity of a tomato paste plant chosen?

From the tonnage contracted with growers and the campaign length: Compact 10  30 t/h for a local growing basin, Industrial 30  120 t/h for regional processing and High Capacity 120  200 t/h when the plant serves export over a 60  110 day campaign.

How much energy does the evaporation section consume?

Evaporation dominates the energy bill. A multi-effect evaporator with vapour recovery, cooling towers sized on local ambient temperature and reuse of treated wash water are what bring the cost per tonne down.

What Brix can be reached?

28  30  Brix hot break for industrial paste and 36  38  Brix double concentrate; lower concentrations are used for pulp, puri  e

and passata.

Is aseptic filling included in the scope?

Yes  tubular steriliser, holding tube, controlled cooling and aseptic filler for 220 L bag-in-drum or 1000 L IBC, validated during commissioning.

Does MCF handle installation and commissioning abroad?

Yes. Supply, mechanical and electrical installation, commissioning, capacity verification and operator training on site, plus spare parts and post-delivery support worldwide.

NEXT STEPS

- Full technical page: <https://mcftechnology.group/en/tomato-paste-processing-plant>
- Configure the line and request the feasibility study: <https://mcftechnology.group/en/configurator>
- Run the ROI simulator: <https://mcftechnology.group/en/roi-simulator>
- Build the bankable financial plan (310 years): <https://mcftechnology.group/en/financial-plan>
- Request a quotation: <https://mcftechnology.group/en/contact>

DISCLAIMER

All figures in this datasheet are indicative engineering ranges used by MCF Technology for budget screening and layout discussion of the reference configuration. They are not a quotation, not a performance guarantee and not the audited result of a specific plant. Final specification, dimensions, utilities and CAPEX are fixed in the feasibility study on your product, packaging formats, utilities cost and site conditions.