TMW35
MICROWAVE TEMPERING TUNNEL

The TMW35 allows deep frozen foods to be tempered or defrosted (butter) quickly. It is adapted for products like meat, poultry, fish, fruits, vegetables, cheese, butter, etc…

The distinctive feature of the TMW 35 tunnel is the use of the microwave technology to achieve the best tempering homogeneity while maintaining a good microwave efficiency.

The very low floor space, the length under microwaves (residence time) and the crossed coupling of microwaves above and below the blocks, are a few examples of the solutions used to conciliate capacity, flexibility, efficiency and homogeneity.

KEY BENEFITS

- **Profitable:** save money by avoiding drip losses
- **Fast:** very short time of treatment, between 5 to 15 minutes
- **User friendly:** easy loading / unloading, colour touch screen HMI
- **Homogeneous**: excellent temperature homogeneity thanks to multiple microwave inlets
- **Reliable**: no need for regular maintenance, except daily cleaning
- **Hygienic**: no bacteriological growth, complies with all hygiene regulations and standards
- **Flexible**: can be used for tempering packed (cardboard, plastic film …) or unpacked food
- **Compact**: small floor footprint
- **Connected:** USB and ethernet connection for remote control

82 rue Elisée Reclus
69150 Décines-Charpieu
France

www.sairem.com
welcome@sairem.com
Tel: +33 472 018 160

Ref. TMW35
MK113EN-B
Page 1 of 7

TMW35
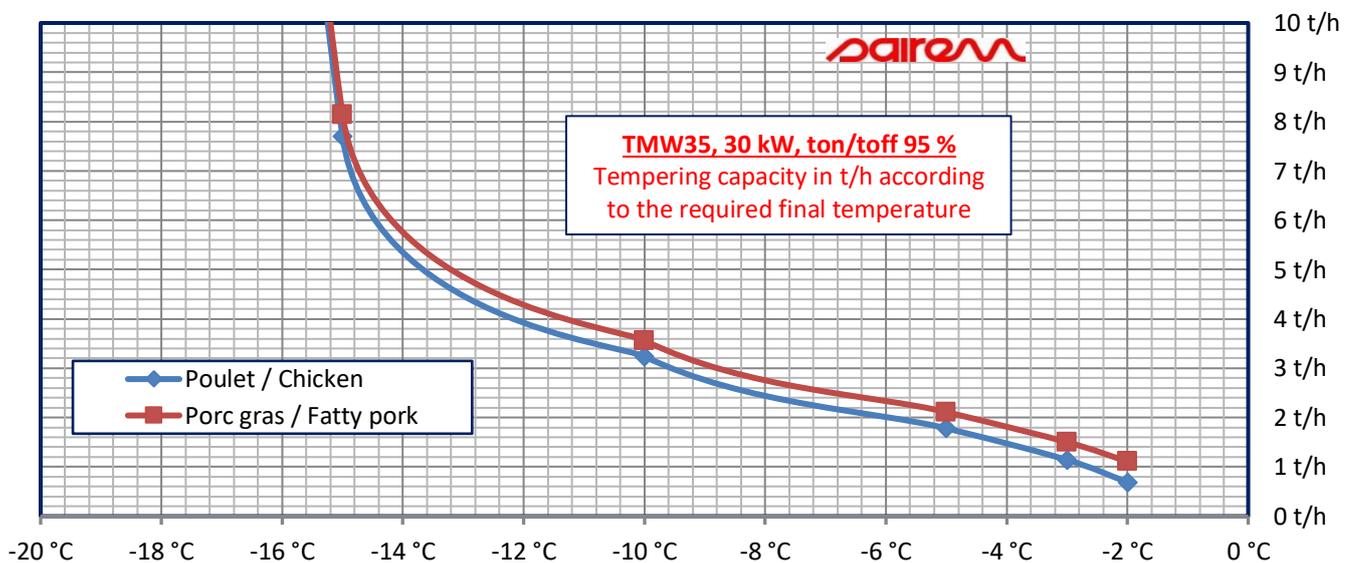# MICROWAVE TEMPERING TUNNEL

TEMPERING CAPACITIES

The TMW35 offers a tempering capacity between 1 t/h and 1.5 t/h from - 20 °C to a final temperature of - 4 °C / - 2 °C in 95% of the block, which is the optimum temperature for processing: dicing, grinding, cutting, slicing… The capacity is calculated to temper frozen blocks with standard dimensions 600 mm x 400 m x 200 mm and a weight of about 20 / 25 kg. If fatty products are to be processed, fat ought to be very homogeneously distributed in the block, otherwise the limit temperature for homogeneity is - 4 °C.

The tempering capacity is variable and depends on the final required temperature and on the product (meat, fish, vegetables, fruits, butter, etc. Figures below show these variations.

