Austrian Journal of Technical and Natural Sciences

№ 11-12, 2019
November-December

Vienna
2019
«East West» Association for Advanced Studies and Higher Education GmbH

Austrian Journal of Technical and Natural Sciences
Scientific journal
№ 11-12 2019 (November-December)

ISSN 2310-5607

Austrian Journal of Technical and Natural Sciences is an international, German/English/Russian language, peer-reviewed journal. It is published bimonthly with circulation of 1000 copies.

The decisive criterion for accepting a manuscript for publication is scientific quality. All research articles published in this journal have undergone a rigorous peer review. Based on initial screening by the editors, each paper is anonymized and reviewed by at least two anonymous referees. Recommending the articles for publishing, the reviewers confirm that in their opinion the submitted article contains important or new scientific results.

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Typeset in Berling by Ziegler Buchdruckerei, Linz, Austria.
Printed by «East West» Association for Advanced Studies and Higher Education GmbH, Vienna, Austria on acid free paper.

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THE IDEA OF CREATING SUCH «HYBRID DESIGNS» WAS THE FIRST STEP IN THE DEVELOPMENT OF NEW CONCEPT

Abstract: *The article is considering the architectural and planning structure flexibility of cultural and performing arts centers in adaptive and transformable aspects as one of the basic principles of their design. The recommendations on the use of different methods of flexibility depending on the type of cultural and performing arts centers were provided.*

Key words: *flexibility, adaptability, transformation, cultural and performing arts centers.*

One of the major components of poultry fodder is wheat, soybean meal, corn, which serve as an indispensable source of protein, carbohydrates, calcium and phosphorus. However, those substances are contained in fodder in the form of complex indigestible conglomerates bound by complex organic compounds — phytates and cannot be digested by birds. One of the solutions of this critical issue is the introduction into the poultry diet of phytase. Phytase is a specific enzyme that initiates the decomposition of phytate — phytic compounds, which contain 70–90% of the total phosphorus in plant. Due to the inability of poultry to produce own phytase availability of phosphorus, calcium, protein and other nutrients is limited. The use of phytase provides a new qualitative approach to improving fodder efficiency and reducing nutrients consumption per unit of livestock production. In spite of the fact that phytases from several species of bacteria, yeast and fungi have been characterized, commercial production of this enzyme currently focuses on fungi of the *Aspergillus* because of high productivity [1, 585; 2, 581]. However, great drawback of industrial fungal strains is their low activity, despite the fact that the essential requirement to enzymes is their high activity. The production of phytase have been affected by One of the major components of poultry fodder is wheat, soybean meal, corn, which serve as an indispensable source of protein, carbohydrates, calcium and phosphorus. However, those substances are contained in fodder in the form of complex indigestible conglomerates bound by complex organic compounds — phytates and cannot be digested by birds. One of the solutions of this composition of the cultivation medium (carbon and nitrogen sources) play significant role on enzymes production. The effect of different carbon and nitrogen sources on phase production by *Aspergillus niger* was investigated.

Materials and Methods:

Organohalogen compounds. This class includes organochlorines such as chlorendic acidderivatives chlorinated paraffins; organobro mines such as decabromodiphenyl ether (decaBDE), decabromodiphenyl ethane (a replacement for decaBDE), polymeric brominated compounds such as brominated polystyrenes, brominated carbonate oligomers (BCOs), brominated epoxy oligomers (BEOs),tetrabromophthalic tetrabromobisphenol nyhydride, (TBBPA) cyclododecaneand hexabromo (HBCD). Most but not all halogenated flame-retardants are used in conjunction with a synergist to enhance their efficiency. Antimony trioxide is widely used but other forms of antimony such as the pentoxide and sodium antimonate are also used.

However, those substances are contained in fodder in the form of complex indigestible conglomerates bound by complex organic compounds — phytates and cannot be digested by birds. One of the solutions of this a variety of physical and chemical factors, such as the composition of the growth medium, critical issue is the introduction into the poultry diet of phytase.

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Critical issue is the introduction into the poultry diet of phytase. Phytase is a specific enzyme that initiates the decomposition of phytate — phytic compounds, which contain 70–90% of the total phosphorus in plant. Due to the inability of poultry to produce own phytase availability of phosphorus, calcium, protein and other nutrients is limited. The use of phytase provides a new qualitative approach to improving fodder efficiency and reducing nutrients consumption per unit of livestock production. In spite of the fact that phytases from several species of bacteria, yeast and fungi have been characterized, commercial production of this enzyme currently focuses on fungi of the *Aspergillus* because of high productivity [1, 585; 2, 581]. However, great drawback of industrial fungal strains is their low activity, despite the fact that the essential requirement to enzymes is their high activity. The production of phytase have been affected by a variety of physical and chemical factors, such as the composition of the growth medium. Due to the inability of poultry to produce own

Effect of Carbon and Nitrogen Sources: Different pure carbon sources (e. g. glucose, sucrose, lactose, maltose, fructose and xylose) with concentration of 1,5% were added to up the fact that the essential.Among the various nitrogen sources such as ammonium sulfate, ammonium phosphate, ammonium nitrate, potassium nitrate, yeast extract, peptone used for phytase production, ammonium nitrate supported phytase production in *A. niger* with enzymatic activity of 1320 U/g. All other nitrogen sources used had less effect on phytase production with enzymatic activity from 850 U/ml to 1200 U/g. The various concentration of ammonium nitrate (0.25% — 2.0%) have been used for the phytase production in submerged fermentation (Fig. 4). It was found that 0.5% ammonium nitrate has given the highest enzymatic activity (1320 U/g).

Thus, among the different nitrogen and carbon sources tested 0.5% ammonium nitrate and 1.0% sucrose were found to be good nitrogen and carbon sources for phytase production.

The effect of different concentration of sucrose on phytase production was studied using sucrose in the range of 0.25 to 2% (Fig.2). Sucrose at 1.0% concentration was found to support maximal phytase activity (1250 U/g).

Acknowledgements: This research work was funded by Ministry of Education and Sciences.

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THE ARAL SEA DEGRADATION AND BIOLOGY DESCRIPTION OF ACTIONS ON THEIR ELIMINATION

Abstract*: This article represents the updated version of the texted version on the state of environment of the Republic of Uzbekistan and on the department «Ecology and ground science» Karakalpak state university of name Berdak, prepared in 2012 . Its purpose is providing of the broad sections of the public and decision-makers with easy for understanding, modern and reliable environmental information.*

Key words*: Ecology, Environmental Protection, Pollution, water resources, the population, Aral Sea, desert "Aralkum", The regional flora.*

The basic attention in the report is given to the description of the some priority national environmental problems, identified at the development of the National Environmental Action Plan for Sustainable Development of the Republic of Uzbekistan: Deficit of water resources; Degradation of pasture and arable lands; air pollution of urban territories; Environmental pollution in oil fields area; Environmental pollution with industrial and municipal solid waste; Shortage of forests and especially protected territories; Pollution of the water bodies with wastewater. Most of the sands and soils in the Pre-Aral area are light and easily transported by wind.

On the basis of geographical and archeological research it was established that the Aral Sea has had periodical changes of its water area, i.e. expansions are followed by with drawals. This was brought about by climate change and changes in the state of the environment in the region. With the development of land use, anthropogenic factors affected the natural periods of sea fluctuations changing flows of the Syrdarya and Amudarya. This is especially explicit in the present. The beginning of irrigated agriculture in the region dates back to the 6th-7th centuries B.C. and coincides with flourishing the most ancient civilization where irrigation was a major decisive factor of historical and socio-economic development.

Today the Aral and surrounding territories are world-known for ecological disasters attributed mainly to anthropogenous factors. The growth in water consumption connected to cultivation of new irrigated territories, where mainly cotton and rice are grown, together with the increase in the population working in agriculture, the flow of water to the sea from the two major river systems -the Amudarya and Syrdarya - completely stopped.

In spite of intensive glacier melting which should have led to increase of territory of the Aral Sea, during last 25 years disastrous reduction of the largest inland water body takes place.

The Aral Sea is the largest inland body of salty reservoirs in the world. Situated in the centre of the Central Asian deserts at an altitude of 53 metres above the sea level, the Aral Sea functions as a gigantic evaporator. About 60 km^2 of water evaporates per year.

The sea contributed to hydrothermal regime improvement, influenced water regimes of arid plants, pastures productivity, and provided normal functioning of artesian wells etc. Ecological balance in the basin was formed in the first half of the 20th century and was stable up to the beginning of the 1960's, with a volume of 1,064 kmi, and a water territory of 66.4 thousand kmI. Because of irrevocable removal of river water on irrigated territories, ecological balance began to decline. Only half of the previous river runoff reached the Aral Sea.

But even this quantity of water was not sufficient to support sea level at 53 m. However as a result of a tendency of economy development in agrarian areas, leading to growth of irrigated territories and volumes of irrevocable water consumption during years of water shortages, water flow into deltas of the Amudarya and Syrdarya rivers was reduced sharply. In 1982 and 1983 this made up only 2.28 and 3.25 km^3, respectively. Since 1961 the sea level has declined with increasing speed from 20 to 80-90 cm per year.

During the last 50 years, from 1960 to 2010, the sea received less than 2,000 km^3 of river water, which led to the lowering of the sea level by 22 m, accompanied by a reduction of the volume of the water area by 87%.

As a result of the complete stop of the Amudarya and Syrdarya runoff and expansion of irrigated territories without any control of the Aral Sea and environmental needs, a serious complex of ecological, social and economic problems was formed in the Pre-Aral area. These problems by origin and level of consequences have an international character. The sea has lost its fishery and transport importance. It was divided into two parts, the Bolshoi and the Maly (Northern) Aral, and moved 140-190 km away from the original shore. From exposed salty bed (35 thousand kmI) up to 100 million tons of salty dust flew out annually. Suspended solids in the form of aerosols with agricultural pesticides, fertilizers and other harmful components of industrial and municipal wastes prevail in the composition of the winds.

Due to the reduction in the sea dimensions, and the increase in evaporation and drainage-collecting water, water salinity considerably increased from 9.94 g/litre in 1965, to about 22 g/litre in 2010. Sharp continental climate is a feature of the Pre-Aral area climate.

During the last 10-15 years the drying off of the Aral Sea, brought about noticeable changes in climate conditions. In the past the Aral was considered a regulator mitigating cold winds from Siberia and reducing the summer heat. It contributes to aerosol transference into upper layers and fast spread in the atmosphere

Climate changes have led to a dryer and shorter summer in the region, and longer and colder winters. The vegetative season has been reduced to 170 days. The pasture productivity has decreased by a half, and meadow vegetation destruction has decreased meadow productivity 10 times. On the shores of the Aral Sea precipitation was reduced several times. Average precipitation magnitude is 150-200 mm with considerable seasonal ununiformity.

High evaporation (up to 1700 mm per year) is marked while air moisture is reduced by 10%. Air temperature during winters has fallen, and summer temperatures have increased by 4-6 degrees C, including observations of 54 degrees C.

Frequent occurrence of long dust storms and ground winds is characteristic feature of the Pre-Aral area climate. Strong winds often blow in the region. They are the most intensive on the western coast - with perhaps more than 50 days of storms per year. Maximum wind velocity reaches 23-28 m/s.

These climatic conditions defined that agriculture without irrigation is impossible. The result is intensive accumulation of salt in the soil leading to water use for watering plants and washing off lands.

Most of the sands and soils in the Pre-Aral area are light and easily transported by wind.

The drying off of the Aral Sea resulted in two different kinds of desertification. The newly dried sea bed, and the artificial water logging of irrigated lands. As a result, a new desert "Aralkum" appeared in the centre of the great deserts. It is solid salt-marsh consisting of finely-dispersed sea depositions and remnants of mineral deposits, washed away from irrigated fields. A new qualitative phase of desertification affecting the Pre-Aral ecosystem degradation, regional and global climate, mountainous flow-forming systems and water-salty regime of agricultural zone takes place.

The sea bed, formerly referred to as a so-called "fresh water maker" of vast water collecting basin at the expense of rich sea hydrobiocenose activity, is an artificial anthropogenous volcano, throwing tremendous masses of salt and finely-dispersed dust into the atmosphere. Pollution is increased because the Aral Sea is located along a powerful air stream running from west to east. of the Earth. That is why traces of pesticides from the Aral region were found in the blood of penguins in the Antarctic, and typical Aral dust has been found on Greenland's glaciers,

in Norway's forests, and Byelorussia's fields, all situated thousands of kilometers away from Central Asia.

If the cover of moraine depositions increases, they no longer will be moisture condensators and sharp reduction of the river flow will start.

The Aral disaster has deteriorated the sphere of inhabitation of the region sharply, due to polluting of the atmosphere, the drinking water and the soil.

An evaluation of the field with drawl from the dry parts of the Aral Sea bed shows that this magnitude varies from several hundred thousand tons to 20-30 million tons per year. In the composition of dust cloud suspended solids in the form of aerosols with agricultural pesticides, fertilizers and other harmful components of industrial and municipal sewage prevail. Salt content makes up 0.5-1.5%. Sand-and-salt aerosol effects on oasis soils and pastures are predominantly negative. Replacing multilayer herbage by single-layer, reduces the quantity of useful feeding plants, and often plants that have no feeding value are cultivated.

Two million hectares of fertile lands disappeared as a result of overwatering and as a result of fast rise of ground water they got polluted for the second time.

Today these lands are either water logged or salinized. Former arid soils of the Pre-Aral area with automorphic feed and moisture regime became meadow-swamp soils with hydromorphic regime. To support this regime artificially it is necessary to raise standards by 2-3 times, in order not to activate the secondary salinization process. A vicious circle of agriculture was formed in this region, where heavy swamped lands are left. The land-improvement condition of irrigated soils in Central Asia is worsened by collective-drainage water saturated with pesticides and discharged as return runoff into numerous local landscape depressions. Before 1960 the river deltas were home to over 70 kinds of mammals and 319 types of birds. At present only 32 kinds of mammals and 160 types of birds remain. As a result, artificial reservoirs-accumulators appear. These reservoirs are a real disaster for surrounding lands. Some of them cause secondary pollution when of the poisonous bed depositions become dry and are brought on irrigated lands, ruin them and pollute the atmosphere in the surrounding regions.

The most spread pollutants in the Aral Sea are: oil hydrocarbons, phenols, synthetic surface-active substances (SSAS), chlororganic pesticides (COP), heavy metals and minerals. The abundant use of pesticides with high physiological reaction (B-58, metaphos, corotan, butiphos, hexachloran, lindan, DDT etc.) poses a tremendous threat to living organisms. Reservoirs carrying water with undecided compounds of heavy metals and chlororganic pesticides, led to the destruction of fishery, the appearance of cancerogenic diseases, and changes in citogenetic indices.

The maximum pollution level by oil hydrocarbons in 1970 was 54 MPC (maximum permissible concentration) in the Maly Aral (MPC=0.05 mg/dmi), and 80 MPC in the Bolshoi Aral. Since 1978 the tendency to oil hydrocarbons pollution stabilization at the level of MPC is marked. Phenols made up 28 MPC (MPC=0.001 mg/dmi)in the Maly Aral, and 63 MPC in the Bolshoi Aral. At present there is no information about phenol pollution because observations have been stopped. Concentrations of SSAS and heavy metals do not exceed MPC.

Salinization increased from 10 g/l to 40-50 g/l because of lack of fresh water inflow.

In the past the uniqueness of the Aral Sea contributed to richness and diversity of the biota which could be compared with Africa. The Pre-Aral area possessed half of the biological species of the former USSR, many of these, however, have disappeared or are threatened. There were 500 kinds of birds, 200 species of mammals and 100 species of fishes, thousands of insects and invertebrates.

