

CARMEL PROCESSING EQUIPMENT



HOSOKAWA CONFECTIONERY & BAKERY
TECHNOLOGY AND SYSTEMS

TER BRAAK

BEPEX-HUTT

KREUTER

Caramel processing equipment

By specialising in design and construction Hosokawa Ter Braak are able to supply the most comprehensive range of processing equipment for the production of all types of caramel. Simultaneously, the technical department has built up an international reputation for the practical support provided in the field.

Hosokawa Ter Braak can supply equipment for all types of caramel applications, whether to meet the requirements of the small specialist confectioner, or a major product

manufactured by an international organisation. A feature of construction is that most individual units can be subsequently integrated into a complete line as capacity requirements grow. Usually production starts with a weighing, mixing and pre-heating system type Caramix, which can be used to deliver the correct formulations of prepared ingredients to any style of cooker, whether batch, continuous batch, or truly continuous.

The continuous caramel production lines can be controlled by either a

conventional control system or a PLC system. Varying degrees of automation are available as standard, or can be designed to meet customer requests. Supervisory, control and data acquisition (SCADA) can optimise the system and provide the required management information.



Caramix

Weighing, Mixing and Feeding



The Caramix is a weighing and mixing plant in electronic execution with micro processor. The jacketed weighing vessel is mounted in a frame on a 3 point load cell assembly. The lower holding vessel is also jacketed to keep the premix at the correct temperature. The Caramix is available in a sophisticated version with PLC control system and operating screen or a dedicated batch weighing controller (economy execution).



Specifications Caramix

		200	500
Working capacity max.	kg/h	1.600	3.000
Power consumption	kVA	11	11
Air consumption	nl/h	500	500
Valve for water	Ø	1"	2 x 1"
Valve for glucose	Ø	2"	2 x 2"
Valve for milk	Ø	1"	1"
Valve for fat	Ø	1"	1"
Capacity of weighing vessel	l	200	500
Capacity of lower reservoir	l	500	1.000
Length	mm	1.850	2.375
Width	mm	1.070	1.750
Height	mm	2.875	3.700
Net weight	kg	1.400	2.200

All data are approximate and subject to specific process parameters and quality/type of raw materials.

TBT

Batch Cooker

The TBT is a multi-task steam heated batch cooker designed for the production of soft confectionery articles such as caramel and toffee, jellies (based on pectin, gelatine, agar-agar or Gum Arabic), fruit fillings and jams. Because of its scraped surface, even products with high protein levels can be made. The machine is designed to accommodate batches of 100 kg final product.

Vacuum systems can be added in order to cool down the cooked mass before adding heat sensitive ingredients, such as fondant (fudge production) and gelatine solution (chewy caramel, jelly and gummy production). The cooker is equipped with a heavy-duty, 2-speed anchor type stirrer with Teflon scrapers. Upon request breaker arms can be fitted to achieve a higher turbulence and to assist breaking up lumps or to melt down fondant blocks or pieces. The cooker can also be constructed for air-assisted discharge. All TBT cookers are fully executed in stainless steel.



Specifications

		TBT 100	TBT 200
Working capacity	kg/h	300	450
Batch capacity	kg/batch	80-130	180-210
Steam working pressure	bar max.	10	10
Steam consumption	kg/h	100	150
Power consumption	kVA	7,5	7,5
Air consumption (compressed air discharge)	nl/h	1.800	2.500
Water consumption vacuum exec. (max. 18°C)	l/h	1.200	1.200
Length	mm	1.140	1.700
Width	mm	1.450	1.720
Height	mm	2.350	2.720
Net weight	kg	700	950

All data are approximate and subject to specific process parameters and quality/type of raw materials.

TBF

Universal open cooking pan



Dissolving and cooking pan in copper or stainless steel execution, not only suitable for the production of caramel but also for the preparation of fondant masses and all kinds of syrups. The pan is available in 200 or 500 litres. The outer jacket of the pan is suitable for steam heating. The cooker is equipped with a heavy-duty, 2-speed anchor type stirrer with Teflon scrapers. Upon request breaker arms can be

fitted to achieve a higher turbulence and to assist breaking up lumps or to melt down fondant blocks or pieces. The above picture shows the TBF (at the right) mounted on load cells in a continuous application for the production of sesame snacks.

