

MOGUNTIA FOOD GROUP

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original

PEPPERONI *Pizza*



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NO.1 *definition*

PEPPERONI

is a dry sausage that contains lean and fat beef and pork • it is characterized by a bacterial fermentation or acidification process followed by drying to a 1.6:1 moisture to protein

weight
1.89g +/- 0,12g

diameter
44mm +/- 2mm

cupping
> 10mm in height





BASIC PEPPERONI *process*

initial grind raw meat | temp. $-6^{\circ}\text{C}/21^{\circ}\text{F}$



meat block analysis | target fat 44%



addition of lactic acid culture, water (culture suspension), salt and seasonings



blend / chill | temp. $<0^{\circ}\text{C}/<32^{\circ}\text{F}$



final grind / bone removal | 2.5mm plate



stuff into casings



fermentation and cooking | temp. $37^{\circ}\text{C}/99^{\circ}\text{F}$



drying | $15^{\circ}\text{C}/59^{\circ}\text{F}$ for 14 days to a 70% yield



chill / slice



packaging



freeze | temp. $-18^{\circ}\text{C}/-0,4^{\circ}\text{F}$



metal detect

NO.2 *pepperoni pizza rules*



AVOIDANCE OF HIGH PH AFTER FERMENTATION // due to using hot boned meat, which has a very high pH, depletion of metabolizable sugar, too much nitrite, which kills the culture or too much mustard flour which is bacteriostatic at high level



AVOIDANCE OF OILING OUT // the pepperoni oils out during cooking on the pizza caused by fat breakdown during raw processing due to high meat mix temperatures, too much conveyance during raw processing, aggressive conveyance by screw conveyors, overmixing in paddle mixers (causing smearing on sides), blunt knives during emulsion grinding, too much mixing during filling • also the higher the % of pork in mix, the higher the oiling out because pork fat is softer and less saturated than beef fat, also it has a lower melting point



AVOIDANCE OF CUPPING // the danger of cupping is caused by protein smear during raw manufacturing • protein smear is excessive protein extraction prior to stuffing resulting in longitudinal protein orientation during stuffing • results from overmixing/overworking meat mix, high temperatures, pumping product through process



AVOIDANCE OF CHARRING OR BURNING

// the outside edges are black on the pizza • due to residual sugar in product post processing and/or excessive capping • possible causes are the culture has not depleted sugar source, hidden sugar is present in the spice mix (not evident in recipe) or excessive cupping

PROPOSED SOLUTIONS // add salt last or after final grind, keep mix temperatures below 0°C/32°F, paddle mixers

CASE HARDENING DURING DRYING // case hardening is the condition where the product surface is much drier than the internal portion resulting in a dry ring • it is caused by moisture evaporating from surface faster than it migrates from center of the stick • surfaces becomes hard and traps moisture • causes the product to severely cup when cooked • case hardening is characteristic of product that has been dried too fast

PROPOSED SOLUTIONS // use low air speed, have air travel over short distances only • keep humidity only 3-5% less than water activity

NO.3 *the perfect formula*

INGREDIENTS //

- meat mix
- M8947 FixSTART®-FFPF
- M51438 32 Pepperoni no smoke
- M51437 48 Ripening additive DRY Pepperoni 21520
- salt

REQUIRED EQUIPMENT //

- coarse grinder and grinding plate (13-17mm)
- vacuum mixer with paddles
- fine grinder and 2.5mm grinding plate
- vacuum stuffer and 48mm fibrous casings
- temperature / humidity controlled ferment house
- temperature / humidity controlled drying room

NOTE // heat and humidity are raised to ferment the product • lactic acid starter culture converts dextrose to lactic acid • lactic acid lowers the pH of the product below 5.0

PRODUCTION PROCESS //

- grind the frozen meat ($-6^{\circ}\text{C}/21^{\circ}\text{F}$) through a 13mm till 20mm plate
- transfer the meat to paddle blender
- mix the meat batter homogeneous to the right fat content of approx. 44%
- add the culture suspension, Pepperoni liquid compound and the ripening compound and mix it carefully but homogeneous
- to the end please add the salt
- regrind through the final 2.5mm plate
- stuff into the fibrous casings at approx. $-3^{\circ}\text{C}/26^{\circ}\text{F}$ to $-1^{\circ}\text{C}/33^{\circ}\text{F}$
- ferment as followed: $35^{\circ}\text{C}/95^{\circ}\text{F}$ to $40^{\circ}\text{C}/104^{\circ}\text{F}$, approx. 12 hour final pH of 5.1 have to be reached
- followed by a heating step at $54^{\circ}\text{C}/130^{\circ}\text{F}$ to the core of $52^{\circ}\text{C}/125^{\circ}\text{F}$ resting time of 0.5 hour at $52^{\circ}\text{C}/125^{\circ}\text{F}$ to be sure that all Salamis have achieved the temperature
- 5 min. shower and post ripening at $14^{\circ}\text{C}/57^{\circ}\text{F}$, 75 % humidity to a ripening loss of approx. 20%

NOTE // pepperoni should be dried slowly • process causes moisture to migrate from the center to the surface • the internal moisture should be evenly distributed, this creates a product which is uniformly dry throughout

POST MATURING //

- **TEMPERATURE** should be between $12^{\circ}\text{C}/54^{\circ}\text{F}$ and $15^{\circ}\text{C}/59^{\circ}\text{F}$ (greater than $15^{\circ}\text{C}/59^{\circ}\text{F}$ causes moulds)
- **RELATIVE HUMIDITY** should be kept at 65% to 80% • uniform evaporation rate is obtained at a 3-5% differential between water activity and relative humidity
- example: at 0.93% RH = 88-90%
- (>80% over prolonged period causes mold growth)



Article number	Description	Application quantity	Main seasoning direction
M8947 09	FixSTART® FF-PF 1	25g / 100kg meat and fat	starter culture
M51438 32	Pepperoni no smoke liquid	3-6g / kg	hot, spicy, fennel, anis, a bit of garlic
M51437 48	Ripening additive Dry Pepperoni 21520	21,5g / kg	technological compound
M51435 48	Pepperoni Dry AFR 2620	25-28g / kg	complete blend, medium hot, fennel, anis, paprika
M51436 48	Pepperoni Dry AF 3020	30g / kg	complete blend, medium hot, paprika, fennel, anis
M56254 15	Summer salami Canadian Pepperoni (GdL)	25g / kg	hot like pepperoni
M3051 31	PAPRIN® M 4000 Paprika Extract	0.5-1g / kg	paprika liquid to boost the reddish colour
M3055 31	PAPRIN® 20,000 Paprika Extract	season to taste	paprika liquid to boost the reddish colour
M5590 15	Hot sausage spice	0.5-2g / kg	chillies to boost the hotness