In low streams of the Syrdarya River, more than 100 thousand hectares of alluvial soils became salt-marsh, and more than 500 thousand hectares of swamp and medow-swamp soil became dry. This resulted in the transformation and destruction 5-7 kinds of herbs needed for fodder for sheep, horses, camels and goats. Diseases and death of cattle began, musk-rats cultivation stopped, and sheep live-stock decreased sharpl The regional flora is impressive and includes 1,200 flowers, 560 types of tugai forests of which 29 are endemic to Central Asia. The flora of the Aral-Sea coast includes423 kinds

of plants of 44 families and 180 genera. The highest diversity of sand vegetation is concentrated on the former islands of the western coast. The dry strip of the Aral is characterized by lower diversity in comparison with the coast. Among them are 30 species which are valuable fodder plants, 31 kinds of weeds, and more than 60 kinds of local flora are potential phytomeliorants for dried coasts. The change in water balance caused mineralization of the water in the Aral Sea basin, which led to the loss of unique biocenosis and a number of endemic species of animals. Inflow reduction into the Aral caused irreversible changes of hydrological and hydrochemical sea regimes and hydro systems. Salt balance changes increased the sea salinity 3 times, transforming it into a desert. The formerly flourishing sea ecosystem supported 24 species of fishes that are disappearing. These include carp, perch, sturgeon, salmon, sheat-fish and spike. There were 20 kinds of fish in it, but fishery was based mainly on bream, sazan, aral roach (vobla). Barbel and white-eye fish were caught in the Aral Sea. The first signs of the negative impacts of salinization on ichtyofauna of the Aral Sea, appeared in the mid 1960's when salinity reached 12-14%. On shallow water the salinity of water increased faster than in the open parts of the sea, negatively affecting spawning places. By 1971 the average salinity exceeded 15% and resulted in the destruction of fish spawn. Since 1971 the average salinity has reached 12% in the open part of sea, and the first signs of negative impact on fish have appeared. Some kinds of fish have slowed their growth, and the number of fish has been sharply reduced. By the mid 1970's average salinity of the sea exceeded 14%, and the natural reproduction of the Aral fish was completely destructed. In the late 1970s Sea has lost its fishery completely. Of the ichtiofauna of the Aral Sea. several species of fish did not reproduce at all. By 1980 salinity exceeded 18%. The Aral only aboriginal species - pricles and acclimatizers - bullheads and sprats are left. In the estuaries of the Syrdarya and Amudarya grown up fishes were caught occasionally. The researchers of the tendency to increase. In the epicenter of out Aral department of the Kazakh Research Institute of Fishery in the 70's collected eurigaline and salt loving kinds of fish. They conducted experiments with Caspian sturgeons, Kurine salmon, Asov and Black Sea plaice-glossa and plaice-kalkan. The most promising were the experiments with plaice-glossa having ecological plasticity, spawned at the places with 17% to 60% of salinity, at present its catch makes up 30% of the total number.

The Pre-Aral area is characterized by a complex spatial structure of ecosystems. The physical and geographical conditions of the region, the consequences of its economic utilization during many centuries, and the active influence of modern anthropogenous processes influence these. Pre-Aral ecosystems are developing in extreme conditions of desert. The factors limiting biota development were established by nature itself. The Pre-Aral area has suffered from anthropogenous processes for a long time, both regionally and locally. Anthropogenous impacts have caused transformations of natural ecosystems which finally led to dramatic changes and degradation.

The ecosystems of delta valleys have been transformed greatly by agricultural land use for many centuries. Irrigated or cultivated fields, rice fields and non-cultivated agricultural lands which are characterized by different stages of soil and vegetation cover rehabilitation, are singled out. The following anthropogenic factors that brought about changes in the ecosystems should be considered according to their significance: pastures, land-use, agriculture, transport, city, rural, military objects, hydrotechnical (artificial reservoirs, dams, canals, sewage accumulators), and cattle-breeding. The process of degradation in the Aral region caused progressive crises in the social and economic spheres. The primary victims of the crises were the most vulnerable layers of population, namely children, women, ill-paid inhabitants of cities and rural areas. The region has the highest child mortality rate in the former USSR (10-12 children per 100 newly born), high level of maternity death: about 110 women per 1000 births. Diseases such as TB, infections and parasites, typhus, hepatite, paratyphoid always accompany poverty. The disease rate has a tendency to increase.

In the epicenter of ecological disaster, anemia, dysfunction of thyroid the gland, kidney and liver diseases are wide spread. Blood, oncological diseases, asthma and heart diseases are progressing. Medical research proves that the incidence and growth of these diseases are directly dependent on ecological disaster.

In agriculture there is a steady tendency to transition to ecological management of production. One of the main principles of the above mentioned tendency is maintenance of positive humus balance in soil at the expense of introduction of alternation of crops and application of organic fertilisers.

The largest ecosystems, limiting on size and scale, is biosfere. Biosfere name the active shell of the land, including all alive organisms of the Land and residing in interaction with lifeless ambience (chemical and physical) of our planet, with which they form the united integer. Biosfera our planets exists 3 mlrd. years, she grows and becomes complicated contrary to trend cool entropiya to deaths; she carries the reasonable life and civilization. Biosfera existed long before appearance of the person and can dispense with it. Opposite, existence of the person without biosfere impossible.

All rest ecosystems are found inwardly biosfere and are hersubsystem. Large regional ecosystems, characterizing some main type to vegetation, is identified the biom. For instance, biom to deserts or humid tropical wood. Much smaller system is a population, including group by person of one type, t. e. united origin, occupying determined area. The more complex system, than population, is a community, which includes all populations, occupying given territory. Thereby, population, community, biom, biosfere are situated in hierarchical order from small systems to large.

The important effect to hierarchical organization consists in that that on measure of the association component in more large functional units on new step of the hierarchical stairway appear the new characteristic, being absent on previous step. These characteristic it is impossible predict coming from characteristic component, forming new level. This principle has got the name emerjentsing. The Essence his: characteristic integer impossible to reduce hisparts to amount characteristic. For instance, hydrogen and oxygen, residing on level, when joining form the molecule of water, possessing already absolutely new characteristic. The other example. Some algaes and intestine-form the system coral reef. Enormous productivity and variety coral reef - an emerjenting characteristic typical only of rifing community, but at all not for hiscomponent, living in water with low contents biogen element.

Activity organism in ecosystem adapts geochiming ambience to its biological need. That fact that chemical composition of atmosphere and powerfully bufer physical ambience of the Land sharply differ from conditions on any other planet of the Solar system, has allowed to formulate the hypothesis Henry. According to this hypothesis exactly alive organisms created and support on the Land favourable for life of the condition.

Sooner whole, green plants and some microorganisms have played the main role in shaping of terrestrial atmosphere with herhigh contents of the oxygen and low contents of the carbon dioxide. The hypothesis Geo emphasizes importance of the study and conservations these adjusting mechanism, which allow atmosphere to adapt to contamination, conditioned activity of the person.

Beside green plants N_2O acidifies with forming the gaseous oxygen O_2, herewith SO_2 is restored before organic material (in brought equation organic material - a glucose). Beside fotosyntes bacteria are synthesized organic material, but is not formed oxygen. The breathing - a process, inverse photosynthesis, under which organic material acidify by means of atmospheric oxygen.

Reducenty, degrading remainder organism, free the biogen elements (C, O_2, N_2, P, S and others), which enter in rotation, necessary ecosystems for existence. Each year produsents on the Land s beside 100 mlrd. t. organic material that forms the global product biosfere.

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For this gap of time aproximately such amount alive material, oxidents, changes in SO_2 and H_2O as a result of breathings organism. This process is identified the global disinteration. But this balance existed not always. Approximately 1 mlrd. the years back part formed produsents material was not spent on breathing and did not decompose, since in biosfere was not yet a sufficient number consuments. As a result this organic material was saved and detained in setting. The prevalence of the syntheses organic material on their decomposition has brought about reduction in atmosphere of the Land of the carbon dioxide and accumulation of the oxygen. Beside 300 mln. years back particularly big excess to organic product has brought about formation combustible fossilized, to account which person has later made the industrial revolution. But more then 60 mln. years were back worked out fluctuating stationary correlation between global product and disinteration.

However for the last half a century as a result of economic activity of the person, bound with incineration combustible fossilized mainly, concentration SO_2 in atmosphere increased, but O_2 - decreased that creates the critical situation for stability of atmosphere. Thereby, the most important feature ecosystem is a rotation material, definied global product and disinteration.

The following most important feature ecosystems are their cybernetic behaviour. The cybernetic behaviour ecosystems is defined that that they possess the developed information networks, including flows physical and chemical signal, which link all part ecosystems and control her as united integer. The Difference ecosystems from cybernetic device, created person, is concluded in that that controlling functions ecosystems concentrated inwardly it and diffusing. In cybernetic system, created person, controlling functions are directed and are specialized. instance "standing water", "current water" and etc. Under biotics factor understand the collection of the influences to vital. By comparing cybernetic system with ecosystems possible to find something general.

In that and the other management is founded on feedback. The known that energy to feedback extremely small in contrast with initiated by her energy, which is agitated in system, goes speech about technical device, organism or ecosystem. The Device, realizing feedback above-ground system, are identified the gomeostaz mechanism. Gomeostaz in using to organism means the maintenance hisinternal ambience and stability hismain physiological function. In using to ecosystems gomeostaz means the conservation herconstant aspectual composition and numbers by person. Gomeostatic mechanisms support the stability an ecosystems, warning full plants herbivorous animal or disastrous fluctuations to number predator and their victims and etc.

The brain of the person presents itself device with low energy feature and with enormous ability to management since under comparatively small expenses to energy he capable produsing varied powerful ideas. This has done the person by the mightiest essence on the Land. At least once, this concerns hisabilities to change operation an ecosystems, including biosfere.

The Main features ecosystems - hersize, herstability, processes clearing.

The size ecosystems - a space, in which possible realization of the processes regulation and all forming ecosystems component and element.

Sautocleaning natural ecosystems - an independent return natural ecosystems to condition of the dynamic balance, from which she was obtenium influences natural and antropogen factor.

Avtocleaning - a natural destruction polution in ambience as a result of processes, occurring in ecosystems.

Ekosistems possible to classify on miscellaneous sign. Bioming categorization ecosystems is founded on dominating type to vegetation in large region. In water point living, where vegetation hardly noticeable, in base of the separation ecosystems are found main of the physical line of the ambience. This is from cutting the deterioration of the ecological situation, destruction due to system

destructions earlier existed in country of the systems of the total preventive maintenance of the diseases and contempts to rule and rate to safety to vital activity.

The All-round analysis surrounding ambiences provides the estimation herecological condition and influence upon it natural and antropogening influence. The nature these influence more specific. The Limiting factor level natural and antropogening influence is at most-brot ecological load (PDEN), which in many country is installed whereas, normal operation and stability ecosystems and biosfere possible under not determined limiting loads on them.

The condition biosfere, continuously changing under influence natural factor, usually returns in initial. For instance, change the temperature and pressures, moisture of the air and ground occur within some constant average importances. As a rule, large ecosystems under influence of the natural processes change exceedingly slowly. Existing in the world ecological services (and others) conduct checking for change of these processes.

Any alive organism or community organism necessary not in general temperature, moisture, food and etc, but their determined mode, t. e. borders of the possible fluctuations these factor. The range between ecological minimum and ecological maximum forms the limits to stability, t.c. toleranting given organism - this law toleranting was worded in 1910.

Value to concepts limiting factor in that that she enables the studies the most complex ecological situation. If for organism typical broad range толерантности to factor, which is present in ambience in moderate amount, that such factor can not be limiting. Opposite if organism possesses the narrow range toleranting to some volatile factor, that this factor deserves the studies, since can be limiting.

Radioactive Sr-90 extremely dangerous for person and animal. On chemical characteristic he looks like calcium and so, haved a drink in organism, is accumulated in bone and turns out For this purpose, we have developed new polymer compositions based on lignin phosphonium and phosphorylation by the Friedel-Crafts reaction. The lignin phosphorylation process was carried out under mild and accessible conditions. The product of the lignin phosphorylation reaction, which we called the preparation “PDA-1”, is a viscous product of brown color, odorless, stable during prolonged storage. The composition and structures of phosphorylated lignophosphonate "PDA-1" were identified by modern physicochemical methods of analysis.

Considering that sands should be treated with aqueous polymer solutions, structure formation will occur in the sand-water-binder system, it is of interest to study the electrical conductivity of sand dispersion in water. A study of the electrical conductivity of sand dispersion in various media revealed the surface dissolution of its grains with the appearance of neoplasms that form a contact zone at the sand-binder interface, and with increasing pH of the medium, the solubility increases. We presented research data on the acid-base properties of the surface of sand, which has been in contact with the atmosphere for a long time at 20 ° C and warmed up to 70 ° C. These two states cover a different degree of surface hydration and characterize its properties in various technological processes.

It was established that contact with the atmosphere at 20 ° C leads to complete hydration of the sand surface and the screening of its active centers by the adsorption layer. In this state, the surface has weakly acidic (pH = 6.3) and weakly basic (pH = 7.1) properties.

Strongly acidic and strongly basic indicators do not ionize upon adsorption on a hydrolyzed surface; therefore, the spectra of indicators with a pH of transition 7.2 contain only acid bands, and with a pH of 6.3, bands of the main form. At 70 ° C, partial dehydration of the sand surface occurs, accompanied by an increase in weakly acidic centers with pH = 3.2-1.7. Strongly acid sites with negative pH values remain shielded residual water molecules. Studies of the surface of the sand revealed a negative effect of the adsorbed quartz surface of the water, which shields strongly acidic and strongly basic centers and prevents their interaction with the binder. A monolithic protective coating should to be in dangerous contact with marrows - circulatory fabrics.perform its functions up to 1.8-2.5 years, subject to the exclusion of techni-

mechanical stresses from it. Its longevity is completely dependent on the weather resistance of the binder. The viscous sand layer, in addition to weather resistance, must also have the ability to pass atmospheric moisture through itself and maintain the moisture of the sand, which is very important especially in arid and extra arid conditions.
If the coating will have a combination of these properties, then phytomelioration will have increased effectiveness. The kinetics of the formation of a polymer-sand structure is associated with the speed of the processes of interaction of sand and polymer, in particular, with adsorption, which determines the adhesive properties.

To clarify the nature of adhesion, it was necessary to study the nature of the formation of the corresponding structures in the contact zone. The most important characteristic of a monolithic polymer sand coating, revealing its operational properties, is the value of the plastic strength PT, at low loading speeds.The curves of changes in the coating strength depending on the hardening temperature (Fig. 1) show that the most acceptable results are achieved at a temperature of 40°C. A further increase in the hardening temperature leads to a strong increase in PT and an increase in the brittleness of the material. Apparently, this is due to a sharp removal of the dispersed medium, which in turn impedes the processes of structure formation in the contact zone.

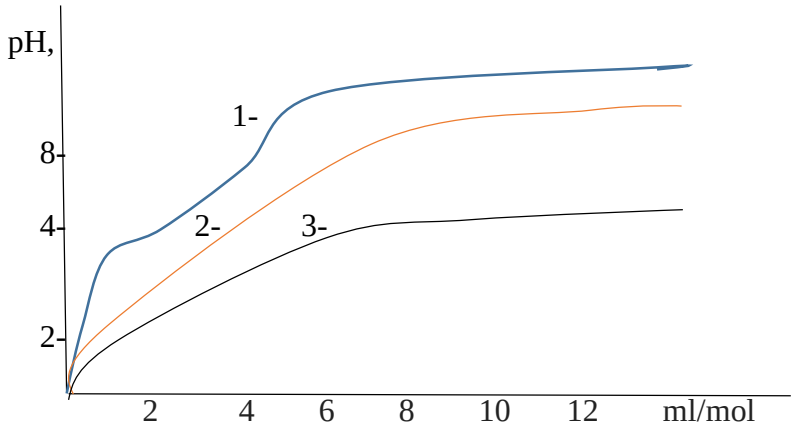

Fig. 1. Dependence of changes in coating strength on hardening temperature. 1-70°C, 2-40°C, 3-20°C.

The graphical dependence of the change in coating strength on the binder consumption of optimal concentration shows that at a flow rate from 1 l / m2 to 3 l / m^2, the value of Pт is almost constant, from 3 to 5 l / m2 - it increases, and a further increase in binder consumption leads to a noticeable decrease, this worsens the process of absorption of binder into the sand, which leads to its spreading on the surface of the sand. At the same time, sand samples were tested from various regions of the Aral Sea region, treated As a result of studies, it was found that the samples treated with a binder with the content of the drug "PDA-1" - 12%, have the highest stability of the structural and mechanical properties of the system to external loads in the temperature range from 20°C to 80°C.At this minimum value, the elastic-elastic characteristics correspond to the maximum values of true plastic viscosity.The influence of various factors on the water resistance of the coating was studied and the values of these factors were determined. Under structure of the with a binder solution of various concentrations. combination, various and of to Change in the plastic strength of the protective coating formed in the sands by impregnation of the PDA-1 preparation of optimal concentration after testing samples exposed to the IP-1-ZM and Feitron artificial weather apparatus for 20, 40 and 60 cycles. The cycle consisted of 20 hours of ultraviolet irradiation at 30°C, 5 hours of sprinkling and 3 hours of freezing at a tempe-

rature of 15^{o}C.The strength of the protective coating material reaches 5.28 MPa by the end of the first 20 exposure cycles a further increase in the strength of the polymer-sand crust is less intense and reaches its maximum value by 40 test cycles, and then, a decrease in strength is observed. Tests have shown that 20 and 40 exposure cycles, seasoned by the samples, correspond to 1-2.5 years of operation of the polymer-sand crust in natural conditions, which is consistent with the requirements for it.

