

# ON THE RELATIONSHIP BETWEEN THE ORGANOLEPTIC INDICATORS OF MELAMINE AND ITS USE

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## Abstract

This article talks about the use of melamine, its different brands and their organoleptic indicators.

**Keywords.** Melamine, technology, heavy organic synthesis, chemical industry, materials.

## Introduction

As the use of melamine in the chemical industry and the national economy is expanding, two different pyrolysis methods have been developed to obtain it from urea in industry:

- 1) in the presence of a catalyst at low pressure;
- 2) without catalyst under high pressure.

The melamine obtained by the first method is in a finely dispersed state. Fine dispersion - the main quality requirement for melamine was calculated. The main consumers of high-quality, high-grade, fine-dispersed melamine are enterprises that produce high-temperature and fire-resistant paints and car enamels.

When melamine is incorporated into various consumer materials, it gives them a number of positive properties. For example, it provides properties such as resistance to heat, open fire, water and other effects. Due to these positive properties, melamine has gained a strong place in almost all industries, including various sectors of the national economy, from household items to large-scale construction. In addition, melamine gives the materials an original decorative color, makes them durable and resistant to various mechanical effects, and extends the service life.

Melamine is an important raw material in the lacquer industry and the production of plastics. Melamine-formaldehyde resins obtained on the basis of melamine have several advantages over urea-formaldehyde resins. They are characterized by relatively low toxicity, high durability and heat resistance, resistance to burning, high decorative qualities and the ability to paint in various colors. Melamine-formaldehyde resin production industry is the main demander of melamine. They, in turn, are raw materials for the production of various technical and household products and are used for the following purposes:

- dipping in decorative paper when obtaining plastic materials with a layer-by-layer structure. Such materials are used for furniture, walls, vehicle cabins, elevator cabins, etc.



used as a covering agent. It is also used in the production of paper, maps, money and securities. Fabrics treated with melamine have reduced creasing, permeability and tensile strength.

- lamination of wooden boards. It is used in the production of MDF, DSP, OSB, plywood material, which is widely used in the field of construction. They, in turn, are used in furniture, as floor and wall laminates, and in other areas of construction. It is added to the raw mass as a compacting agent in the production of wood-chip materials.
- getting press compositions. Compositions of melamine with various fillers - cellulose, glass fiber, wood flour - are used in the production of dishes for food products, devices and equipment cases, various devices and equipment keys.
- production of fire-resistant paints and coatings. Polyphosphate and cyanurate of melamine provide fire resistance and heat resistance. Their inclusion in the composition of the material facilitates the extraction of polymers. For example, the production of polyamide thermoplastics.
- in concrete production. In the concrete industry, melamine is added to the mixture as a superplasticizer, which ensures the flowability of concrete and reduces the water retention index. Superplasticizers are synthetic polymers, most often based on melamine resin, which, when added to concrete, create a highly fluid concrete mixture.
- obtaining varnishes that protect against friction, abrasion and scratches and do not fade. Such lacquer-paint coatings are used in the automotive industry, in the painting of household electrical appliances and other products. In the production of varnishes, melamine is added to form a melamine film. The main point of application of melamine in the varnish and paint industry is the production of car enamels and primary car paints.
- production of hexachloromelamine, which is used in the production of dyes and herbicides.
- as additives, ion exchange resins and corrosion inhibitors.

However, the main consumer of melamine is the production of wooden tiles in the wood industry. It accounts for 70% of the total volume of melamine produced. In Uzbekistan, it is mainly used for the production of furniture and laminate. The demand for melamine is increasing year by year.

Below are the brands of melamine included in the nomenclature of foreign goods and their fields of application.

- METORAS MMSCC99 Melamine - high-quality finely dispersed melamine. Produced in China.
- METORAS MMCYC99 Melamine - quality is very close to the above brand. Made in China.
- BASF Melamine is produced by the German company Basf. It is the most popular brand in the European market.
- METORAS MSA Melamine cyanurate is a melamine-based product used as a flame retardant. Unlike melamine, it has high heat resistance and improves the physical and mechanical properties of polymers and polymer composites. For these properties, it is used in obtaining polymers that can be processed at high temperatures.



- METORAS MMRU99 Melamine polyphosphate - high-quality finely dispersed melamine. Produced in the Russian Federation.
- METORAS MRR Melamine polyphosphate is a compound based on melamine, which has a high level of thermal stability compared to melamine. This compound is effectively used in the production of fire retardant and flame retardant materials. It is also used in the production of refractory thermoplastics.

In Uzbekistan, brands of melamine mainly produced in China are widely used. The following table shows the physico-chemical and organoleptic characteristics of different brands of melamine.

**Table 1 Physical and chemical properties of different brands of melamine organoleptic characteristics**

№	Indicators	Melamine stamps			
		METOPAC MMSCC99	METOPAC MMCYC99	METOPAC MMRU99	METOPAC MCA
1	Gross formula	$C_3H_6N_6$	$C_3H_6N_6$	$C_3H_6N_6$	$C_3H_6N_6$
2	Amount, %	$\geq 99,8$	$\geq 99,8$	$\geq 99,8$	$\geq 99,8$
3	Color (Pf-Co)	max 20	max 20	14,51	–
4	Humidity, %	max 0,1	max 0,1	max 0,1	$\leq 0,15$
5	Density, $kg/sm^3$	1,573	1,573	1,573	1500-1600
6	Sprinkling density, $kg/sm^3$	0,3-0,6	0,3-0,6	0,3-0,6	0,45-0,55
7	Amount of residual ash, %	max 0,03	max 0,03	max 0,03	–
8	Liquefaction temperature, °C	354	354	354	–
9	solubility in water at temp 25°C, $g/100 sm^3$	0,035	0,035	0,035	0,001
10	pH value of 10% suspension at 25°C	7,5-9,5	7,5-9,5	7,5-9,5	5,5-6,5
11	Particle size, mkm	max 40	max 40	max 40	$\leq 3$

### Conclusion

It can be seen from the analysis that the same melamine has different brands, and as a result, each brand has its own organoleptic, physico-chemical indicators. As a result, different brands of melamine have different areas of application.

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