Specifications

		TBF 200	TBF 500
Working capacity	kg/batch	200	500
Power consumption	kVA	8,4	8,4
Steam consumption	kg/h	120	300
Air consumption	nl/h	500	500
Length	mm	1.000	1.550
Width	mm	1.025	1.050
Height	mm	2.400	2.400
Net weight	kg	700	800

All data are approximate and subject to specific process parameters and quality/type of raw materials.

Hotmix

Feeding, mixing and cooking plant

The Hotmix is a highly flexible and accurate cooker for various types of confectionery, especially the manufacture of caramel or toffee. It is a combined weighing machine based on the Coolmix weighing system and cooker type TBT 100. The Hotmix is available in standard single execution with one cooker and in twin with two cookers. Further multiple executions or combinations are available upon request. The photograph shows an example of a Twin Hotmix, which is a weighing and high capacity cooking system for the simultaneous preparation of different recipes. The cooker is executed with a loss-in-weight auger feeder for dosing of dry ingredients after the cooking cycle.

Vacuum systems can be added in order to cool down the cooked mass before adding heat sensitive ingredients (fondant/ fudge/gelatine solution). The Hotmix can be supplied with standard dedicated batch weighing controller and electronic thermostats, or with a small PLC with HMI (Human Machine Interface). Through the HMI the operator can select, edit, save and download recipes and monitor the actual status of the installation.



Specifications		single	twin
Working capacity	kg/h	350	700
Batch capacity	kg/batch	80-130	80-130
Steam working pressure	bar max.	10	10
Steam consumption	kg/h	150	300
Power consumption (vacuum execution)	kVA	15	26
Air consumption	nl/h	500	500
Air consumption (compressed air discharge)	nl/h	1.800	3.100
Water consumption (vacuum execution)	l/h	1.200	1.200
Length	mm	2.100	2.350
Width	mm	1.100	2.800
Height	mm	3.500	3.500
Net weight	kg	1.750	2.500

All data are approximate and subject to specific process parameters and quality/type of raw materials.



Contimix

Continuous Mixer



The Contimix is a continuous mixer suitable for mixing caramel, toffee or aerated masses with other ingredients or inclusions such as nuts, coconut, almonds, fruit pieces, raisins, sesame seed, icing sugar, milk powder, cocoa powder, fondant and similar materials with minimum loss of density and virtually no degradation or breakage of the inclusions.

To ensure even distribution into a hopper of forming equipment, the Contimix can be supplied in *oscillating executions*. The system is also available in *easy clean execution* with optimal accessibility of the screws.



Specifications		700	1200	2450
Working capacity	l/h	700	1.200	2.450
Power consumption	kVA	3,3	3,3	3,3
Length of total machine	mm	2.000	2.500	2.800
Length of mixing chamber	mm	820	1.600	1.700
Net weight	kg	200	250	325

All data are approximate and subject to specific process parameters and quality/type of raw materials.

Candyflex

Flexible continuous caramel cooker

The multipurpose Candyflex (patented) has been designed for maximum product diversification in candy processing. Ter Braak developed this system for cooking under pressure or vacuum (depending upon application), which permits caramelisation within a very short time as compared to ambient caramelising systems. Alternatively, this system can also be used to produce white milky chew without browning effect.



The Candyflex cooking system is capable of producing products as diverse as:

- from white to dark caramels containing high percentage of milk solids and whey powders
- plain hard candy masses
- white milk hard candy
- butterscotch
- chewy masses with or without milk
- sugar free candies

The Candyflex is designed as a continuous cooking system and comprises the following three processing stages.

- 1 Pre-dissolving and caramelising, under pressure.
- 2 Film cooking/evaporating stage either under atmospheric or vacuum conditions.
- 3 Open take-off with simple surge vessel and pump (plain caramel) or
- 4 Vacuumizing, whereby the vacuum chamber is used either as a buffer vessel or to operate under vacuum.