The data in the charts are calculated for the TMW 35 operating at 30 kW power, with t_{on}/t_{off}[1] optimum at 95 %, for blocks with regular size and weight 25 kg (600 mm x 400 mm x 200 mm) and for a starting temperature around -20 °C/-18 °C.

The maximum microwave power which can be used in processing is limited by the products and not the tunnel. Recipes power vs. time must be chosen according to the compromise between capacity and homogeneity of heating.

TEMPERING CAPACITY VS. DESIRED FINAL TEMPERATURE

TMW35, 30 kW, ton/toff 95 %
Tempering capacity in t/h according to the required final temperature

Poulet / Chicken
Porc gras / Fatty pork

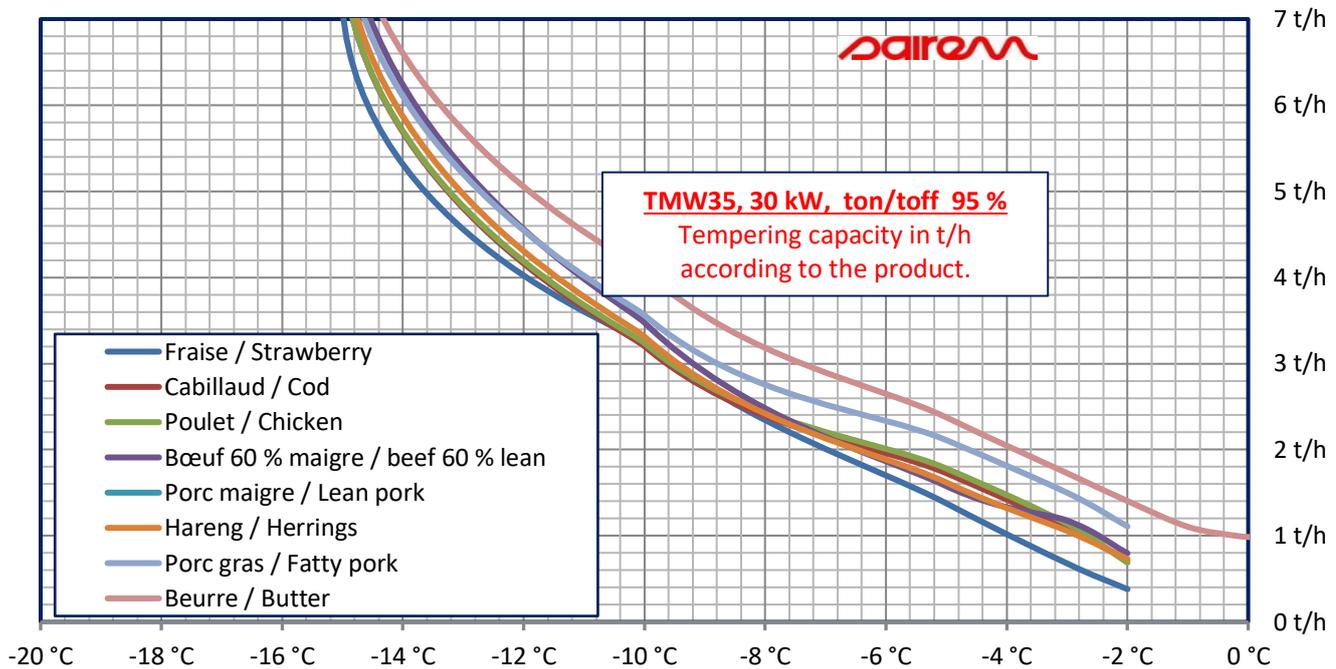**Example:** Chicken ≃ 1.8 t/h from -18 °C to -5 °C or ≃ 1.15 t/h from -18 °C to -3 °C.
Example: Fatty pork ≃ 2.1 t/h from -18 °C to -5 °C or ≃ 1.5 t/h from -18 °C to -3 °C.