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Section 3.Environmental and health

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MECHANISMS OF TOXICITY EXPOSURE

Abstract: *The article is proves that the order to make the evaluation fully comprehensive, it was decided to compare also material and fire performance as well as attempt a life cycle assessment of a reference product containing halogen characteristics. The tests on the fire behaviour of materials with different flame retardants revealed that halogen free flame retardants produce less smoke and toxic fire emissions to be participants in the news process.*

Key words: *toxicit, global problem, equipment manufacturers.*

The environmental behaviour of flame retardants has been studied since the 1990s. Mainly brominated flame retardants were found in many environmental compartments and organisms including humans, and some individual substances were found to have toxicproperties. Therefore, alternatives have been demanded by authorities, NGOs and equipment manufacturers. The EU-funded collaborative research project ENFIRO (EU research project FP7: 226563, concluded in 2012) started out from the assumption that not enough environmental and health data were known of alternatives to the established brominated flame retardants. In order to make the evaluation fully comprehensive, it was decided to compare also material and fire performance as well as attempt a life cycle assessment of a reference product containing halogen free versus brominated flame retardants. About a dozen halogen free flame retardants were studied representing a large variety of applications, from engineering plastics, printed circuit boards, encapsulants to textile and intumescent coatings. A large group of the studied flame retardants were found to have a good environmental and health profile: ammonium polyphosphate (APP), Aluminium diethyl phosphinate (Alpi), aluminium hydroxide(ATH), magnesium hydroxide (MDH), melamine polyphosphate (MPP), dihydrooxaphosphaphenanthrene (DOPO), zinc stannate (ZS) and zinc hydroxstannate (ZHS). Overall, they were found to have a much lower tendency to bioaccumulate in fatty tissue than the studied brominated flame retardants.

The tests on the fire behaviour of materials with different flame retardants revealed that halogen free flame retardants produce less smoke and toxic fire emissions, with the exception of the aryl phosphates RDP and BDP in styrenic polymers. The leachingexperiments showed that the nature of the polymer is a dominating factor and that the leaching behaviour of halogen free retardant that has been used in electronics, wire and cable insulation, textiles, automobiles and

and brominated flame retardants is comparable. The more porous or "hydrophilic" a polymers is the more flame retardants can be released. However, moulded plates which represent real world plastic products showed much lower leaching levels than extruded polymer granules. The impact assessment studies reconfirmed that the improper waste and recycling treatment of electronic products with brominated flame retardants can produce dioxins which is not the case with halogen free alternatives. Furthermore, the United States Environmental Protection Agency (US-EPA) has been carrying out a series of projects related to the environmental assessment of alternative flame retardants, the "design for environment" projects on flame retardants for printed wiring boards and alternatives to decabromo diphenylethers and hexabromocyclododecane (HBCD).

In 2009, the U.S. National Oceanic and Atmospheric Administration (NOAA) released a report on polybrominated diphenyl ethers(PBDEs) and found that, in contrast to earlier reports, they were found throughout the U.S. coastal zone. This nationwide survey found that New York's Hudson Raritan Estuary had the highest overall concentrations of PBDEs, both in sediments and shellfish. Individual sites with the highest PBDE measurements were found in shellfish taken from Anaheim Bay, California, and four sites in the Hudson Raritan Estuary. Watersheds that include the Southern California Bight, Puget Sound, the central and eastern Gulf of Mexico off the coast of Tampa and St. Petersburg, in Florida, and the waters of Lake Michigan near Chicago and Gary, Indiana, also were found to have high PBDE concentrations. The earliest flame retardants, polychlorinated biphenyls (PCBs), were banned in the U.S. in 1977 when it was discovered that they were toxic. Industries used brominated flame retardants instead, but these are now receiving closer scrutiny. In 2004 and 2008 the EU banned several types of polybrominated diphenyl ethers (PBDEs). Negotiations between the EPA and the two U.S. producers of DecaBDE a flame of the out

Another study conducted by Chevrier *et al.* 2010 measured the concentration of 10 airplanes, and other applications), Albemarle Corporation and Chemtura Corporation, and the largest U.S. importer, ICL Industrial Products, Inc., resulted in commitments by these companies to phase out decaBDE for most uses in the United States by December 31, 2012, and to end all uses by the end of 2013. The state of California has listed the flame retardant chemical chlorinated Tris (tris(1,3-dichloro-2-propyl) phosphate or TDCPP) as a chemical known to cause cancer. In December 2012, the California nonprofit Center for Environmental Health filed notices of intent to sue several leading retailers and producers of baby products for violating California law for failing to label products containing this cancer-causing flame retardant. While the demand for brominated and chlorinated flame retardants in North America and Western Europe is declining, it is rising in all other regions.

There is a potential association between the exposure to the Phosphorus Flame Retardants (PFR) in residential indoor dust and the development of allergies, asthma and dermatitis. A study was conducted in 2014 by Araki, A. et al. in Japan to assess this relationship.They found a significant association between the Tris (2-chloro-iso-propyl) phosphate (TCIPP) and atopic dermatitis with an odds ratio of 2.43. They also found that the Tributyl phosphate was associated with the development of allergic rhinitis and asthma with an odds ratio of 2.55 & 2.85 respectively.

Nearly all Americans tested have trace levels of flame retardants in their body. Recent research links some of this exposure to dust on television sets, which may have been generated from the heating of the flame retardants in the TV. Careless disposal of TVs and other appliances such as microwaves or old computers may greatly increase the amount of environmental contamination. A recent study conducted by Harley *et al.* 2010 on pregnant women, living in a low-income, predominantly Mexican-immigrant community in California showed a significant decrease in fecundity associated with PBDE exposure in women.

higher than other U.S. children and 2 to 10 times higher than U.S. adults. They also found

PBDE congeners, free thyroxine (T4), total T4, and thyroid-stimulating hormone (TSH) in 270 pregnant women around the 27th week of gestation. Associations between PBDEs and free and total T4 were found to be statistically insignificant. However, authors did find a significant association amongst exposure to PBDEs and lower TSH during pregnancy, which may have implications for maternal health and fetal development.

A prospective, longitudinal cohort study initiated after 11 September 2001, including 329 mothers who delivered in one of three hospitals in lower Manhattan, New York, was conducted by Herbstman *et al.* 2010. Authors of this study analyzed 210 cord blood specimens for selected PBDE congeners and assessed neurodevelopmental effects in the children at 12–48 and 72 months of age. Results showed that children who had higher cord blood concentrations of polybrominated diphenyl ethers (PBDEs) scored lower on tests of mental and motor development at 1–4 and 6 years of age. This was the first study to report any such associations in humans.

A similar study was conducted by Roze et al. 2009 in The Netherlands on 62 mothers and children to estimate associations between 12 Organohalogen compounds (OHCs), including polychlorinated biphenyls (PCBs) and brominated diphenyl ether (PBDE) flame retardants, measured in maternal serum during the 35th week of pregnancy and motor performance (coordination, fine motor skills), cognition (intelligence, visual perception, visuomotor integration, inhibitory control, verbal memory, and attention), and behavior scores at 5–6 years of age. Authors demonstrated for the first time that transplacental transfer of polybrominated flame retardants was associated with the development of children at school age. Another study was conducted by Rose et al. in 2010 to measure circulating PBDE levels in 100 children between 2 and 5 years of age from California. The PBDE levels according to this study, in 2- to 5-year-old California children was 10 to 1,000 fold higher than European children, 5 times.

Many halogenated flame retardants with aromatic rings, including most brominated flame retardants, are likely thyroid hormone

that diet, indoor environment, and social factors influenced children's body burden levels. Eating poultry and pork contributed to elevated body burdens for nearly all types of flame retardants. Study also found that lower maternal education was independently and significantly associated with higher levels of most flame retardant congeners in the children.

San Antonio Statement on Brominated and Chlorinated Flame Retardants 2010: A group of 145 prominent scientists from 22 countries signed the first-ever consensus statement documenting health hazards from flame retardant chemicals found at high levels in home furniture, electronics, insulation, and other products. This statement documents that, with limited fire safety benefit, these flame retardants can cause serious health issues, and, as types of flame retardants are banned, the alternatives should be proven safe before being used. The group also wants to change widespread policies that require use of flame retardants.

A number of recent studies suggest that dietary intake is one of the main routes to human exposure to PBDEs. In recent years, PBDEs have become widespread environmental pollutants, while body burden in the general population has been increasing. The results do show notable coincidences between the China, Europe, Japan, and United States such as dairy products, fish, and seafood being a cause of human exposure to PBDEs due to the environmental pollutant.

A February 2012 study genetically engineered female mice to have mutations in the x-chromosome MECP2 gene, linked to Rett syndrome, a disorder in humans similar to autism. After exposure to BDE-47 (a PDBE) their offspring, who were also exposed, had lower birth weights and survivability and showed sociability and learning deficits. A January 2013 study of mice showed brain damage from BDP-49, via inhibiting of the mitochondrial ATP production process necessary for brain cells to get energy. Toxicity was at very low levels. The study offers a possible pathway by which PDBEs lead to autism.

calcium activity in mitochondria. Exposure to PBDEs can also alter neural cell differentiation and migration during development Many

disruptors. The thyroid hormones triiodothyronine (T3) and thyroxine (T4) carry iodine atoms, another halogen, and are structurally similar to many aromatic halogenated flame retardants, including PCBs, TBBPA, and PBDEs. Such flame retardants therefore appear to compete for binding sites in the thyroid system, interfering with normal function of thyroid transport proteins (such as transthyretin) in vitro and thyroid hormone receptors. A 2009 *in vivo* animal study conducted by the US Environmental Protection Agency (EPA) demonstrated that deiodination, active transport, sulfation, and glucuronidation may be involved in disruption of thyroid homeostasis after perinatal exposure to PBDEs during critical developmental time points in utero and shortly after birth. Disruption of deiodinase as reported in the Szabo et al., 2009 *in vivo* study was supported in a follow-up *in vitro*study. The adverse effects on hepatic mechanism of thyroid hormone disruption during development have been shown to persist into adulthood. The EPA noted that PBDEs are particularly toxic to the developing brains of animals. Peer-reviewed studies have shown that even a single dose administered to mice during development of the brain can cause permanent changes in behavior, including hyperactivity. Based on *in vitro* laboratory studies, several flame retardants, including PBDEs, TBBPA, and BADP, likely also mimic other hormones, including estrogens, progesterone, and androgens. Bisphenol A compounds with lower degrees of bromination seem to exhibit greater estrogenicity Some halogenated flame retardants, including the less-brominated PBDEs, can be direct neurotoxicants in *in vitro* cell culture studies: By altering calcium homeostasis and signalling in neurons, as well as neurotransmitterrelease and uptake at synapses, they interfere with normal neurotransmission. Mitochondria may be particularly vulnerable to PBDE toxicity due to their influence on oxidative stress and

Exposure to PBDEs has been studied the most widely. As PBDEs have been phased out of use due to health concerns, flame retardants degrade into compounds that are also toxic, and in some cases the degradation products may be the primary toxic agent:

- Halogenated compounds with aromatic rings can degrade into dioxins and dioxin-like compounds, particularly when heated, such as during production, a fire, recycling, or exposure to sun Chlorinated dioxins are among the highly toxic compounds listed by the Stockholm Convention on Persistent Organic Pollutants.
- Polybrominated diphenyl ethers with higher numbers of bromine atoms, such as decaBDE, are less toxic than PBDEs with lower numbers of bromine atoms, such as pentaBDE.[47] However, as the higher-order PBDEs degrade biotically or abiotically, bromine atoms are removed, resulting in more toxic PBDE congeners.
- When some halogenated flame retardants such as PBDEs are metabolized, they form hydroxylated metabolites that can be more toxic than the parent compound. These hydroxylated metabolites, for example, may compete more strongly to bind with transthyretin or other components of the thyroid system, can be more potent estrogen mimics than the parent compound, and can more strongly affect neurotransmitter receptor activity.

Bisphenol-A diphenyl phosphate (BADP) and tetrabromobisphenol A (TBBPA) likely degrade to bisphenol A (BPA), an endocrine disruptor of concern. People can be exposed to flame retardants through several routes, including diet; consumer products in the home, vehicle, or workplace; occupation; or environmental contamination near their home or workplace. Residents in North America tend to have substantially higher body levels of flame retardants than people who live in many other developed areas, and around the world human body levels of flame retardants have increased over the last 30 years.

control, delay sensory development and puberty.

organophosphorus flame retardants, including halogenated organophosphate flame retardants, have frequently been used to replace them. In some studies, indoor air concentrations of phosphorus flame retardants has been found to be greater than indoor air concentrations of PBDEs. The European Food Safety Authority (EFSA) issued in 2011 scientific opinions on the exposure to HBCD and TBBPA and its derivates in food and concluded that current dietary exposure in the European Union does not raise a health concern The body burden of PBDEs in Americans correlates well with the level of PBDEs measured in swabs of their hands, likely picked up from dust. Dust exposure may occur in the home, car, or workplace. Levels of PBDEs can be as much as 20 times higher in vehicle dust as in household dust, and heating of the vehicle interior on hot summer days can break down flame retardants into more toxic degradation products. However, blood serum levels of PBDEs appear to correlate most highly with levels found in dust in the home. 60-80% of exposures are due to dust inhalation or ingestion.. In addition to this, 20% to 40% of adult U.S. exposure to PBDEs is through food intake as PBDEs bioaccumulate in the food chain. High concentration can be found in meat, dairy and fish with the remaining exposure largely due to dust inhalation or ingestion. Individuals can also be exposed through electronic and electrical devices. Young children in the United States tend to carry higher levels of flame retardants per unit body weight than do adults. Infants and toddlers are particularly exposed to halogenated flame retardants found in breast milk and dust. Because many halogenated flame retardants are fat-soluble, they accumulate in fatty areas such as breast tissue and are mobilized into breast milk, delivering high levels of flame retardants to breast-feeding infants. PBDEs also cross the placenta, meaning infants are exposed in utero. Mothers thyroid hormone (T4) level can be disrupted and exposure in utero in rat studies has been demonstrated to alter motor

Another reason for high levels of exposure in young children are due to aging consumer products age, small particles of material become dust particles in the air and land on surfaces around the home, including the floor. Young children crawling and playing on the floor frequently bring their hands to their mouths, ingesting about twice as much house dust as adults per day in the United States.[58] Children also have a higher food intake per kilogram of bodyweight compared to adults. Young children are also exposed to flame retardants through their clothing, car seats and toys. The introduction of these chemicals came about after the tragic death of children wearing brushed rayon fabric that would ignite easily. The U.S enacted the Flammable Fabrics Act passed in 1953 after which, flame retardants were mandated to be added to many children's items, including pajamas. While flame retardants are shown to decrease the risk of burn injuries in children, the risks of thyroid disruption as well as physical and cognitive developmental delays, are not outweighed.

A study was conducted by Carignan in 2013, C. et al. found that gymnasts are exposed to some flame-retardant products such as PentaBDE and TBB more than the general population in the United States. After testing hand-wipe samples before and after the exercise, they found that the BDE-153 concentration was four to over six times greater among gymnasts than the United States population. Also, the PentaBDE concentration was higher up to three times after exercise compared to the level before; indicating a higher level of the flame-retardants on the training equipment. Moreover, they also found several flame-retardant products with different concentrations in the air and dust that were higher in the gym than residencies. However, the study was performed on a small sample size; and further studies are recommended to assess the association.

Literature

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SPECIFIC TECHNIQUES METODS IN MEDICAL SYSTEM

Annotation. *In this article, the author analyzed the problem of forming the personal and professional qualities of they accumulate in fatty areas such as breast tissue and are mobilized into breast milk, delivering high levels.*
Key words: *medical activity, patient identity, symptom recreation, professional skill, parenting functions, personal qualities, medical technology*

As a result of these studies and observations, there were projects of devices in which, along with the waving wing, fixed horizontal surfaces had to be used. The idea of creating such» hybrid «designs was the first step in the development of the concept of the aircraft. In those days, the only source of energy for the flight was the muscular strength of the experimenters themselves. However, the lack of knowledge and the lack of necessary technologies did not allow to create a really working muscle, the creation of such structures, became possible only in our days, when the achievements of science and technology and engineering, allowed to create designs of aircraft with very high weight and aerodynamic characteristics. But in our time, such a flight is only a very trained people. In past centuries, the attempts of designers to develop a device for flight due to the strength of their own muscles were initially doomed to failure – the power required for the flight of the first fixed wing aircraft was many times greater than the capabilities of a person. At that time, the only type of aircraft capable of flying could only be a glider. But widespread these devices are not received, because of the same is not knowledge, it was believed that the flight without the use of moving surfaces was impossible, it was suggested that the flying and planning bird maintains itself in the air thanks to a very fast, barely noticeable flaps of the to develop a device for flight of development of aviation verytrained people. In past centuries, the attempts of designers to the world. The main issues of the modern education system include fundamental nature wings, this misconception has become a dogma for most people.

