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Synthesis of Adhesive Resins from Chlorinated Hydrocarbons Produced in the PVC Production Process and Their Properties

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Abstract: This PVC manufacturing in the article release as a result harvest to be chlorinated from hydrocarbons adhesive tars synthesis to do opportunities studied. Research during chlorinated hydrocarbons, cyanide acid and urea-formaldehyde based on resin (KFS) glue working release method offer Synthesis process temperature, concentration and reaction duration such as to the parameters impact analysis Results this showed that the modified glue high adhesion to the ability has is different industry in the fields application possible.

Keywords: polyvinyl chloride (PVC), chlorinated hydrocarbons, adhesive tar, cyanide acid, urea-formaldehyde resin (KFS), adhesion ability.

1. Login

Polyvinyl chloride (PVC) production release as a result harvest to be chlorinated hydrocarbons to the environment negative impact to show possible . Therefore , they again work and industry for useful to products convert current from problems This is one of them . in research chlorinated hydrocarbons and cyanide acid based on adhesive tars synthesis and their physicochemical properties analysis to do goal Made of PVC. release in the process harvest to be chlorinated hydrocarbons in the composition high to reactivity has was components there is and they binder to materials convert through ecological risks reduce possible . From this except this substances adhesive tars synthesis for use industry waste effective also possible for disposal gives . Today on the day adhesive tars construction , oil rig again work , car and furniture in the industry wide used , their quality increase and cost reduce important importance has.

2. Materials and methods

2.1 Adhesive tars synthesis to do for following main components used:

Used substances and their classification

Substance name	Chemical classification	Features	Production issuer companies
Urea-formaldehyde tar (KFS)	Polycondensation polymer	High binder feature , strength and to the water endurance	**" Navoiyazot " JSC**
Chlorine hydrocarbons mixture	Organic ringed and chained chlorinated compounds	Solvent and plasticizer as used	**" Navoiyazot " JSC**
Cyanide acid solution	Organic acid	As a catalyst , a reinforcing agent is used	**" Navoiyazot " JSC**

Sodium silicate	Inorganic compound (aqueous glass)	Binder to the feature has , hardener and thermal stabilizer as used	Chemistry Factory (Uzbekistan)
Ammonia solution (25%)	Inorganic basis	pH balance preserves , polymerization in the process catalyst task will do	**" Navoiyazot " JSC**
Water	Universal solvent	Reaction environment and viscosity order to plant	Local delivery providers

2. 2 Synthesis methods and mechanisms

Synthesis process three in stages done increased :

1. **Reactive of substances mixed** – defined in proportion chlorinated hydrocarbons and cyanide acid to KFS added .
2. **Polymerization and modification** – 30-50 minutes at 40-60°C during reactions take went .
3. **The product cleaning and properties analysis to make** – to harvest was my glue viscosity , stickiness and mechanic strength studied .