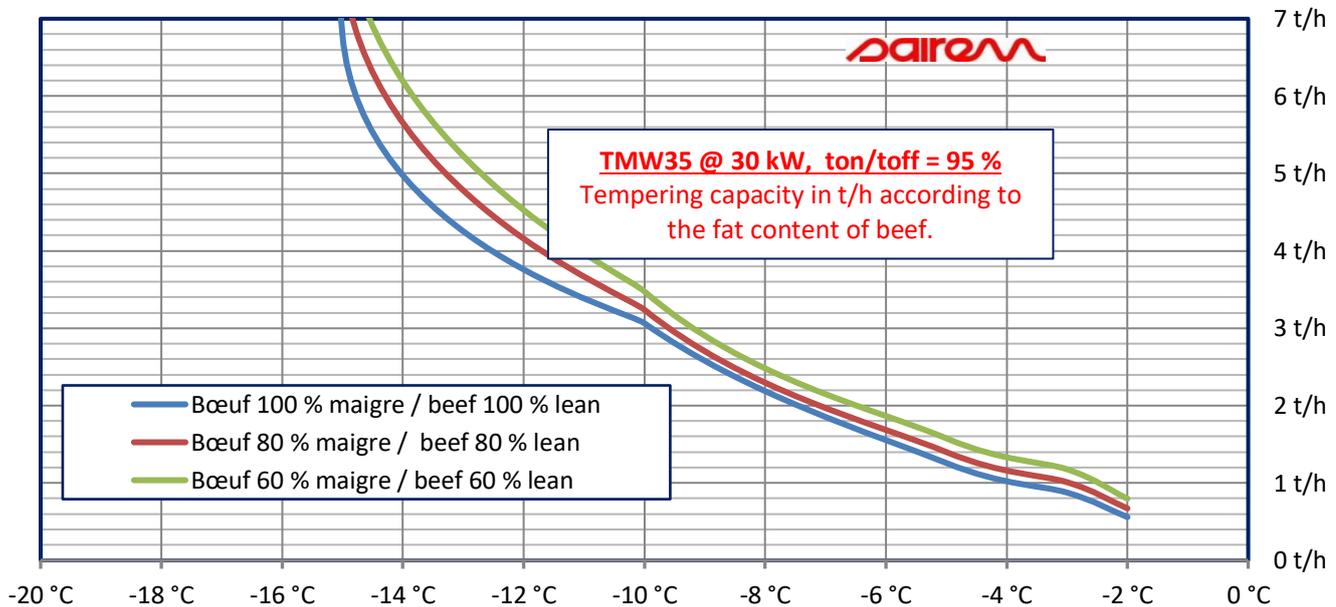[1] Microwave utilization within 1 hour including loading/unloading. the optimum is 95 %.

TEMPERING CAPACITY VS. PRODUCT TYPE

TMW35, 30 kW, ton/toff 95 %
Tempering capacity in t/h
according to the product.

Legend:
- Fraise / Strawberry
- Cabillaud / Cod
- Poulet / Chicken
- Bœuf 60 % maigre / beef 60 % lean
- Porc maigre / Lean pork
- Hareng / Herrings
- Porc gras / Fatty pork
- Beurre / Butter

Examples: butter (1.8 t/h at -3°C) or beef 60 % lean (1.15 t/h at -3°C) for the same final temperature.

TEMPERING CAPACITY VS. FAT CONTENT

TMW35 @ 30 kW, ton/toff = 95 %
Tempering capacity in t/h according to
the fat content of beef.

Legend:
- Bœuf 100 % maigre / beef 100 % lean
- Bœuf 80 % maigre / beef 80 % lean
- Bœuf 60 % maigre / beef 60 % lean

Example: capacity ≃ 1.2 t/h for beef 60 % lean, or ≃ 0.85 t/h for beef 100 % lean from -18 °C to -3 °C

TMW35
MICROWAVE TEMPERING TUNNEL

Capacity is highly variable if final temperature is -7 °C or -3 °C, or if meat is lean beef or fat pork. Such variations are linked to physical laws such as for example, latent heat of fusion. Capacity varies according to the processed product (lean beef, pork…), its fat content and the final required temperature.

All the above charts are calculated for a TMW35 operating under following conditions:

- Power of microwave generator at 30 kW
- T_{on}/T_{off} at 95 %
- Blocks or products with regular mass and shape
- Blocks or products regularly placed on the belt
- Starting temperature between -20 °C and -18 °C homogeneous in all the blocks or products

EXAMPLES OF BLOCKS PROCESSED WITH THE TMW35

Beef
25% fat, 25 kg
1500 kg/h from -18 °C to -4 °C/-2 °C

Pork shoulder
10 to 15 % fat, 25 kg
1000 kg/h from -18 °C to -3 °C / -1 °C

Chicken breasts
15 kg
950 kg/h from -18°C to -4°C/-2°C

Strawberries
10 kg bags
950 kg/h from -18 °C to -3 °C/-1 °C

Rhubarb
10 kg bags
950 kg/h from -18 °C to -3 °C/-1 °C

Broccolis
20 kg bags
900 kg/h from - 18 °C to - 3 °C/- 1 °C

82 rue Elisée Reclus
69150 Décines-Charpieu
France

www.sairem.com
welcome@sairem.com
Tel: +33 472 018 160

Ref. TMW35
MK113EN-B
Page 4 of 7

To get the complete data sheet :

- **full specifications**
- **technical drawings**

CONTACT US !

sairem
microwave & radio frequency