

LOW VOC ALKYD PAINTS

Jonas Fogelberg

Algol Chemicals AB, AC - Coatings & Polymers

e-mail: jonas.fogelberg@algolchemicals.se

Antonina Kot, Ruslan Rohozhyn

antonina.kot@algol.ua; ruslan.rohozyn@algol.ua

Algol Chemicals Oy, Karapellontie 6 P.O.Box 13

FI-02611 Espoo, Finland

Tel: +358 9 50991; e-mail: info.chemicals.fi@algol.fi

G.I.Gurina, канд. PhD, Associate Professor

Kharkiv National University of Urban Economics named after O.M.Beketov,

Marshal Bazhanov str., 17, Kharkiv, 61002, Ukraine

e-mail: gigurina@ukr.net

Modern requirements for paints and varnishes are related to their scope and controlled by the requirements of the EU Directive 42/2004 and the Technical Regulation on the limitation of volatile organic compounds (VOC) emission due to the use of organic solvents in certain paints and varnishes for repair painting of vehicles. The purpose of this restriction is to reduce air pollution caused by the influence of VOCs on tropospheric ozone formation.

Creation of pigmented painting material that meets European standards on the content of VOCs on the basis of resins Crestakyd 10-0504 and Crestakyd 10-1019 using organobentonites, is an urgent task.

The VOC content was calculated by the formula:

$$\text{VOC} = 10 \cdot \rho_e \cdot (100 - N)$$

where ρ_e – the density of the enamel,

N – the content of non-volatile substances, %

The density was determined by the formula:

$$\rho_e = \frac{\sum m_i}{\sum m_i / \rho_i}$$

where m_i . ρ_i - weight and density of each component of the enamel formulation

Theoretical calculations of enamel formulations using rasins Crestakyd 10-0504 and Crestakyd 10-1019 in the ratio 1:4 were carried out.

Physico-chemical properties of enamels and coatings based on them with a high content of non-volatile substances: conditional viscosity at (20±0,5) °C over OT – 246 - 150 s; mass fraction of non-volatile substances - 65%; degree of dispersion – 25 micron; drying time to degree 3 at (20±2) °C - 12 hours; the strength of the film on impact - 50 cm, the elasticity of the film during bending -1 mm; adhesion of the film - 1 point; hardness – 0,41 units; film resistance to static action of water at (20±5) °C- 24 hours; resistance to the detergent solution at (20±5) °C- 24hours; VOC content -395,6 g/l.

Recommendations on the introduction of enamels obtained with the use of organobentonites in the production of finishing paints for interior and exterior works for wooden and metal surfaces were formulated.