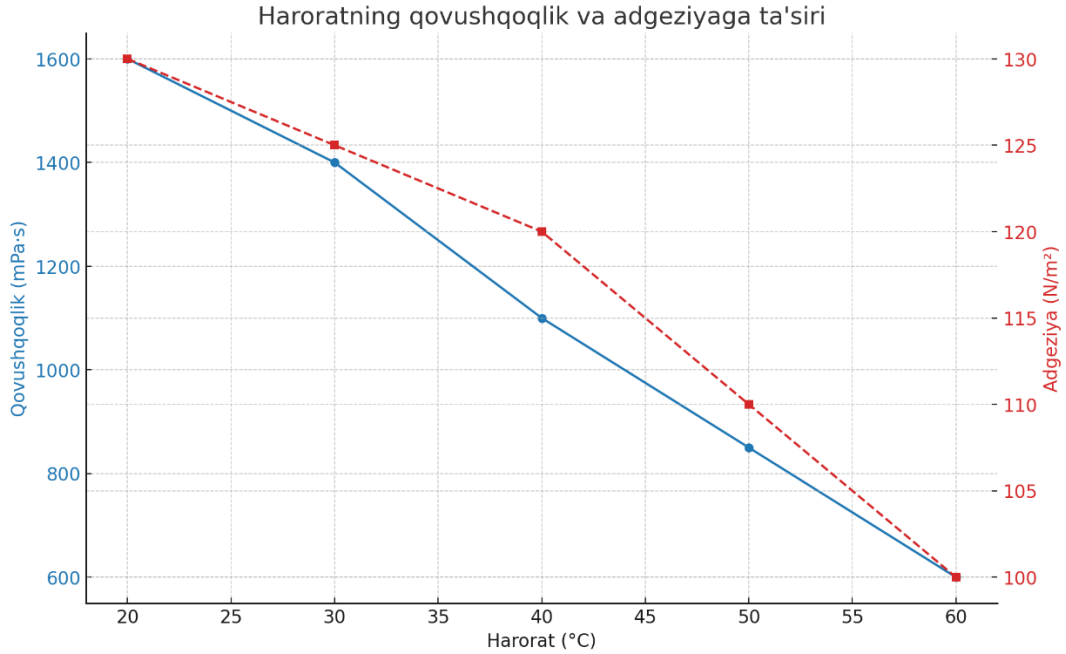

Figure 1. Temperature viscosity and to adhesion impact

From the picture apparently It is clear that the temperature The more I eat, the more I feel . viscosity decreases . 1600 mPa·s at 20°C , but 600 mPa·s at 60°C to Adhesion **(N/m²) – Red line** : Temperature increase with my glue adhesion The feature also decreases , because glue to liquefy and harden speed decreases . At low temperatures glue thicker and adhesion power high will be . Top at temperature and glue faster it hardens , but adhesion quality decrease possible .

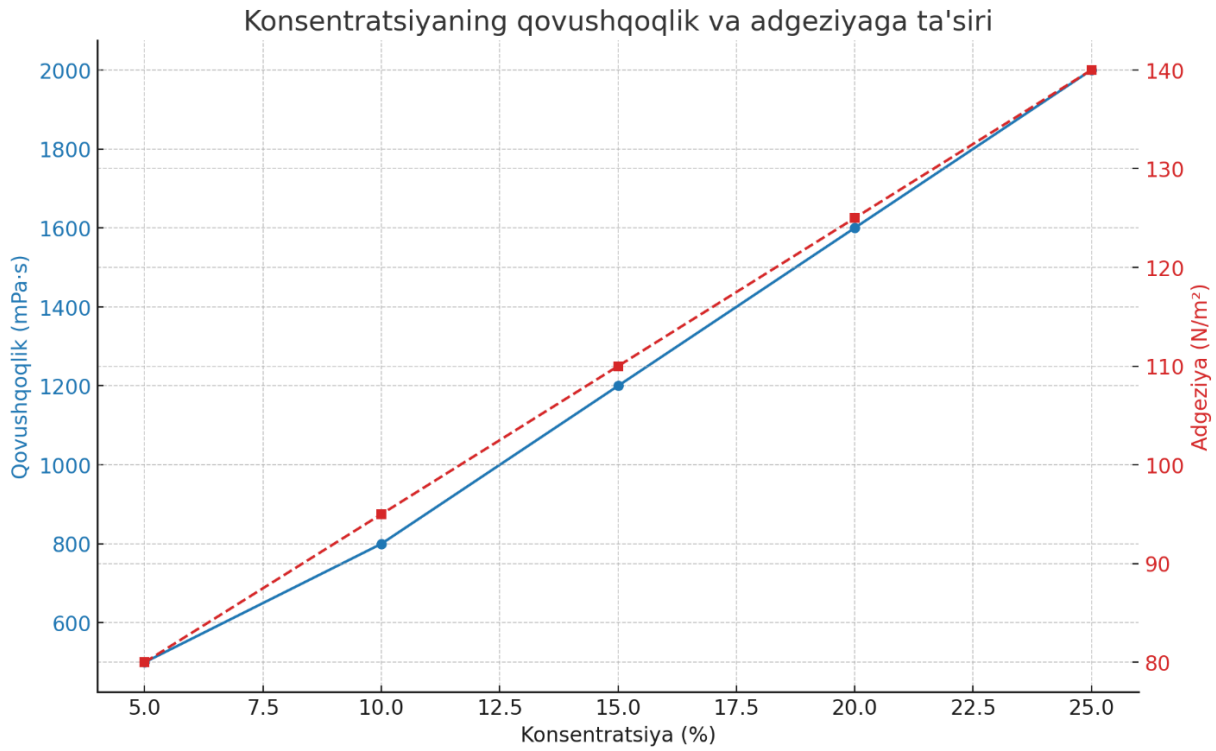

Figure 2. Concentration viscosity and to adhesion impact

Viscosity (mPa·s) – Blue line : Concentration increased gradually glue thickening , viscosity increases . At **5% concentration 500 mPa·s** , **at 25% 2000 mPa ·s** . **Adhesion (N/m²) – Red line** : Concentration The more I eat, the more I feel . adhesion strength also increases , because in it active gardener substances amount increases . At low concentration glue more liquid to be , to stick the quality will be low . High in concentration my glue adhesion feature increases , but too much outside thick to be processing to give process make it difficult possible .