The first projects of fixed-wing aircraft did not attract the attention of representatives of science and government agencies, remaining only the lot of their inventors. Numerous unsuccessful tests of ornithopters, led to discrediting the idea of creating a device heavier than air. The promising idea of using a fixed wing for flight was not taken seriously. The first studies on hydro and aerodynamics, first of all, were aimed at solving the problems of shipbuilding and ballistics, but did not affect the theory of dynamic flight.

Due to the lack of scientific approach to the design of aircraft, their development occurred by trial and error. This approach had a negative impact on the pace of development of aviation at the stage of origin of the idea of creating winged vehicles for flight. Despite this, there was little progress. In XVII–XVIII centuries emerged the idea of joint use of flapping and fixed wing, first suggested. strategy within society progress. After the proclamation of independence of the Republic of west contries, the upbringing of the developed generation became the priority of the government policy. Educational priority issues are clearly specified in documents dedicated to idea of national independence, the Law of the Republic of a lot of contries on Education and the National Program for Personnel Training. The main issues of the modern education system include fundamental nature of teacher training, maintaining of core of shipbuilding and ballistics, but did not affect by trial and error.

production competitiveness, as well as effectively operating within requirements to

of teacher training, maintaining of core values, general and professional skills, the relationship of knowledge within liberal arts and sciences, integration of educational and scientific activities, academic freedom and progressive education. This task is reflected in specialist's theoretical model represented as the graduate:
– development of emotional-volitional, physical, moral and spiritual qualities, transfer of information agitating theoretical and practical activities in mastering professional skills, teaching innovative information technologies, opportunities for learning foreign languages, focusing on process and system analysis, formation of adaptability to practical efficacy and professional activity for young students;
– formation of a developed personality that fully meets the requirements of ongoing reforms within society, the ads attract attention of the audience. www.xs.uz updates its ads twice a week.

Fellow feeling, correct solution of various situations, foresight of work results and related correct opinion, work on themselves, keep an eye on the news. and pedagogical skills. Knowledge gained by the student from his/her teacher during lectures, seminars will be the main source of intellectual and moral development outside the classroom.

The points to improve pedagogical technology may be as follows:
• Achieve social and psychological, organizational, intellectual and cognitive, specially-professional preparedness ;
• Expand professional knowledge with modern science;
• Ensure respect through professional development;
• Implement properly professional challenges (considering importance, degree) through the development of skills;
•Coping strategy;
•Professional self-test;
•Study of corrective tasks designation techniques, etc.
How can this be understood?
– Is the official distributor of the Minsk automobile factory of the Republic of Belarus qualification of specialists on labor market;
– ensuring quality-defining professional skills and continuous, integral gradual development of issues;
– formation of such qualities like diligence, interest, discipline, initiative, creative thinking and managerial abilities;
– students' awareness of their role and place in society, gaining experience, knowledge and activities required to master, set goals, plan activity, analyze, independently work using information tools and technologies, arrange and conduct various moral and education events;
– self-improvement in moral, motivational, mental and practical development, shaping strong-willed and emotional skills;
– character building of future fullfledged specialists, that is, young people, who professionally gained such qualities sociality, international friendship, humanity.

Often it places ads on cars, telephones, and service providers. It is desirable to list a number of achievements and shortcomings in the promotion of the website. Achievements:
Advertisements are clearly visible in large quantities; Broadcast ad-supported ads; Shirts are selected correctly; Disadvantages:
Design is very simple; Apply colors that are less intense (blue, black, green); Edit ad text (request invalid words) Just use the banner type of the ad; as an example. Advertising also plays a key role in ensuring that the web site is financially viable. Www.ut.uz, a web-site of Uzbekistan Today, is one of the leading publications in Uzbekistan. He specializes in the preparation of analytical materials on the economic, social and political life of the country, on the implementation of reforms in Uzbekistan in news, health, culture and sports and in various spheres. The purpose of the webcast is to provide objective and impartial information about the development of our country and international patients, symptoms of a men's.
Summary. Paying attention to the language of advertising will promote the

inviting from the warehouse in Tashkent? Even if we change it in different ways, the meaning remains incomprehensible. First, it is difficult to understand the user. Secondly, the language of advertising is unprofessional. Such ads should be monitored before placing on the site. It also affects the reputation of the site. In online advertising you should focus on the following: High literacy; Rapid Conversion; Comprehensive approach to text; Take the time; The most important thing is to be aware of modern technologies. Please be aware that the xs.uz Web site will be featured at the end of the newsletter. Web-publishing is not a part of the publications that are of great importance. This can be achieved through the use of the site. For example, when a visitor visits the site, the site's daily content is monitored by banner ads. The site primarily focuses on advertising its materials. Basically, the web site contains advertisements Advertising is basically a banner. It is difficult to say that we can say that cultural and pedagogic and fsixset systems. very simple and simple way to advertise.

• Consistency and uniformity of pedagogical requirements in all higher education institutions, in all courses and academic groups;

• Consideration of individual and professional benefits and interests of the individual in this process;

• Creation of conditions enabling creative abilities of the trainees, as well as their development, involvement in activities of diverse social importance based on their interests and opportunities;

• Strict compliance with integrity and continuity of any form, type, vision of educational work while considering age and individual characteristics of students;

• Crime prevention, assistance to young people who are socially in dangerous situations, including evacuation from this environment and conditions;

• Support for youth associations, societies, promotion of the brand at a brand-new level. During the online advertising process, you need to pay attention to the queries. It is important to avoid the spread of all kinds of immoral ads coming from the West and today, which is also happening on our national sites. Traditional web site ads should take into account audience accessibility, specific language and technical capabilities.

Online advertising has a strong interactivity and can be viewed through forums on a particular subject matter. Online advertising should also consider mentality issues. It is necessary to use the pictures of national spirit in the most effect.

The main objectives for education of students in higher institutions are as follows:

• Ensure high quality and effective education;

• Compliance of objectives and goals with concepts, forms and methods of a world. A new education; for the newspaper. It is a movements operating within higher education institutions and their further development.

Personal example and authority of a teacher, traditions and values of an academic association, the humanity of a higher educational institution can serve as a means of spiritual and moral education. Since a person developed spiritually and morally can have a positive impact on education, only a trained specialist can cultivate a student with the pride in chosen profession, as well as demonstrate own professional and creative skills. Summing up, we can say that cultural and pedagogic upbringing within higher education shall start with the quality of academic teaching staff, compliance of academic teaching staff with legal, ethical and moral criteria, code of conduct, absolute compliance with professional and science-based ethics. Teacher's pedagogic mission is reflected in his behavior and etc. activities, appearance, intonation, attitude and Future.

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FIRE PROOF MONOLITHIC FLOORING – ADVANTAGES AND DISADVANTAGES

Abstract: *In present study the effect of construction materials necessary for building it can be acquired without problems – steel bars and concrete can be bought easily, while planks can be later used to build the roof. Furthermore, monolithic flooring can be built in a variety shapes, also including atypical, round or polygonal shapes. It determines the amount of stress the material can take.*

Key words: *floor, monolithic, excellent, poultry, material.*

Despite the presence of many modern and interesting construction solutions on the market, traditional monolithic flooring still has numerous followers. This is caused by a few different reasons. First and foremost, when building monolithic flooring, there is no need to use heavy equipment. Besides, construction materials necessary for building it can be acquired without problems – steel bars and concrete can be bought easily, while planks can be later used to build the roof. Furthermore, monolithic flooring can be built in a variety shapes, also including atypical, round or polygonal shapes. That and it is not too thick (from a few to a dozen or so centimetres) and is characterised by good acoustic and thermal insulation characteristics. If it is built according to the best construction practices, reinforced concrete flooring forms a smooth and even surface on both sides, that is the floor and the ceiling.

Unfortunately, they also have some disadvantages. First and foremost, they are relatively heavy and building them is labour-intensive, since they require full formwork and complicated reinforcement, constructed by a professional. Furthermore, there should be no stoppages during the works – after setting up the formwork and reinforcement, concrete should be poured immediately, of course while remembering to vibrate and cure excellent professionals should be employed during the mentioned works.

Constructors and designers all over the world rely on concrete as a strong material that provides safety and is easy to handle. It can be found in almost all building types – residential, commercial, multi-floor and even in municipal infrastructure – roads, bridges and many more. Despite its wide range of use, many of its users still do not know about the matters directly connected to ensuring the endurance and high quality of concrete. The term "concrete strength class" means the endurance of concrete against compression, no more, no less. It determines the amount of stress the material can take. Concrete strength is determined by measuring the crushing strength of cubes or a cylindrical sample made from a pre-prepared mixture. After the measuring and strength determining, concrete is assigned a strength class. The European Standard PN-EN 206: 2014 clearly defines the designation of the concrete strength class. It is marked with the letter C and two numbers – e.g. C 16/20. What does this term mean exactly? The letter C is an abbreviation for the expression *compressive strength*, i.e. the previously mentioned endurance against compression of the material. The first number tells us about the strength marked on the cylinders, while the second number is the endurance test performed on cubic samples.

water-binder indicator has a significant influence on the strength of the concrete. This means that the more binder and the less water is in the mix, the higher the class of the concrete. However, this is not without consequence – increasing the amount of cement in the mix results in a negative effect on rheological properties, causing excessive stress. The result may be cracks appearing in the structure. Of course, there is a way to limit them, such as anti-contraction reinforcements or appropriate chemical admixtures.

The wide use of concrete, which was then prepared from cement and volcanic ash, was already discovered as far back as the Antique. Called "artificial stone", it has high compressive strength, but very little resistance against stretching. For this reason, for many centuries, compressed elements, i.e. walls and columns, were made of this material. However, almost 200 years ago, the idea to use metal bars in constructions to strengthen bent elements appeared – that was when a real revolution was put in motion. From that moment on, the structural elements can be additionally reinforced with rods and steel security nets. At this point, the objective of the steel is to take over the stretching stress, while the concrete only works on the selected base.

Concrete is a non-flammable material and cannot catch fire by itself. Of course, its surface can burn, e.g. when it is covered with a flammable material – fuel, varnish or plastic, etc. Nevertheless, concrete alone is not combustible in the same manner as, among others, wood. This does not mean, however, that it is completely resistant to the effects of fire. True, a concrete wall provides excellent protection against flames, but, unfortunately, it can also get pretty hot. The less free space filled with air there is in such concrete, the better it transfers heat, which means that it heats up faster concrete This is why autoclaved aerated concrete is so popular. Due to the presence of empty space inside of it, it has good thermal insulation properties and, at the same time, heats up much slower than traditional solid reinforced. Furthermore, let us not forget about the issue of fire resistance. Concrete does not burn, but high temperatures will surely have a negative impact on its structural properties, in particular in its surface zones.

This is caused by the presence of traditional aggregate, which increases its volume significantly in temperatures exceeding 500°S. Because of that basalt, pumice or diabase aggregates are, for example, used to manufacture fireproof and heatproof concrete, since they withstand high temperatures much better. Furthermore, special ceramic reinforcements are placed in the concrete, which increase its durability in high temperatures (exceeding, e.g., 1000°C.)

To preserve and protect existing historic buildings from the effects of father time, the best solution is to use GRC concrete. The application of this type of concrete in the renovation of monuments is a common practice among conservators. Due to the favourable material properties: high resistance, durability, flexibility among others, GRC concrete is becoming more and more popular in architecture and reconstructive procedures. Materials used in the renovation of fire.

By adding glass fibre to the basic concrete mix, the material produced becomes much lighter and more resistant to stretching. It still has the features of ordinary concrete, however, improved by an additional layer of material that increases its plasticity and flexibility. This feature enables the use of GRC concrete e.g. in the renovation of monuments, in the creation and reconstruction of various details and architectural elements, decorations and ornaments.The production of GRC concrete consists of mixing cement, water, small aggregates, pieces of fiberglass and other additives until it becomes a liquid concrete mixture, which will then be printed on the prepared form. High tensile strength and compression makes GRC concrete reliable for the production of thin but strong building elements, such as: panels, facades, claddings, ceilings, domes or decorative columns.

GRC concrete is strong in both the compressive and the tensile aspect.

It is more flexible and plastic, which makes it possible to model any shape consistent with the maintenance plan:

1. 2.It is much lighter than ordinary concrete, so you can use it to create thin walls, panels and ornaments
2. It is resistant to both fire and weather conditions – this advantage is one of the most important in the case of renovation of old and historic buildings.
3. Easy to manufacture – just add glass fibre to the basic mix.
4. Waterproof – resistance to moisture extends the life of each mortar.
5. A smooth surface can easily be obtained by using GRC concrete.
6. GRC concrete gives the possibility of easily forming any shape, according to the customer's wishes and the requirements of the conservator.
7. This type of concrete is easy to care for.
8. In terms of finish, GRC concrete can be painted in any colour or left in its original form as exposed material.

For several decades, concrete has been the favourite building and architectural material almost all over the world. However, despite its durability and resistance to weather conditions, damage can occur in it, caused by the human factor, unfortunately. Graffiti can effectively spoil not only ruin your day, but also an unprotected facade, penetrating deeply into the material structure. However, there are ways to protect yourself from vandals and save time for.

Among building enthusiasts, it is said that the facade is the face of the building. It has an undeniable influence on the appearance and reception of urban architecture – building facades are variable and individual, just like human faces. To maintain their value and aesthetic look, they must be under the best possible care and treated with an individual approach. What if someone decides to destroy the facade, covering it with colourful, but unsightly inscriptions? There is no sure-fire way to prevent such actions, but you can use solutions that will protect the surface from damage and allow you to effectively wash the graffiti off. Concrete preparations that form a protective anti-graffiti coating are there for the rescue. The effect of the protective agents is that the paint contained in the spray does not penetrate into the structure of the material to be protected, but instead bonds itself to the layer of protection.

Protective coatings for concrete surfaces are almost invisible to the naked eye. Two basic categories can be distinguished:

- sacrificial coatings;
- permanent coatings.

Sacrificial coatings are applied to the concrete surface and then washed away when removing graffiti from the wall. Their task is one-time protection, the coating gives up its role along with being washed off. To remove paint from such a protected substrate, use a high-pressure washer and water of appropriately high temperature. After cleaning the facade, the anti-graffiti coating loses its properties, so it should be applied again.

Permanent coatings completely prevent adhesion of graffiti to the concrete surface. They are substantially more expensive than sacrificial coatings, but if properly applied, they will serve and protect the surface for many years. Their task is to create a protective surface, which after vandalizing should be cleaned only with solvent. Thanks to it, the concrete does not absorb the colour contained in the paint and remains intact.

Fibreglass reinforced GRC concrete is a universal material which is used, among others, in ducts and troughs for electric cables. Such casing constructions are often created in places with unfavourable external conditions, where the cables are exposed to destruction. For this reason, it is necessary to use a material with high resistance to adverse weather conditions, as well as non-combustible material, in case of failure of the cable contained inside. Fibreglass reinforced concrete has first of all very good strength parameters. It is often used in the field, as it is not adversely affected even by the worst weather conditions. In addition, this composite is distinguished by its fire resistance. Another feature, which is a special, advantage when creating shields for electric

cables, is the lightness of the GRC concrete which allows for its quick transport. This variant is lighter in weight than the traditional composite and can therefore be used almost anywhere, in any environment and under any circumstances.

GRC concrete turns out to be an excellent option in situations where unconventional solutions are needed. It can be shaped in any form, which is useful in construction projects carried out in difficult areas. In such cases, the ease of transport and assembly of the construction material is particularly important. Due to its relatively low weight and free forming, GRC concrete is ideal for this type of installation.

Of course, casing structures can be laid not only to protect electrical cables, but also in places where pipes transporting gas, water or any other substance may be damaged. It is not worth saving costs on the construction of appropriate shields, because possible failures of cables contained in them often cause high losses and difficulties for large groups of the population, and the repair works entail considerable costs.

