

The suggested energy-technological complex in ethylene production is meant for the production of industrial steam with the pressure of 0,6 MPa, cooled water with the temperature of 7°C and technological streams' heating up, warming and hot water supply load covering. The given complex allows putting into effect the utilization of secondary energy resources being formed in the same production. This is the warmth of pyrolysis furnaces' combustion gases, gas purifiers' recycled and condensed water.

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INNOVATION METHODS TO EXTEND STORAGE LIFE OF COOLED BEEF

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Meat and meat products – is a perfect nutrient medium for various microorganisms' propagation, among which molds, yeast, gram-positive and gram-negative bacteria are most common. In this connection the problem of food staples' and products' maximal preservation is of significant importance. To raise meat products' safety level is possible due to the application of various preservative agents, both of natural and synthetic origin. However, the use of any food additive should be rational, reasonable and require a comprehensive study.

In recent years the research on meat treatment with various preparations for the purpose of storage-life extension has been carried out by the scientists of research centers in our country. The storage life extension and safety of food products is possible with the help of rational and expert application of such food additives as conservatives. The choice of a conservative and the original crude quality (and it depends on the bacterial semination of meat at the stage of its being put into the refrigerator, first of all) are in direct dependence. Not less significant criteria influencing the quality of meat are the pH value, the storage temperature and after slaughtering time.

Depending on the kind of product and its state the method of meat products treatment with conservatives is chosen. The comminuted products are carefully mixed with the conservative. If the products are in the form of pieces, they are subjected to surface treatment (the product is sprinkled with the solution of the conservative or dipped into the solution).

The analysis of the information on the subject testifies that its study was carried out on some directions: the crude safety preservation while treating it with the conservatives, which, in their turn, provide the storage life extension, bacterial semination reduction; the influence of food coatings on quality retaining and cooled meat mass loss reduction; the use of physical methods of effect (ray treatment, heating, modified atmosphere) on the meat for the purpose of negative microflora inhibition.

In spite of the popularization, the research in this direction is limited, and the informative data available do not allow detecting the features of the parameters' and conservation conditions' influence on the quality of meat and its storage life.

The purpose of the present work has been the conservative selection and the cattle meat treatment technology development, which will guarantee the bacterial semination reduction and the beef storage life extension. The solution of the raised problem will allow increasing the cooled meat output and will guarantee its undamaged condition on long storage.

As a part of the study, pieces of slaughter-warm meat weighing 500 g were used. The check sample was not treated; the second sample was treated with the preparation "Desinbac super" of the 0,1% concentration; the third sample was treated with the preparation "Desinbac super" of the 0,3% concentration; the fourth sample was treated with the preparation "Desinbac super" of the 0,5% concentration; the fifth sample was treated with the preparation "Desinbac super" of the 0,75% concentration. The treated samples were hanged on stainless steel hooks and placed into the refrigerator with the camera temperature +4 °C for 23 days. The selection of intermediate investigation probes was carried out every 5 days. The pH level of the beef before the treatment was 5,8. The microbiological study results at the beef treatment with the preparation "Desinbac super" were got. The results of the investigation are represented in the table.

Table 1. - The microbiological study at the beef treatment with the preparation "Desinbac super".

Sample number	pH	Microbiological factors					Peroxidase	Acid value
		MAFAM CFU/g	Listeria	Salmonella	E. coli	Coliforms		
24 hours after starting the experiment								
1	5,8	$1,9 \cdot 10^5$	neg.*	neg.	neg.	neg.	pos.*	5,74
2	5,9	$2,2 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,82
3	6,1	$2,2 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,82
4	6,1	$2,1 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,81
5	6,2	$2,1 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,82
Results of microbiological research on the 5 th day								
1		$4,3 \cdot 10^8$	neg.	neg.	neg.	neg.	pos.	5,76
2		$2 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,82
3		$2 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,84
4		$1,8 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,86
5		$1,8 \cdot 10^4$	neg.	neg.	neg.	neg.	pos.	5,86
Results of microbiological research on the 10 th day								
1		-	-	-	-	-	-	-
2		$4,5 \cdot 10^3$	neg.	neg.	neg.	neg.	faint pos.	6,40
3		$4,3 \cdot 10^3$	neg.	neg.	neg.	neg.	faint pos.	6,40
4		$4 \cdot 10^3$	neg.	neg.	neg.	neg.	faint pos.	6,53
5		$4 \cdot 10^3$	neg.	neg.	neg.	neg.	faint pos.	6,54
Results of microbiological research on the 15 th day								
1		-	-	-	-	-	-	-
2		$2,4 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,60
3		$2,2 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,60
4		$2 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,62
5		$1,9 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,62
Results of microbiological research on the 20 th day								
1	-	-	-	-	-	-	-	-
2	7	$2 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,62
3	6,9	$1,8 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,62
4	6,6	$1,2 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,64
5	-	$1,2 \cdot 10^3$	neg.	neg.	neg.	neg.	neg.	6,65

Note: *neg. – negative, pos. – positive.

The non-treated meat was damaged on the 7th day.

Proceeding from the results of the microbiological research one can come to the conclusion that the optimal concentration for beef treatment is the 0,5% solution of the preparation "Desinbac super". As a part of the study, it was also found out that to treat a 0,5 kg piece of meat it is required 12-15 ml of the preparation "Desinbac super".

The research on the application of the new conservative will be continued for the purpose of determining functional characteristics of the meat treated with the conservative.

An economical effect from the given preparation use is formed on account of damage prevention and, respectively, loss reduction, cattle meat quality factors retaining, and also on account of increase in output and realization of high quality cooled meat.

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*Shot report***INCREASING OF TOOL RESISTANCE FOR HIGH-SPEED MACHINING BY CUTTING**

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The complex manufacturing techniques of cutting tool of the raised (increased) wear resistance in an interval bainite pre-transformation are submitted.

One of the most popular task of modern science of materials is searching of the such structural states that provide a high level of design strength, including wear resistance, thermal resistance and impact elasticity for cutting tool.

Practice of using of cutting tools produced from high-speed steel shows that in the most cases the reason of bad tool resistance is in its brittle fracture or scuffing of cutting edge due to low plastic properties. Different methods of bainitic hardening, which permit to increase sharply plastic properties of cutting tool, deserve an attention. However, for all that, the strength properties are reduced.

By the researches executed at Komsomolsk-on-Amur State Technical University there was established, that one of perspective methods of

cutting tool wear and thermal resistances increasing is bainitic hardening within bainite pre-transformation interval, as a heating and cooling surroundings, the fluidized bed of loose materials can be used.

Maximal thermal resistance peculiar to the samples produced from R18 steel after bainitic hardening within bainite pre-transformation time interval excluding interim transformation including bainite transformation. Bainitic hardening of high-speed steel within bainite pre-transformation time interval prevents carbides isolation that stimulate increasing of wear and thermal resistances. Furthermore, the special pre-transformation state, caused by atomic bonding weakening in crystal lattice lead to structure inhomogeneity ordering and improving of the cutting tool properties produced from high-speed steel. Comparative assessment of cutting tool wear resistance while high-speed machining showed that its wear resistance increasing 1.3 – 1.7 times as much. Using of carbonitriding for such tools increases its wear resistance 3.1 times as much and machining by electro pulse influence 3.9 times as much.

The results of experiments show the prospectiveness of research works carrying out for other structural steels.