Specifications		single standard	single super	twin super	twin mega
Working capacity	kg/h	300	600	1.200	2.000
Steam working pressure	bar max.	10	10	10	10
Steam consumption	kg/h	135	275	550	1.000
Power consumption	kVA	42	50	90	110
Air consumption	nl/h	500	500	1.000	1.000
Vacuum pump power	kW	5,5	7,5	7,5	15
Water consumption of vacuum pump (open system) at 15°C max.	l/h	1.200	1.200	1.200	1.500
Chilled water flow rate in closed loop (ecovac system) at 10°C max., ΔT=6	m3/h	8	11	15	27
Length	mm	3.000	3.400	3.400	5.000
Width	mm	1.200	1.600	1.800	2.200
Height	mm	3.700	4.000	4.300	4.500
Net weight	kg	2.600	3.500	4.500	8.000

All data are approximate and subject to specific process parameters and quality/type of raw materials.

Cooling drum

Continuous Cooling



This is a continuous cooling unit for caramel and chewy masses. The unit comprises a specially designed hopper to receive the product from the cooker and spread it evenly on the surface of the drum. The drum is available with a diameter of 1000 mm and of 1500 mm. Capacities up to 1000 kg/hr. The drum is cooled through cooling liquid circulation in the jacket of the drum's surface; the latter is lubricated continuously to prevent the product from sticking to it. The cooling liquid distribution in the cooling jacket is designed to use as little chilling energy as possible against the best possible cooling result, resulting in considerable savings in water and energy.

The picture alongside shows an enlarged custom made cooling drum with a diameter of 2350 mm.



Specifications

		Ø 1000 x 600 mm	Ø 1500 x 700 mm
Cooling capacity			
soft caramel 110 -> 40°C	kg/h	300	600
Steam consumption	kg/start up	10	10
Power consumption	kVA	1,7	2,3
Water consumption at 18°C*	l/h	3.500	5.000
Length	mm	1.200	1.800
Width	mm	1.070	1.700
Height	mm	1.850	2.800
Net weight	kg	1.200	1.500

* Closed loop cooling water system possible. Specification of temperatures and required energy of water chilling unit upon request.

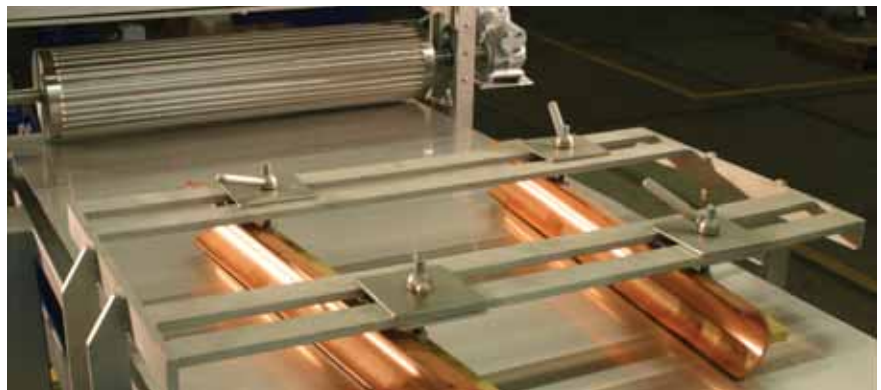
All data are approximate and subject to specific process parameters and quality/type of raw materials.

Cooling conveyor

Continuous Cooling

The cooling conveyor is a continuous cooling/tempering unit equipped with a stainless steel belt built into a stainless steel frame in sections of 2.5 or 5 metres. The cooling conveyors can be supplied in varying lengths and/or widths for various capacities.

Each section is equipped with a watertempering system allowing the adjustment of various temperatures throughout the cooling conveyor. This provides the possibility to gradually and smoothly cool down/temper the cooked mass to its ideal plasticity for subsequent forming in the batch roller/extruder/cut and wrap machine. Ploughs and water cooled egalising rollers take care of the kneading action in the belt. Release agent is applied continuously to avoid sticking of the mass to the belt.