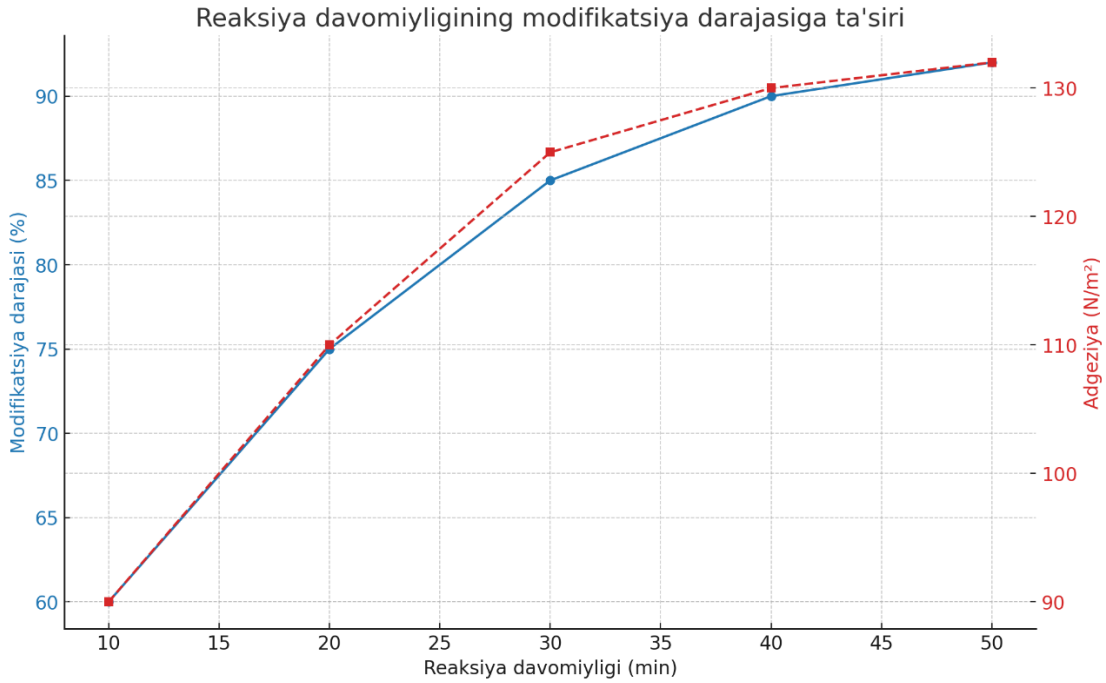

Figure 3. Reaction duration modification to the level impact

Modification level (blue) line , left y- axis) in 10 minutes modification level **60%** around if , in 20 minutes **75%** to enough for 30 minutes come modification level **85%** , in 40 minutes and **90%** to It will take 50 minutes . then modification level stabilized , noticeable change Adhesion

(red) line , right y - o ' q) in 10 minutes adhesion **90 N / m² ,** in 20 **minutes 100 N / m²** It will be . In 30 minutes adhesion sharp exceed **120 N / m²** to It will take 40-50 minutes . **130 N / m²** to It is approaching . This is what shows that the reaction duration increase with my glue adhesion ability improves . **Optimal reaction time 30-40 minutes** between is , this at the time modification level and adhesion high will be . **From 50 minutes then growth slows down ,** this and excess reaction of time to efficiency impact decrease shows . Modification level and adhesion in the middle **correct dependency** exists , that is modification level increased gradually my glue adhesion ability also improves .

Conclusion Research PVC production throughout release as a result harvest to be chlorinated from hydrocarbons used without high good quality adhesive tar synthesis This was done . method industry waste again to work and ecological the environment to improve service to do possible . Next in research gluers further reinforcement and their ecological safety increase according to affairs take to go necessary .

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