The question of the ecology of concrete, raised more and more often within the construction industry, is much more complex than it would appear at first glance. First, we should remember that cement production causes CO2 emissions. Saying nothing of the disputes between the supporters and opponents of the thesis that climate warming is attributable first and foremost to humanity's actions, it is, regardless, a fact that the emission of CO2 to the atmosphere is not a very ecological activity. Due to this, the cement burning technology is undergoing constant modifications with regard to decreased emissions of noxious gasses. Some manufacturers take pride in having implemented more ecological methods that actually decrease the emissions of carbon dioxide during cement production. This way, CO_2 emissions can be decreased by over 30 percent. Neither should we forget that hardening concrete absorbs carbon dioxide, thus the ecological costs of its production should be reduced by the amount of absorbed gas. Furthermore, there is more advanced ecological material that could partially replace cement in concrete mixtures and thus decrease its production. Ashes created by burning the by-products obtained when burning biofuels are currently undergoing testing. Time will tell if they are a suitable replacement, but the prospects look quite good.

The use of admixtures and additives remains a controversial issue. It is presently difficult to imagine a situation where the construction industry stops enriching concrete mixtures with plasticizers, air entraining admixtures or distributed reinforcement completely. Even ordinary composite, used e.g. for constructing foundations, should simply be properly enriched. Special concretes, used in the industry or for the construction of dams, bridges, etc., downright have to contain proper additives. The life of concrete and its resistance to destructive factors hinges on them.

If it ever turns out that there exist natural and ecological substances that harden concrete perfectly against, e.g., the effects of acids or damage caused by vibrations or the cavitation effect, then they will surely be taken into account when planning the composition of concrete. Until that happens, we are forced to stay with the technology currently in use. Of course, it is important to remember that additives and admixtures that end up in concrete are thoroughly examined with regard to possible harmful effects on health. You have no reason to be concerned in that respect.

There are a few types of paint for concrete. The most popular of them are epoxy, acrylic, silicone acrylic and urethane-alkyd paints.

Epoxy paints are water-based preparations consisting of two different components mixed together about 30 minutes before starting to pain. Aside of fresh concrete, other types of surfaces should be primed before applying consecutive paint layers – two are usually enough. Furthermore, a few days are usually required for the applied layer to reach the best protective characteristics. They are pretty economical preparations (up to 0.2 l/m^2 of surface), relatively resistant to abrasion.

Acrylic paints are produced from acrylic resins. Their coat can be matte, glossy or satin. They are just as efficient epoxy paints, but a

floor painted with them can be already used after 2 days. They should not be applied on old, unremoved epoxy or polyurethane coatings. The next type of paint, i.e. silicone-acrylic paints, differ in few ways from acrylic paints. First and foremost, a surface painted with them is ready for use as quick as a few hours after applying the last layer. Furthermore, they are composed, as the name itself suggests, of two types of components – a silicone resin and an acrylic copolymer. Unfortunately, they are relatively susceptible to abrasion. Furthermore, they are available in a very limited range of colours and cannot be used on surfaces painted beforehand with an unremoved polymer coating.

The last of the discussed types of paint, i.e. urethane-alkyd paints, are probably the most optimal choice for residential interiors. They are more economical than the paints mentioned above (up to 0.15 l/m^2) and floors painted with them can be already used a dozen or so hours after their application. They are also very resistant to abrasion and offer a pretty wide range of colours. They are thinned with white spirit, but have a mild smell.

You should remember that each of the paints listed above fulfils its role only if they are applied according to the manufacturer recommendations. This means that paints have to be properly thinned and applied in a specific manner. The quality of the base surface is key in this case, not only it has to be dry, clean and degreased, but, most importantly, primed well. External conditions are important as well, since too high or too low application temperature will surely lower the durability of the layer being applied. Architectural concrete on the floor makes a dramatic impact. It perfectly emphasizes the style of interiors in modern and minimalist style, but is also an ideal way to finish the floor in the loft. Proves a good solution in public places. The floor of the architectural concrete allows to enlarge the room optically and makes a good finishing effect for furniture and accessories. Besides its aesthetic qualities, architectural concrete also has functional advantages – it is very durable and resistant to damage. More importantly, the process of intended to find an. concrete floors producing architectural is environmentally friendly – such a solution.

How do you care for architectural concreto floors? Contrary to appearances this is not very difficult – following some rules will make the stylish floor preserve its attractive look and ensure its functioning for a long time.

The concrete floor will be easier to keep in good condition and care if properly impregnated. In this way we reduce evaporation of water and also obtain a nice gloss of the floor surface. Suitable for this purpose may be, for example, an acrylic resin based solution or a fluoropolymer or hybrid impregnate. To keep the floor in perfect condition for long stretches of time, make sure you clean it even in areas that are not usually exposed, e.g. under the furniture. The floor made of architectural concrete is resistant to abrasion, so we may vacuum and sweep it without any reservations.

For daily care of concrete floors we may use the mop, as it copes well with moisture. We may add special concrete curing compound to water. In the case of concrete floors laid for example on the terrace, where impurities may be more difficult to remove, use a medium hard brush and a mild pH detergent. The wet concrete floor can be dried or left to dry.

Formwork, also known as planking, called informally as board or clapboards is used to give the right shape of a concrete mix. It is a form made of wood, metal or other plastics (for example the plywood), which is used in the construction of concrete or reinforced concrete structures, less often in the production of concrete prefabricates. Formwork can be individual – used once in case of atypical forms or inventoried, that is, used for reusable. The planking can also be moveable – this means that it needs to be dismantled, as well as sliding or slideable – such structures are not required to be dismantled. Formwork is used, for example, for walls and roofs that have a skeleton form, as well as for the construction of structures made of concrete or reinforced concrete.

Does architectural concrete, which has other properties than the plain concrete, require formwork preparation? Take a closer look at this problem.

Architectural concrete needs formwork similarly to the common concrete. This is one of the factors, besides the type and composition of the mix, the concreting technology and further surface care that affects the quality of the finished product. However, in this case, the solution has to be tailored to its specificity. Functional architectural concrete formwork should be flexible and characterized by high quality. This should of course be fitted with properly aligned main frame profiles and locks of an adequate strength. Such formwork must also stand out in stiffness and should be resistant to deformation will undoubtedly be appreciated by environmentalists research underway.

A useful solution would be to provide visual inspection of the concrete structure condition. Also the precision in preparation and execution of the formwork is very important. It is important to know that taking into account the requirements for architectural concrete formwork, it is possible to use an easily accessible, traditional planking. However, the individual elements of the structure must be properly assembled.

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Retaining walls are independent structures in the form or walls or elongated parietal pillars with a straight, step or chamfered inner side. They are made of concrete or reinforced concrete and also from concrete blocks, bricks, stones, hollow blocks or gabions. They are structural components that transfer the load of the secured structure to the ground. The simplest retaining walls have the form of a wall driven to the proper depth directly into the ground. However, this is not a very efficient solution, since the pressure of, e.g., soil in the embankment, may be much too high for such a structure. A much better solution is to use a retaining wall with a sloped outer wall or equipped in a special perpendicular base fixed to the ground. Such a structure transfers loads much more efficiently.

Retaining walls are used primarily in transport and road construction, where they are a very important component of embankments and also ramps, viaducts or subways. Furthermore, they are used to stabilise faults in the ground or the subsoil – e.g. for bridge construction. We should also remember about other uses for this type of structures. They are used to secure dykes and regulate river beds, and also to

reinforce military fortifications or walls in churches. They are also used at ramps to underground car parks or in warehouses and to create storage bunkers. Furthermore, retaining walls are finding more and more use in landscape development, e.g. in gardens, where they fulfil the role of protection for artificial elevations. Concrete slabs that will be used to cover façades need to meet a few criteria. First and foremost, they have to be lightweight. The reason is obvious – the lighter the slabs, the easier they are to fasten. Even the strongest anchors or glues may turn out to be insufficient in the case of heavy concrete, particularly in a situation where we are dealing with violent weather phenomena – cloudbursts or strong winds. We should also rememver about the low absorptivity of concrete slabs, since water not only increases the weight of the cladding, but also freezes in low temperatures, which may damage the façade.

Furthermore, a façade concrete slab has to be resistant to mechanical damage. The ability to easily remove soiling, e.g. mud of organic tarnish, is an additional asset. We should also remember about frost resistance and good fire resistance, and also resistance to natural UV radiation, which may cause discoloration. Aesthetic matters are important as well – concrete slabs have to look perfectly and be easy in treatment. All the above criteria are met by façade slabs made of GRC concrete that you can order at GRC Beton. Our products are tough, durable and have all the necessary certifications and attestations. Furthermore, they come in various shapes, dimensions and textures, tailored to your liking. If you decide to take advantage of our offer, then your façade will maintain its original appearance for a very long time. The most important function of architectural concrete is the aesthetical function – such a composite should in the first place assure a good appearance. This reasoning leads to the necessity of formulating a mix of sufficiently high quality to assure that ready panels are as resistant as possible to external factors or the passage of time. A frost-resistant concrete is a composite resistant not only to low temperatures, but also to water freezing in low temperatures. There are capillaries in each mortar, in which water accumulates.

Thanks to high execution quality the concrete casing maintains it appearance over quite a long time, is not likely to crush or become cracked. This is of particular importance for example in the context of elevation panels, which are generally exposed to the impact of adverse weather conditions or UV radiation.

Desired features of a concrete mix may be achieved in a few ways. As regards architectural concrete, in most cases special admixtures are applied, which help the composite acquire properties that are of interest. Interestingly, generally admixtures are generally associated with dyes that assure colour to the composite, yet the role of admixtures goes far beyond clearly aesthetical features of concrete. What is more, specialists consider dyes, dispersed reinforcing or various types of fibres (of steel, carbon, plastic, or even optical fibres) to be additives, and not admixtures. For this reason the most popularly used admixtures in the production of architectural concrete are plasticisers. Those are substances that allow the production of composite with the use of a smaller amount of water which assures new properties to the concrete mix. In the first place thanks to plasticisers and superplasticisers the risk of formation of shrinkage cracks in setting concrete decreases, and consequently, its surface is not marred by cracks. In addition such a composite tends to dry quicker, becomes more durable, and it is also more workable, e.g. by modelling its surface to obtain the required textures and patterns. Also aeration admixtures are added to concrete, which enhance its resistance to weather conditions, especially to frost. In some cases admixtures that hasten or retard setting are also applied. Their presence depends, however, on external circumstances, such as for example long transport time of a concrete mix or the necessity of quick placing of architectural concrete.

Low temperature makes the water freezes, thereby increasing its volume and bursting capillaries and, consequently, the concrete. Mixing frost-resistant concrete is primarily associated with two activities. The first one is

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to create a composite with a low water-cement ratio. While the second is adding thereto a special aeration admixture. It causes the formation of additional air bubbles in a concrete's structure, not aggregating with each other, that brake the capillary. Lack of capillaries is equal to much smaller amount of water in the composite, and this water, which has got into the concrete already, may be pushed into the empty bubbles during freezing process. These bubbles are very small, with diameter less than 0.5 mm, and they are fairly evenly distributed. Unfortunately, preparation of frost-resistant concrete may cause some troubles for inexperienced persons. Well, the amount of aeration admixture to be added to the concrete, is based on several criteria. These are mainly the type of cement, water-cement ratio, temperature of the concrete, type of aggregate and other mineral additives. For this reason, preparation of frost-resistant concrete should be preceded by carefully reading the instructions of the manufacturer of cement and admixture itself, or outsource the work to a specialist or construction company. What is concrete composed of? Cement, sand, water and all kinds of additives are used in this construction material. In addition, the reinforced concrete contains suitable reinforcements. It should not be surprising that the properties of water used during concrete production are of utmost importance as regards the features of the finished product.

Good water quality allows for the proper consistency of concrete or mortar, and it also allows for the binding process. Of course, it can not contain any physical or chemical impurities.

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Such conditions are met e.g. by supply water, which makes it quite suitable for use in construction. There are adequate standards for each source of make-up water (e.g. surface water or reclaimed from concrete production processes). Any deviation from the provisions of the Polish Standard PN-EN 1008: 2004 (except points 3.4 to 3.6), which relates to make-up water, may cause negative changes related to the bonding process, the reduction of the bonded mixture strength and, consequently, harmful external conditions.

Keep in mind that even a small amount of water pollution from chemicals can result in salt precipitation and mechanical damage to the solidified composite. These defects are caused by the local growth of salt crystals, which significantly increase their volume, thereby causing the pore and capillaries to break in the concrete.

Interestingly, in some cases even seawater can be used for the production of concrete – for example, when there is no reinforcement in the composite. Nevertheless, the less chemical compounds and foreign substances in the make-up water, the better. Therefore, in general, it should not show yellow color, produce no odors – particularly decay. The presence of suspensions, sugars, salts or acids is also undesirable, as is the presence of washing agents, detergents, municipal waste or microorganisms.

It is believed that in most cases supply water is the optimum choice for concrete production.

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Fire retardant nanocoating for wood protection

Abstract*: In article the disadvantages of intumescent coatings include their instability when exposed to external factors, which leads to a short exploitation period—up to 10 years. In addition, intumescent type coatings often contain halogen flame retardant agents, which form toxic thermolysis products during fire.*

Key words*: fire, fire-retardants, flammability, smoke and toxic gases, fillers, rheological additives.*

The ideal fire retardant coatings for wood should show minimal spread of flame, little to no release of smoke and toxic gases, be easily applied, demonstrate good wear resistance, adhere to substrates, and provide low cost of production and application. It is this set of properties that should be given to the known IFR systems by nanosized additives.

As follows from recent studies, this can be achieved by the use of nanostructured flame retardants boron nanocompounds nanooxides, nanoclays, and others, in intumescent type coatings.

Since phosphorous fire retardants correspond to a wide range of chemical structures and not only inorganic phosphates incorporated as additives in polymers, combinations of nanoclays and organic phosphates, phosphinates, phosphonates, and red phosphorus were reported [1]. Some of these compounds are present as chemical groups in grafted polymers or copolymers, which can also act for some of them as reactive fire retardants.

Various research work, mainly carried out in Asia, mentioning the combination of oMMT and red phosphorus [2], have studied ternary combinations of oMMT with magnesium hydroxide (MH) and red phosphorus in PA6. It is well known that MH acts mainly as a fire retardant by its endothermal decomposition and water vapor release, which occurs over the decomposition range of the polymer. A partial substitution of 2 wt% MH by oMMT (mixed intercalated and exfoliated) in the ternary blend allowed significant improvement of fire performance, observed using cone calorimeter and LOI test, to be achieved. The water vapor released makes the cross-linking and charring of PA6 easier. Moreover, red phosphorus can form polyphosphoric acid derivatives, which can react with the decomposition products of the other components and lead to a stable glassy and charred protective layer.

The combinations of oMMT with aromatic phosphates such as triphenyl phosphate (TPP) and resorcinol bis(diphenylphosphate) (RDP) were investigated by [3] in PS and unsaturated vinyl ester resins. Aromatic phosphates did not influence the nanostructure created by the nanoclays. Synergistic effects on the ability to autoextinguish (UL 94 V0) were achieved in PS for phosphate loadings of 30 wt%. For vinylester resins, synergistic effects were found for HRR values with a superior effect on char formation. Table 1 shows the improvement of fire reaction achieved using the combination of oMMT and RDP: the peak of HRR is decreased and occurs over a longer time; nevertheless, total heat release (THR) does not change in comparison with RDP alone. Strategies based on reactive fire retardants associated with clays were proposed by various authors. Organophosphorus epoxy resins were synthesized by [3] through the reaction of 9,10-dihydro-9-oxa-10-phosphaphenanthrene-10-oxide with diethylene glycol ethyl ether acrylate (DGEBA) resin. Addition of 5–7.5 wt% of a MMT was added to investigate possible synergies. Cone calorimeter tests showed that the presence of 3 wt% phosphorus or 7.5 wt%

clay could improve pHRR values and THR for poly(diethylene glycol ethyl ether acrylate) (P-DGEBA), but no evidence for complementary effects for combinations was found (Table 2). investigated the flame-retardant effect of newly synthesized phosphorus-containing reactive amine, which can be used both as a cross-linking agent in epoxy resin and as a flame retardant. The effect of combining the organophosphorous amine with oMMT or sepiolite was also studied.A combination of this amine with 1 wt% oMMT entailed an increase in LOI from 21% to 36% in comparison with the same percentage of oMMT and reference amine without phosphorus. Similarly, with sepiolite, LOI increased from 21% to 34%. Moreover, a V-0 rating was achieved using organophosphorous amine.

Table 1. Fire Reaction Data for Polyvinyl Ether (PVE) With Organomodified Montmorillonite (oMMT) and Resorcinol Bis(Diphenylphosphate) (RDP) at 35 kW/m^2 Irradiance.