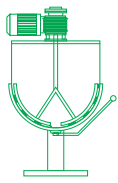
Specifications

		10 m x 600 mm	15 m x 600 mm
Cooling capacity			
soft caramel 110 -> 40°C	kg/h	500	1.000
Steam consumption	kg/start up	25	25
Power consumption	kVA	7,5	9
Water consumption at 18 °C*	l/h	2.500	4.000
Length	mm	11.000	16.000
Width	mm	1.300	1.300
Height	mm	1.600	1.600
Net weight	kg	4.000	5.500

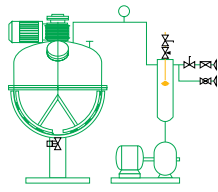
* Closed loop cooling water system possible. Specification of temperatures and required energy of water chilling unit upon request.

All data are approximate and subject to specific process parameters and quality/type of raw materials.

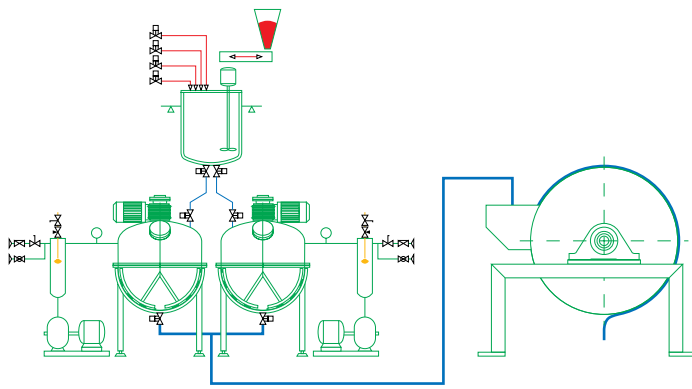
Flow diagrams



TBF

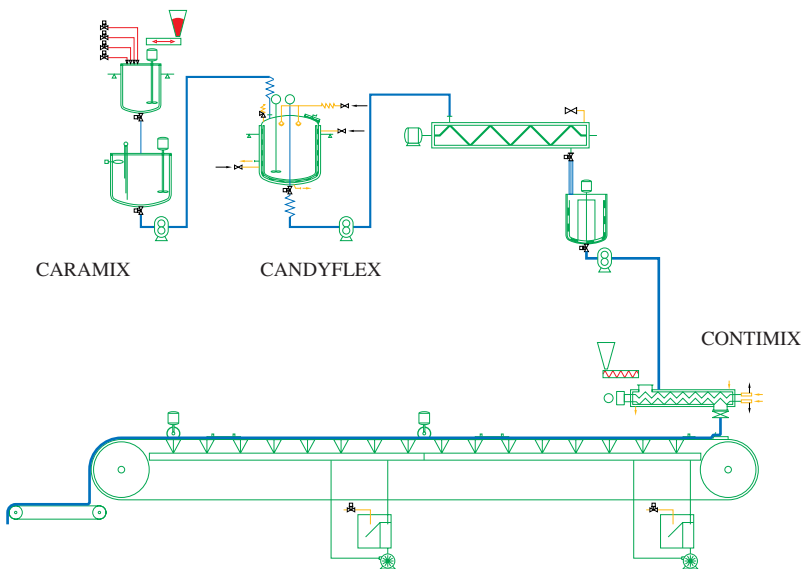


TBT-V



TWIN HOTMIX

COOLING DRUM



CARAMIX

CANDYFLEX

CONTIMIX

COOLING CONVEYOR

Test centre

Hosokawa Ter Braak pays much attention to future development of the machines. The well-equipped pilot plant offers the facilities to carry out the most diversified tests, in order to determine whether and how specific products can be made on our machines. It also helps to design and develop adapted versions of our equipment to meet special requirements.

The small scale equipment offers the following advantages:

- Time is saved by running short trials, also ingredient usage is held at a minimum.
- The results on all laboratory machines can be scaled up for full sized production units.
- Specialised technical staff: candy technologists and experienced machine operators.



HOSOKAWA Confectionery & Bakery Total Capability under one Roof

Mass Preparation
Cooking
Dosing



Forming
Cutting
Depositing



Coating
Tempering
Cooling



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HOSOKAWA CONFECTIONERY & BAKERY
TECHNOLOGY AND SYSTEMS

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