Sample	Time to Ignition (s)	pHRR (kW/m^2)	Time for pHRR (s)	THR (MJ/m^2)
PVE	82	1197	106	80
30% RDP	86	633	49	48
6% oMMT	53	823	83	74
6% oMMT + 30% RDP	81	535	110	47

Table 2. Fire Reaction Data for Epoxy Resin, Poly(Diethylene Glycol Ethyl Ether Acrylate) (P-DGEBA), and/or Organomodified Montmorillonite (oMMT) at 50 kW/m^2 Irradiance

Sample	Time to Ignition (s)	pHRR (kW/m^2)	Time for pHRR (s)	THR (MJ/m^2)
DGEBA	65	1396	155	90
7.5% oMMT	47	857	145	99
3% P in DGEBA	55	702	165	64
7.5% oMMT + 3%P	41	867	140	75

Other routes can consist of intercalating phosphorous compounds between the silicate sheets. This allows the interaction between nanoclay and the phosphorous compound to be enhanced and will also limit the volatility of the phosphorous compound.

Combined oMMT with TPP in acrylonitrile butadiene styrene (ABS) blended with epoxy resin. TPP incorporated in the clay presented a higher evaporation temperature in comparison with TPP incorporated in the ABS matrix, leading to improved thermal stability. The incorporation of epoxy resin at a constant global loading of 15 wt% for all components in ABS allowed a significant improvement in LOI to be achieved. This improvement was ascribed to better compact aspects of charred structure formed after burning.

Phosphonium-modified layered silicate epoxy resin nanocomposites were prepared by Schartel and their combinations with ATH and triphenyl phosphate. Nevertheless, the combination of TPP and phosphonium-modified layered silicate showed antagonistic behavior in most of the fire properties.

A phosphorus-functionalized nanokaolin [with triphenyl phosphite (TPPi)] and a phosphonium-montmorillonite through modified the surface hydroxyl groups of nanoclays were incorporated in poly(ethylene terephthalate)/polycarbonate (PET/PC) blends by [3]. The combination of PET/PC 80:20 (wt:wt) with 4 wt% P-modified oMMT and 5 wt% TPPi led to a decrease of more than 50% of the pHRR in comparison with the pristine blend.

Phosphorus-containing monomers are also of interest to improve flame retardancy in combination with oMMT. Geet synthesized a phosphorus-containing copolymer in which terephthalic acid, ethylene glycol, and 2-carboxyethyl(phenylphosphinic) acid were intercalated into montmorillonite. For a loading of 2 wt% of oMMT, a V-0 rating was achieved. As discussed above fire retardants can be added to the resin to reduce the flammability of the resin. However, many cured resins are already rather brittle in nature due to their high cross-linking density, and further addition of fire retardants often induces degradation of the overall physical and mechanical properties of the resultant composite. An alternative approach is to incorporate fire retardant elements or functional groups, such as phosphorus, halogen, boron and phenol groups into the backbone of the resin. In unsaturated polyester the use of halogenated resin or replacement of curing agent from styrene to bromostyrene is quite common. Presence of phosphorus in the backbone of epoxy resin can enhance its LOI from 22 to 28 vol%.[84] The halogen elements in the epoxy backbone such as chlorine in diglycidyl ether of Bisphenol C (DGEBC), fluorine in diglycidyl ether of Bisphenol F (DGEBF), bromine in tetrabromobisphenol A (TBBA), also enhance the thermal stability of the epoxy resins. For example, the presence of chlorine in DGEBC enhances LOI up to 31 compared to 22 vol% in DGEBA.

Another approach to form inherently fire retarded epoxy resin has been made by reacting diphenyl silanediol with DGEBA, which results in a silicon-containing epoxy resin. The silicon-containing epoxy exhibits higher char formation and an LOI of 35 vol%. Commercial DGEBA can be copolymerised with cresol novolac phenolic resin to achieve high thermal stability and fire retardancy.
The proper choice of curing agents or hardeners for the resin can also enhance thermal stability and fire resistance of the resin. Phenol-formaldehyde and aryl phosphinate anhydride are examples of curing agents that can improve the fire resistance of epoxy resins.

Braun and co-workers have used phosphorus-containing hardeners to produce fire retardant composites. They systematically and comparatively evaluated the pyrolysis of flame-retarded epoxy resins containing phosphine oxide, phosphinate, phosphinate and phosphate (with phosphorus contents of around 2.6 wt%) together with the fire behaviour of their carbon fibre-reinforced composites. With increasing oxidation state of the phosphorus, the amount of thermally stable residue increased while the release of phosphorus-containing volatiles decreased. The flammability of the composites was investigated using LOI and UL 94 tests and the fire behaviour studied with cone calorimetry at different radiant fluxes. The processing and the mechanical performance (delamination resistance, flexural properties and inter-laminar bonding strength) of the fibre-reinforced composites containing phosphorus were maintained at high levels and, in some cases, even improved. Here, the potential for optimising composite flame retardancy while maintaining or even improving the mechanical properties is high lighted.

The inclusion of the organophosphorus functionality within the polymeric resin structure can enhance its fire retardancy. Toldy and co-workers[89] incorporated aromatic organophosphorus compounds into the epoxy resin and also studied the effect of combining them with nanoparticles. By using a fully phosphorylated calixresorcinarene derivative, they significantly increased the limiting oxygen index (LOI) from 21 to 28 vol% and

achieved a V-0 UL 94 rating. Espinosa and co-workers modified novolac resins with benzoxazine rings and then cured them with isobutyl bis(glycidylpropylether) phosphine oxide (IHPOGly) as a cross-linking agent and could achieve V-0 rating with the UL 94 test. Previously the same authors had studied the synthesis and polymerisationof a novel glycidyl phosphinate, 10-(9,10-dihydro-9-oxa-10-phosphaphenanthrene-10-oxide)-2,3-epoxypropyl (DOPO-Gly). Both of these materials were found to have high glass transition temperaturesand retarded thermal degradation rates with excellent fire retardancy properties. In addition to the above examples of recent resin modification work, there is considerable literature available in this field and to cover all the references is beyond the scope of this review. However, the reader is referred to a recent short review on phosphorus-containing epoxy monomers and resins with improved fire resistance properties.

Even though halogenated fire retardants are effective, they will be abandoned sooner or later because of the growing environmental and health concerns. The intrinsic flame-resistant polymers, however, are so expensive that it is difficult to extend their applications unless breakthrough technologies appear that dramatically reduce the cost of synthesizing this type of polymer. Other flame retardants, such as intumescent flame retardants, aluminum trihydrate (ATH), and magnesium hydroxide, have their own shortcomings: their expensive price and the high loading requirement in order to pass fire safety tests, which cause problems such as high density, lack of flexibility, low mechanical properties, and difficulty in processing. The coating technology, on the other hand, could potentially eliminate the difficulty of obtaining PMCs with the flame retardants homogenously dispersed in their matrices.

Plenty of research had reported a high-quality and compact carbonaceous protective char layer being formed under fire conditions when the nanocomposites showed excellent flame resistance. The pioneering research done by inspired the authors with a promising idea to achieve fire retardancy. That is: Instead of forming the char layer gradually during the combustion process, why not impose a preexisting char layer directly onto the surface of PMCs?

First, the thermal stability of such a "char" should be high because it will experience the highest temperature, which automatically led the authors to seek carbon-based material. Initially, CNTs were used to fabricate buckypaper. Although it was possible to make a self-standing CNT paper without additional bonding agent or blender (because the bonding agent or blender might decrease the thermal stability of the nanopaper), the as-made buckypaper was extremely brittle, since the short CNTs were hardly entangled with each other. This, unfortunately, resulted in difficulty of further processing. Carbon nanofiber (CNF), on the other hand, does not exhibit such a shortcoming. Since the CNFs can tangle with each other tightly, it is relatively easy to fabricate a CNF paper with high processability. Moreover, the cost of CNF is much lower than that of CNT, yet CNF possesses similar physical properties. As a result, CNF is the ideal choice to form the scaffold for such a preexisting "char layer." Second, it is difficult to achieve flame resistance by coating the pure CNF paper onto the surface of composite materials. In fact, the authors found that when using pure CNF paper alone, the flammability of PMCs was increased instead of decreased. The PHRR of the sample was increased and the time to ignition was shortened. In other words, the sample coated with pure CNF paper ended up not only easily catching fire but also releasing a large amount of heat, which could provide the heat source for the sustainable combustion. In such a case, the CNF paper was not a "fire retardant" but only a "fire catalyst." Therefore, as a second step, it is important to modify CNF nanopaper by incorporating other types of particles so that a synergistic effect between nanofiber and other particles should be revealed.

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SOME EFFECT OF A PHOSPHATE ADDITIVES ON PHYSICAL–CHEMICAL PROPERTIES OF AMMONIUM NITRATE

Abstract: *The composition of nitrogen phosphorus fertilizers is offered obtained by mixing of two components: the melt of ammonium nitrate and Central Kyzyl Kum's phosphorite taken in such a proportion guaranteeing the end product production containing P_2O_5 in a range: 1.05–5.04%. The effect of phosphate additive on the physical-chemical properties and trademarks of ammonium nitrate are studied. It has been shown that the introduction in ammonium nitrate's melt of phosphate additives leads to a significant improvement of ammonium nitrate's quality indicators.*

Key words: *ammonium nitrate, phosphate raw material, nitrogen phosphorus fertilizer.*

Introduction

Ammonium nitrate (AN) is the most widespread fertilizer in the world and the most efficient nitrogen fertilizer containing at least 34.4% of nitrogen [1]. It can be applied at all types of soils and for all plants being a basic and feeding fertilizer for them. Currently the world production of ammonium nitrate exceeds 43 million tons a year. In the Uzbekistan, three Open Joint Stock Companies (OJSK): "MaxamChirchik", "Navoiazot" and "Ferganaazot" did produce more than 1.7 million tons of ammonium nitrate by 2012. However ammonium nitrate is used not only as a fertilizer but as an explosive component [2]. Series of terrorist attacks worldwide including Uzbekistan state were carried out with ammonium nitrate oxidizer leading to necessity of tight security measures at its handling [3]. Thus, in particular, China, Brazil, Colombia, Algeria, and the Philippines began to consider ammonium nitrate as an explosive and banned its use as a fertilizer. The Uzbekistan's State Joint Stock Company "Uzkimyosanoat" annually spends USD 25000 for special guard measures at transportation of each batch from its productive factory to a farmer's field. Therefore, nowadays for the producers of ammonium nitrate it is very important to apply agriculture nitrate-based fertilizers with a less explosive property retaining however high agrochemical efficiency. So we decided to obtain such a stabilized ammonium nitrate by the introduction of phosphorite raw material (PRM) (Central Kyzyl Kum, Uzbekistan) into usual ammonium nitrate's melt.

Experimental

For the experiments the ammonium nitrate produced at Open Join Stock Company "Maxam-Chirchik» (34,6% N) and the PRM (characterized with the following composition, wt%: P_2O_5 (total) — 17.20; CaO — 46.22; Al_2O_3–1.24; Fe_2O_3–1.05; MgO — 1.75; F — 2.00;

CO_2–16.00; P_2O_5 (acceptable): P_2O_5 (total) = 18.49%) have been used Ammonium nitrate was melted in a metal cup on a hot plate. Into the melt the PRM was injected preliminary taken in an amount providing the end product's P_2O_5 content in a range of 1–5%. At 180°C for 30 minutes it was thoroughly mixed. The cooled product was powdered and chemically analyzed. Acceptable form of P_2O_5 and CaO components were determined at test procedure based on application of 2% citric acid. The chemical composition of nitrogen phosphorus fertilizers (NPF) so obtained is shown at the table 1.

For PRM granulation the ammonium nitrate was melted at 180^0C, then the calculated amounts of phosphates salts were introduced into a number of pool, carefully stirred for 30 minutes, poured smoothly into granulator represented with a metal cup with a perforated bottom (diameter of holes 1 mm). Pumped to the top of the cup the melt was sprayed from a height of 30 m down to a plastic film

lying on the ground. After that the strength of granules of 2–3 mm in diameter obtained was determined using the special device MIP-10–1 according to Standard [4] based on measuring the strength (kg) needed for granules destruction. The static strength of granules (kg/granule) was calculated using the formula:

$$X = \frac{P_1 + P_2 + P_3 + ... + P_{20}}{20} \quad (1)$$

Where P P_1, $_2$,P_3,.....P_{20} − efforts crushing granule (kg).

Static strength of granules Y (kgf/cm ^{2}) was calculated using the formula:

$$i_d = 1av2 , \quad (2)$$

where Pi — the force required to break a single granule (kg);

S — cross-sectional area of granules, cm ^{2}; d_{av} — the average diameter of granules, cm.

To present the results of tests in MPa units the value calculated (2) was divided by 10.2. For comparison the strength of pure AN pellets with a diameter of 2–3 mm was measured as well.

Porosity of pellets was determined by the volumetric method [5]. The essence of the porosity of pellets according to this method was as follows. Into a 25 ml burette equipped with a crane a certain amount of cryoscopic benzene was put (V_1). Then 10 g of AN or NPF were put there and after 1–2 min the changes of the burette's volume (V_2) were fixed. Then the crane was opened, the benzene located between the fertilizer's granules was pulled down into the second burette (volume also 25 ml) and its volume was measured (V_3). Porosity Ppor (in percentages) was calculated according to formula (3):

$$Ppor = V\,VV\,V1_2 \_ - \underline{3}3 \times 100 \quad (3)$$

The porous AN used as a component of explosive mixtures possesses this rate acceding 20%. The caking of AN and NPF was determined according to a rapid method [4] based on the following principle. The preform of nitrogen phosphorus fertilizer equal to 100 g was placed into a split cylindrical mold with an inside diameter 50 mm. The die was closed and left under the installed load of 3.1 kg, then it was put into an incubator at 60 ^{0}C for 8 hours. After a specified time the compression loads were removed, the cassette was released and held for 2 hours at room temperature. After its cooling the top panel from the cassette was removed and values.the resulting pellet carefully was removed from the mold. Briquettes were tested to destruction at device MIP-10–1. The caking of samples X (in MPa) was calculated using the formula (4):

$$X = \frac{P}{S} \quad (4)$$

Where P — breaking effort (N), kg;

S — cross-sectional area of the sample, cm $^{2.}$ Bulk density of the fertilizer granules (Ø 2-3 mm) was determined according to State Standard at temperature 25°C [6]. Determination of the dissolution rate of nitrogen phosphorus fertilizer's granules was conducted according to State Standard; the method consisted of visual observation and dissolution time recording for fertilizer pellets (Ø 2-3 mm) lowered into distilled water at 25°C, bathed into a chemical glass of 100 ml volume.

The hygroscopic point of the fertilizer granules (Ø 2-3 mm) has been determined by exsiccator method [7] at 25°C. The determination of increase or decrease of humidity of substance at constant temperature and certain relative humidity of air was carried out for 3 hours. The required relative humidity of air was created in the exsiccator at the certain concentration of sulphuric acid.

Results and discussion

The chemical analysis of the products showed that the melt activates nitrate phosphate raw material, in other words it transforms the indigestible P2O5 into the digestible for the plants state (table 1). If in the source of phosphate raw material the ratio of masses of digestible form to the total P2O5 form was only 18.49%, the products of its interaction with the melt of ammonium nitrate obtained the value of such ratio in the range of 88.29-98.09%. The products contained 25.24-32.25% N, 1.05-5.05% P2O5 and 2.44-9.02% CaO words it let to increase the strength of granules of granules — from 4.26 to 7.8 MPa, in other7–40 g per 100 g of AN increases the strength of ordinary phosphoric flour in an amount of mass of additives in phosphate raw material's mentioned above method are offered. The data aTable 1. strength of granules of pure AN. Increasing the melt AN leads to an increase of their strength's

Table 1 show that the addition into a melt AC NPF over 2.6–5.0 times in compare with the.

The ratio of the AN: PRM	Humidity, %	N,%	P_2	P_2O	CaO	CaOH	Na	P_2O_5	SiO_2
100: 7	0,35	32,25	1,05	1,03	2,70	2,44	0,94	98,09	90,37
100: 13	0,36	30,75	2,01	1,95	5,69	4,79	1,45	97,01	84,18
100: 20	0,42	29,15	3,00	2,87	8,35	6,60	1,52	95,66	79,04
100: 30	0,56	27,10	4,10	3,83	11,01	8,05	1,57	93,41	73,11
100: 40	0,68	25,24	5,04	4,45	13,12	9,02	1,61	88,29	68,75

Various impurities presented in the phosphate raw material (CaO, P_2O_5, Al_2O_3, Fe_2O_3, SiO_2, etc.) do effect on the structural properties of the NPF granules. Introduced into the melt of AN special phosphate additives form the fine inclusions in the structure of crystalline blocks of a fertilizer. Reducing the size of the individual crystals of salt and increasing of their packing density significantly promote the increasing of the fertilizer granules' strength. It leads naturally to an increasing of the bulk density's values — from 0.925 to 1.033 g/cm3 versus the value of the bulk density of pure ammonium nitrate: 0.855 g/cm ^{3} (Fig. 2). Increasing of the bulk density of fertilizer supports a decrease of porosity of the studied samples, and this in turn indicates an increase in the strength of NPF granules.

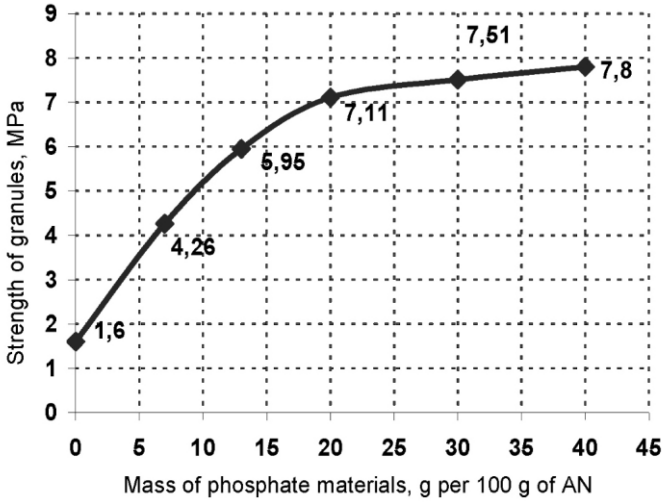

Fig. 1. Effect of phosphate additives on the strength of the ammonium nitrate's granules

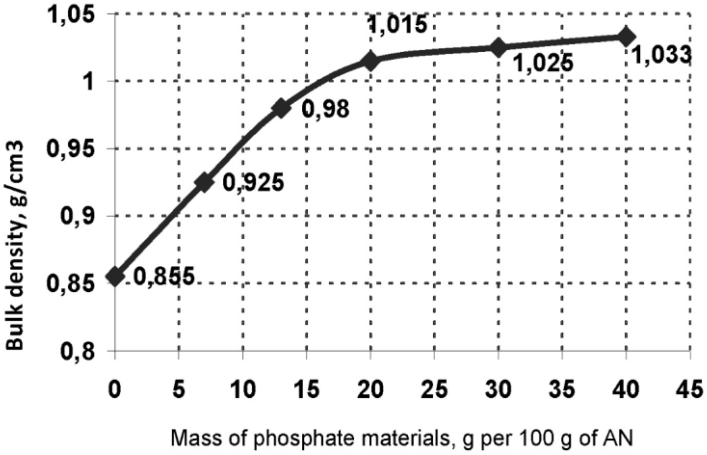

Fig. 2. Effect of phosphate additives on a bulk density of ammonium nitrate

The addition of phosphate raw material into the melt of ammonium nitrate also reduces the porosity and specific surface area of the internal

Despite of that the presence of water indissoluble components of phosphate additive and formation of crystallohydrates prevent from melting of end-

Effect of phosphate additives on physical–chemical properties of ammonium nitrate

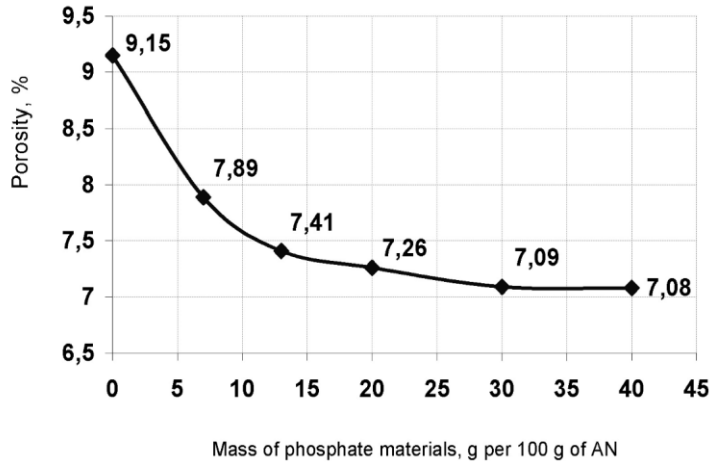

Fig. 3. Effect of phosphate additives on the porosity of the granules of ammonium nitrate

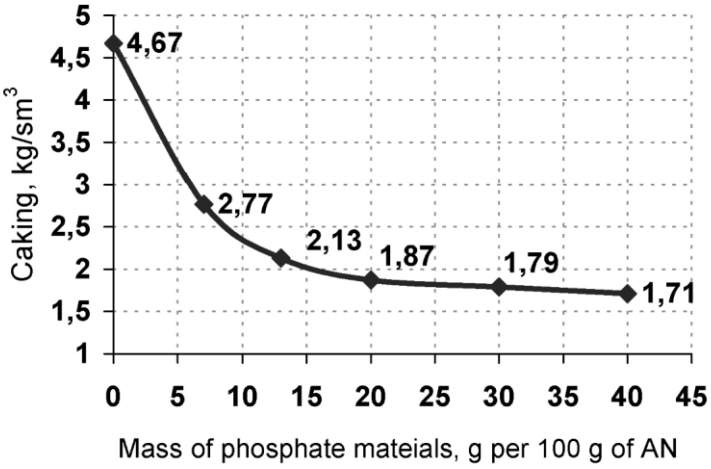

Fig. 4. Effect of phosphate additives on the caking of the ammonium nitrate

NPF granule (Fig. 3). The The data of NPF caking showed the fertilizers' caking values decreasing from 2.77 to 1.7 kg/cm^2, that is 1.6 times according to the increase of phosphate additives mass from 7 to 40 grams. At the optimum mass ratio of the entered phosphate additive and the melt (AN: PRM = 100:40) the NPF caking reduced by 2.7 times compared to the caking of pure ammonium nitrate: 4.67 kg/cm^2. The relative air's humidity at the Uzbekistan is the following: monthly mean minimum — 46%, monthly mean maximum — 74%, mean yearly — 60%. According to Pestov's scale [7] all Uzbekistan's nitrogen-phosphorous fertilizers are hygroscopic. They are more hygroscopic than the parent ammonium nitrate. product and accordingly reduces the negative influence of hygroscopity on agglutination in storage of ammonium nitrate.

Conclusion

Thus, the possibility of obtaining of nitrogen phosphorus fertilizers by phosphate raw materials (Central Kyzyl Kum) introducing into a melt of ammonium nitrate. The chemical composition of fertilizers showed that the phosphate raw material in the molten nitrate is activated, in other words the indigestible P_2O_5 in

We also determined the rate of dissolution of AN and NPF granules (Table 2). The data indicate that the introduction of a phosphate additive into the melt of ammonium nitrate

fertilizer's granules their dissolution rate is reduced in compare with the pure ammonium nitrate. At the increasing of mass portion of phosphate raw material from 7 to 40 % the obtained NPF granules' samples demonstrate the increasing of dissolution period for them from 66.4 to 100.8 seconds in compare with granules made of pure nitrate: 46.8 sec, thus it increases by 2.2 times. Reducing of the NPF granules

dissolution rate, from our pint of view, occurs as a result of granules strength's increasing: the more is strength of granules, the slowly is the dissolution of fertilizer's granules.

The delayed solubility of NPF granules to a certain degree has a positive effect on the absorption of the fertilizer's nutrients by plants through their root system, in the other words the granules containing phosphates will gradually give nutrients, resulting in significantly increase of their efficiency.

Hygroscopity and the dissolution rate of granules) of the ammonium nitrate.

This method is the basic for new fertilizers producing at OJSC "Navoiazot". The granulated nitrogen phosphorous fertilizer possesses an excellent physical, chemical and production characteristics. It does not deteriorate and corresponds to TSh 6.1–00203849–111:2007 State Standard. From the beginning of 2009 more than 200000 tons of nitrogen phosphorus fertilizers have been produced casting USD 37.5 millions and sent to consumers.

the raw material transforms into digestible state suitable for plants. This allows turning phosphate raw materials into an effective phosphorus fertilizer without using the scarce acid reagent.

Introduction of phosphate raw materials of Central Kyzyl Kum into a melt of ammonium nitrate leads to significant quality improvements (strength, bulk density, porosity, caking, The hygroscopic points' values of fertilizer samples were the following: for AN — 62.0%, AN: PRM = 100:7–54.5%, AN: PRM = 100:20–54,0% and for AN: PRM = 100:30 and AN: PRM = 100:40–53,5%.

Table 2. – The rate of NPF beads dissolution in water

Mass ratio AN: PRM	N, %	P2 O5, %	Time of granules dissolving, sec					
			1	2	3	4	5	Average value
100:0,0	34,6	–	51	51	42	47	43	46,8
100:7,0	32,25	1,05	68	58	71	66	69	66,4
100:13,0	30,75	2,01	80	64	79	78	76	75,4
100:20,0	29,15	3,00	82	89	75	81	88	83,0
100:30,0	27,10	4,10	96	94	81	92	93	91,2
100:40,0	25,24	5,04	104	104	106	94	96	100,8

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USING OF WASTE OF A CHEMICAL PLANTS FOR SOLVING ENVIRONMENTAL PROTECTION

Abstract: *In the work for fixing salted sand the dried bottom of the Aral Sea and treating industrial process wastewater used waste Chemical Plants of a Republic Uzbekistan— distilled liquid contained in the composition of 11–12% of calcium chloride. At using this waste as a part of the fixing agent in the process of fixing the salted sand established creation surface crust that has a sufficiently high magnitude strength of the order 2,4–3,02MPa and content of water-stable aggregates in the structure equal to 6.28% vs. 69,91–77,2% of the original sand, in addition using of this waste show that at the purification of industrial waste water of the textile industry water is purified from dyes to 94–98%.*

Keywords: *saline sands, waste water, waste, reagent, concentration, precipitate, hydrous of calcium, calcium chloride, Kokand chemical Plant.*

Relevance

The environmental situation in the Republic of Uzbekistan strongly put a question about carried out works intended on fastening salted sands of the dried bottom of the Aral Sea with cheap, non-toxic and available reagents-fixers as well as increasing the degree of sewage treatment of various production of republic by import-substituting local adsorbents and reagents [1; 2]. Earlier, we in [3; 4], proposed particular types of reagents in order to create artificial structures tested by cheap industrial wasts and polymers. Fixing sand of coast of the Aral Sea region Kazakhdarya using complex addition of reagents and industrial wasts will contribute to the establishment of a small thicknesses of sand durable waterproof structure. The most difficult problem in terms of technology and also includes cleaning colored textile industry waste water, due to the huge volume of this water and a wide, ever- changing range of used dyes. It should be noted that so far no highly effective treatment methods colored wastewater of textile industries. It is known that the chemical industry, in particular, Kokand chemical Plant, has a number of wastes used as secondary raw materials in the different branches of national economy. Such wastes have been used by us as a component of the reagent process purification dyed wastewater of textile industry [2]. Aim of this work — the development of methods of fixing saline sands of the Aral Sea and purification of waste water Fergana colored cotton mill — calcium silicate (GSK) received draining dilute solutions of sodium silicate and of calcium chloride. research of influence of the composition of additives-fixers

Objects and methods of research

As objects of study used samples of salted sand coast Kazakhdarya drained bottom of the Aral Sea. Samples were taken at a depth of 0–5 sm.

As an additive-fixer was used solution HSC which is not used as a finished product, and at the time of formation of the dilute solutions of sodium silicate and of calcium chloride, as distinguishing the product as gaz

and water- haz a colloidal dispersion degree at stages sol-gel of transition. Calcium chloride is obtained Kokands chemical plant, where 10–11% solution of this compound is part of the production waste — distilled liquid that is a waste of soda ash. Distilled liquid composition: $CaCl_2$–11–12%, H_2O — 83–84%, NaCl — 4,0–4,5%, $CaCO_3$–0,50–0,55%, MgO — 0,08–0,09%. fixing was carried out surface treatment solutions of sand by spraying HSC the desired concentration. Fixing the solutions HSC prepared by draining 0.2, 0.5, 0.8 and 1.1% solutions of sodium silicate and of calcium chloride at the rate of receipt of predetermined amounts of the activeproduct and HSC fixer composition with sawdust. HSC having a high value of specific surface area andrespectively the adsorption capacitance for waste water treatment is not used as a finished product, and at the time the diluted solution of sodium silicate and calcium chloride. Thus as well as the first case, distinguishing the product is a colloidal dispersion degree at the stage transition sol-gel. The essence of the method of cleaning colored water is formation of silicate sorption calcium systems at the transition "sol-gel". Purification of dyed wastewater is performed as follows: to a colored waste water containing dyes are administered dilute solutions of calcium chloride, sodium silicate and aluminum sulphate and mixed. Occurs flocculation and coagulation slurry. Maximum lighting solution comes practically instantly, so that after 2–5 minutes of slurry possible to separate.

Discussion and research results

Fixing salted sand Kazakhdarya performed by treating their surface with an aqueous solution GSK after making sand crushed and sift through a sieve 0.5mm additives — sawdust in an amount of 0.26 kg/m 2 with vigorous stirring of the mixture. For this purpose, solutions of GSK with concentrations ranging 0.2 to 1.1%. Thus as well as the first case, distinguishing the product is a colloidal dispersion degree at the stage transition sol-gel. The essence of the

The research results of the mineralogical and chemical composition of salted sand Kazakhdarya showed that samples of sands Kazakhdarya are more mineralized. The predominant of the soluble salts are chlorides and sodium sulfate. SiO 2 content in the sand is 89.24% and the CaO, MgO, K_2O and Na_2O is 1.11; 0.95; 1.85 and 1.35%, respectively. By particle size distribution in the sample contains predominantly sand particles 0.1–0.05 mm. The results of research of influence of the composition of additives-fixers in the formation of water-resistant aggregates (WRA), and the mechanical strength of the surface crust are shown in Table. 1. As seen from Table. 1, the content of water-stable aggregates (WRA) in the initial for HSC concentration of 1.1% as well as their number 64,24–69,91% WRA and 71,19–77,72%, respectively. HSC communicate with sand particles and attending in it salts (anions chlorine, sulfate, etc..) forming aso that the use of calcium silicate in an amount of 200–600 mg/l in combination with aluminum sulfate (200–400 mg/l) purification degree reaches 94–98%. From the data of Table 2 also shows that the optimal ratios of reagent components parts — Calcium silicate (3 parts of a 0.05% solution of calcium chloride and 2 parts of a 0.05% solution of liquid glass) color reduction efficiency dyed wastewater much higher than with the solid mineral adsorbents [2]. The proposed method of reagent on the effectiveness color reduction of water exceeds the action of aluminum sulfate. From the analysis of the test results of cleaning dyed wastewater for further use as compared with bulky adsorption method is recommended more compact and effective way — the reagent which is based on the use of a complex solution consisting of-order Chloris silicate, sodium aluminum sulfate (CaCl2 + Na_2SiO_3+$(SO_4)_3$), more mineralized. The predominant of the soluble salts are chlorides and sodium sulfate method of cleaning colored water dilute solutions of calcium chloride, is performed sodium silicate and aluminum as follows.

Table 1. — Influence of solution concentration and composition HSC with sawdust (to) the number of water-stable aggregates (WRA) and the value of the mechanical strength of the surface crust in salted sand of coast Aral Sea

№	Concentration solution	Number of WPA (%)	HSC fractions, mm	The amount of the WRA,%	Strength of MPa
1	2,0	2,0–1,0	1,14	0,86	0,72
2	3,0	1,0–0,5	–5,14	6,90	1,28
3	4,0	0,5–0,25	–6,28	10,04	2,04
4	5,0	1,5-3,5	-8?52	10,98	2,92

Table 2. — Cleaning dyed wastewater Fergana cotton factory using a reagent hydrosilicate of calcium and aluminum sulfate

№	Dose hydrosilicate of calcium, mg/l	dose sulfate aluminum mg/l	reduction efficiency of the color intensity, %
1	20	300	150
2	100	400	300
3	200	500	400
4	250	400	500
5	300	500	600

Conclusion

It is shown that the basis of the proposed method of fixing salted sand complex additions is the process of translation their surface layers (up to 5cm) from the freedispersed state to the connected-dispersed by forming a structure (crust), consisting of a water-macroaggregates — particles> 1.0 mm, having mechanical strength (to 3.0 MPa). Optimal conditions for the composition of additives, hardeners exhibit the maximum effects of action, as well as the procedure for their introduction into the sand. It is found that a composition consisting of 0,26kg/m^2 sawdust and 0,008kg/m^2 GSK (calculated on a dry product that provided using a 0.8% solution of GSK) is considered optimum and promotes crust having a sufficiently high strength about 2.4 MPa, and the amount of water-resistant aggregates (> 0.25 mm) in the structure with equal 69.91% vs. 6.28% in the original. Kokand chemical Plant HSC fixer composition with sawdust. HSC having a high value of specific surface area andrespectively the adsorption better than anather sodium.

Using HSC obtained based on a dilute solution (0.05%) waste Kokand chemical Plant — 10% solution of calcium chloride in combination with a dilute (0.05%) with a solution of 17% solution of sodium silicate allows to clean wastewater plants the textile industry of dyes, capacitance for waste water treatment is not used as a finished product,ie to besiege flaked various colorants present in the the composition of wastewater. Thus, for example, wastewater treatment Fergana cotton mill found that the use of the reagent — HSC under optimal relationships of its constituent component parts (3 parts of a 0.05% solution of Kokand chemical Plant calcium chloride and 2 parts of a 0.05% solution of sodium silicate) in the number 200–600 mg/l in combination with aluminum sulfate (200–400 mg/liter) degree of industrial wastewater reaches 94–98%, and thus the proposed method well as the first case, distinguishing the product is a colloidal dispersion degree at the reagent wastewater treatment sodium silicate and aluminum helps to improve environment ecology.

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SOME INVESTIGATION AT THE NIOBIY AND MOLYBDENUM CONCENTRATE GRANULATION

Abstract: *Technology of production of the pyrite cinders of Mo middlings includes granulation, firing to oxidize sulfide minerals and to recover Re-oxide. If kaolin is used a dilution of the pyrite cinders with Mo takes place.The research is devoted to the development of alternative to kaolin organic binding agents. The approach is based on a comparison of hydrophilic, strength & technological characteristics of pellets. The new batch was developed differing from the traditional mixture with organic additive burning to the ground allowing minimizing Mo dilution, maximizing Re, Au, Ag hydrometallurgical recovery.*

Key words: *Mo concentrate, cinder, kaolin, organic polymer, granulation.*

Introduction.
Technology of production of the pyrite cinders of molybdenum middlings at JSC "Almalyk GMK" [1] includes the steps of: mixture granulation (composition: Mo-concentrate 90%, kaolin 10%), firing of pellets at 600 °C to oxidize sulfide minerals and to recover rhenium oxide. As a result of the dilution of the original Mo concentrate with kaolin there is a "dilution" of the pyrite cinders upon molybdenum. In this context, the search of pellet-forming scheme that minimizes this rate is the actual problem. The data revealed that if we use

Objective: To provide such a binder for JSC "Almalyk GMK". Its requirements: it should not contain any "technological poisons" (such as phosphates) adversely affecting the redistribution of cinder: leaching, sorption of Mo (VI) ions, hydrogen reduction to metal, sintering rods. Tasks: to compare the hydrophilic, strength and technological properties of binders: kaolin and alternatives to it of organic and organic-mineral nature, being in the composition of pellets and cinder of Mo concentrate.
Subjects and methods. Batch of Mo concentrate ranulation was prepared using

the traditional composition of the batch mixture in the production of cider, the proportion of Mo in the granules is reduced to 4%. In addition, it is known that the presence of kaolin in cinder makes difficult to sublimate rhenium oxide and impairs its commodity indices such as the fullness of ammonia leaching, Au and Ag extraction from a cake. To improve these technical and economic indicators was an idea to replace, completely or partially, kaolin with organic binder to be burned at a sintering of Mo-concentrate and causing no dilution of the product.

Limiting wetting angles of the batches prepared on Moconcentrate base in compare with few reference data [6] are offered in From Table 1 it is revealed that the sample Nr 1 is identified as being hydrophobic material. Decrease of its hydrophobicity was facilitated with binders allowing it to be granulated. Selection of the best of them for the role of alternative to kaolin was intended to experiment aimed at a comparison between the strength of granules with a diameter of 3–5 mm, made of MoS2-containing batch materials with binders, after their dryingfiring at 20, 250, 600 °C.

(Tabletka). In manufacture of candle end of Mo middlings the requirement to the durability of granules is empirically revealed, adjustable by a mode of balling in dish nodulizer of own design, with diameter of a plate made of a stainless steel equal to 2 m, as well as by batch composition,%: Mo-concentrate 92–90, kaolin 8–10. The corner of an inclination of a dish, speed of its rotation and submission of a batch with water, time of balling were selected too empirically, aspiring to the optimum size and durability of the granules. At understating of the kaolin maintenance in granule's batch mixes their resistance to abrasive wear on a way to a furnace fell, at their overestimate — permeability of oxygen in granules (O2 is necessary for oxidation of molybdenite up to trioxide of Mo) was blocked: in both cases the content of sulfur in the candle end exceeded norm of State standard 2677–78.So one of the research's problems was the quantitative description of the above-stated requirement empirically revealed by the industry to durability of bindering: kaolin, bentonite, liquid glass LG, Na-carboxymethylcellulose (NaCMC), polyvinyl acetate (PVA), sulfonated cellulose [2;3], hydrolysis product of waste of production of polyacrylonitrile fiber SC. Their composition (binder content,%; Mo

I (J,%) was determined as a percentage of reflex expressed at the maximum. Results and discussions. The Mo concentrate's composition supplied to the granulating was the following, %: Mo 38; Re 0.7; Cu 2.5; P 0.009; Sb 0.025; WO3 0.05;S 25.2; SiO2 10.8; humidity 0.42; peculiar to Mo concentrate quantities of Au and Ag presented there too.

7 (bentonite 2%, PVA 2%), 8 (bentonite 2%, sulfonated cellulose 2%). 9 (SC 1%), 10 (SK 1.5%, LG 1.5%),11 (bentonite 2%, SC 1.5%, LG 1.5%), 12 (kaolin 2%, SC 1.5%; LG 1.5%), 13 (LG 3%); 14 (bentonite 2%,CMC 1.5%); 15 (bentonite 2%, SC 0.5%); 16 (kaolin 2%, SC 0.5%); 17 (bentonite 1%, CMC 0.5%), 18 (bentonite 1%, SC 0.5%).

Limiting wetting angle of batch material compacted under a pressure of 20 MPa (Ø 12, height: 4 mm) wasdetermined from the profile of water droplets thereon [4]. The granules were obtained in the disc pelletizer, then dried at 20 °C, 24 hr. Their crushing strength was evaluated with the following methods: 1) of integrity of the granules dropped from a height of 2 m onto concrete; 2) of compression fracture. Their comparison revealed allowable strength criterion: $F \geq 1.2$ MPa. The content of elements in the raw materials and technological solutions was determined by ultimate analysis carried by AAS "Perkin-Elmer" PE 3030V with a flaming atomizer, and Aligent 7500 ICP MS. Thus, Au and Ag in the samples were determined at wavelengths of 242.8 and 328.1 nm with preconcentration extraction in a toluene solution of sulfide oil at a ratio of organic / aqueous phases = 1/10, respectively. IR absorption spectra were recorded in the range of 400-4000 cm-1 with AVATAR-360 spectrometer Nico let. Thermograms were recorded by derivatograph Paulik Erdey at gradient 10 degrees per min, sample weight 0.200-0.250 g, in corundum crucible Ø 10 mm, with T-900, TG-200, the DTA-1/10, DTG1/20 sensitive galvanometers and Al2O3 as a

granules. The approximate allowable range of granules' durability is established to be approximately: P=1÷4 MPa, specification of criterion demands additional researches. At concentrate — the rest), Nr: 1 (without a binder), 2 (kaolin 10%), 3 (SC 3%), 4 (kaolin 2%, SC 3%) 5 (bentonite 2%, SC 3%), 6 (bentonite 2%, CMC 2%), Nico let. Thermograms were recorded by derivatograph Paulik Erdey at gradient 10 degrees per min, Their comparison revealed allowable strength criterion: F ≥ 1.2 MPa. The content of elements in the raw materials and technological solutions was determined concentration of It was of interest to compare An advantage of the compositions based on organic binder, for example, Nr 15– 18, to mixtures without its supplement consists in a fact that the organic additives SC, CMC, PVA at thermo treating burn up to the ground causing no dilution of a calcine. Mineral binders: bentonite, kaolin on the contrary resulted. Conclusion. Thus, effective binder compositions are developed providing the required strength to Moconcentrate granules being alternative to existing kaolin mixture (Mo concentrate 90–92%, kaolin 10–8%) and basing on the combinations: 1) kaolin (2%)-SC polymer (0.7–1,0%); 2) bentonite (0,7–1,0%)-SC polymer (0.7–1,0%), Mo concentrate-the rest.the technological properties of mixes Nr 1,2,16, for which of them pellets had been made, burned & subjected to ammonia leaching. From the obtained cakes Au, Ag were extracted after cyanide leaching. At all stages the samples were analyzed for the content of Mo, Re, Au, Ag. It was found out that granule of a mixture № 16 had been relatively enriched with Mo before and after their firing, with minimum content of unoxidized MoS 2 and maximum of MoO3 in their composition. Ag and Au content in the cinder were maximal, facilitating their removal from the cakes. At 600 °C rhenium in the form of Re 2O7 sublimated to the maximum extent At low concentration of both binder agents in Nr 17 mixture, the durability was dissatisfied. For SC exchange on sulfonated cellulose (Nr 8) or water glass (Nr 11, 13), for turning mineral binder of the mixture (kaolin or bentonite), but standard. Rontgenograms were recorded by DRON-2.0 X-ray crystal analyzer with Cu-anticathode. To calculate the interplanar distances table of ASTM standard card index was used. The relative intensity of the lines I / of this parameter in a candle end the content of sulfur could overcome its norm: 1,5% [1]. Tabletka revealed: the current charge mixture based on kaolin Nr 2, as well as a mixture based on kaolin or bentonite: Nr 4, 5, 15–16, 18 provided a required granules' strength: P=1÷4 MPa. When replacing the SC polymer with CMC (Nr 6,14,17) strength values are being worse, but in the range of high the technological properties of mixes Nr (2%)-SC polymer (0.7–1,0%); 2) bentonite 1,2,16, for which of them pellets had been made, burned & subjected to ammonia leaching. From the obtained cakes Au, Ag were extracted after cyanide leaching. At all stages the samples were analyzed for the content of Mo, Re, Au, Ag. It was found out that granule of a mixture № 16 had been relatively enriched with Mo before and after their firing, with minimum content of unoxidized MoS 2 and maximum of MoO3 in their composition. Ag and Au content in the cinder were maximal, facilitating their removal from the cakes. At 600 °C rhenium in the form of Re 2O7 sublimated to the maximum extent At low concentration of both binder agents in Nr 17 mixture, the durability was dissatisfied. For SC exchange on sulfonated cellulose (Nr 8) or water glass (Nr 11, 13), for turning mineral binder of the mixture (kaolin or bentonite), but in the presence of SC (Nr 3, 9), unsatisfactorily decrease of pellet's strength took place. Increasing of the temperature treating from 20 upto 600 °C lead to the pellets' strength rise. An advantage of the compositions based on organic binder, for example, Nr 15– 18, to mixtures without its supplement consists in a fact that the organic additives SC, CMC, PVA at thermo treating burn up to the ground causing no dilution of a calcine. Mineral binders: bentonite, kaolin on the contrary resulted.

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Section 6. Medical science

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A NEW RESULTS OF THE TREATMENT METHODS OF GLUOCOMS

Abstract: *The causes of retinoblastoma were researched and the genetic mutation was identified as the main reason of the disease. The diagnostic methods of retinoblastoma were analysed and DNA analysis, computerized tomography, ultrasonography and immunohistochemical analysis were reviewed. The efficiency of the treatment methods of retinoblastoma was estimated.*

Key words: *retinoblastoma, RB1 gene, germline mutation, leukocoria, photocoagulation, thermotherapy, chemoreduction.*

Gluocoma (GM) is a rare cancer that begins in the retina of the eye. The retina is a thin layer of nerve tissue that lines the inside of the back of the eye and is sensitive to light. In order to see, the retina senses light and sends a message by way of the optic nerve to the brain. Retinoblastoma is the most common intraocular tumor and the seventh most common solid tumor in childhood — approximately 95% before the age of five.

The incidence is similar in boys and girls. Unilateral cases are around 24 months and bilateral cases are before 12 months. The chain of events inside cells that leads to retinoblastoma is complex, but it almost always starts with a change (mutation) in a gene called the retinoblastoma (RB1) gene. The normal RB1 gene helps keep cells from growing out of control, but the change in multifocal. Children of the affected have 45% chance of inheritance. Chromosomal anomaly of this type of retinoblastoma is a germline mutation. Relatives have a high risk of RB development, increased risk for the second malignancies such as sarcomas, melanoma, cancers of brain and nasal cavities.

The common presenting features of retinoblastoma are leukocoria (white pupillary reflex) (60%), strabismus (20%), red painful eye (7%), secondary glaucoma and buphthalmos (5%), orbital cellulitis (3%), unilateral mydriasis (2%), heterochromia iridis (1%), hyphema (1%) and asymptomatic in some cases (3%) [3, 512].

A diagnosis of retinoblastoma is made by examining the eyes. A white pupil or strabismus will usually be noticed by a parent or pediatrician. Because this disease is relatively rare, children are typically referred to a special ophthalmologist who is familiar

the gene stops it from working like it should. RB gene is located on long arm of chromosome 13 (13q14) containing 27 exons and 26 introns. 2 normal copies of RB gene present in most human cells. RB gene product is 928 AA phosphoprotein whose normal function is to suppress cell growth. RB represents phenotypic expression of abnormal or absent tumour suppressor gene RB1. Most RB1 mutations are minute deletions, duplications and point mutations. Depending on when and where the change in the RB1 gene occurs, 2 different types of retinoblastoma can result: 6% familial and 94% sporadic. Sporadic (non-hereditary) retinoblastoma is unilateral and unifocal. This type of retinoblastoma is often found at a later age than the hereditary form. Chromosomal anomaly of sporadic type is a somatic mutation. Relatives have a low risk of RB development. Familial (hereditary) is 85% bilateral and here the determined whether that mutation is in the methods in the analysis of the retinoblastoma gene. The direct method aims to find the initial mutation that precipitated the development of the tumor; then, it is determined whether that mutation is in the germline of the affected patient. Indirect methods can be used in cases where the initial mutation cannot be located or it is uncertain whether it exists. Sources of DNA to be evaluated directly are either from tumor cells or leukocytes. Deletions or rearrangements of the retinoblastoma gene can be detected by eitherkaryotyping or Southern blotting techniques. Cranial and orbital computerized tomography provides a sensitive method for diagnosis and detecting intraocularcalcification and shows intraocular extent of the tumor even in the absence of calcification. Ultrasonography is useful in distinguishing retinoblastomas from nonneoplastic conditions. It is also useful in detecting calcifications. MRI may be beneficial in estimating the degree of differentiation of retinoblastomas, but it is not as specific as computerised tomography because of its lack of sensitivity in detecting calcium. MRI also is useful in identifying any with the treatment of retinoblastoma. The child may need to be examined under general anesthesia to define the extent of the tumor in the eye (s) and to record the information in photographs or diagrams. The specialist may also use additional tests to detect tumors. The following tests are commonly used to provide the specialist with a picture of the inside of the eye and the brain. Blood counts and electrolyte determination as well as urinalysis and liver function tests are useful in excluding other conditions confused with retinoblastoma. Blood specimens should be taken not only from the patient but also from the parents and any siblings for DNA analysis, which could aid in genetic counseling. There are direct and indirect comp recently toward using more conservative (x-x) Ultrasonography is useful in distinguishing retinoblastomas from nonneoplastic conditions. It is also useful in detecting calcifications.

Immunopathologist is required to provide worthwhile results. The classic histologic findings of retinoblastoma are Flexner-Wintersteiner rosettes and less commonly fleurettes Medical therapy should be directed toward complete control of the tumor and the preservation of as much useful vision as possible. Treatment is usually individualized to the specific patient. Although several therapeutic approaches are available, enucleation is one of the most commonly used modalities in the management of retinoblastoma. However, there has been a trend recently toward using more conservative methods of treatmen Enucleation probably is indicated for all unilateral cases in which the tumor fills most of the globe and in which there is little hope of salvaging any viable retina or useful vision. If half of the retina is free from tumor, then other methods of treatment can be considered, as long as parents have been fully informed as to the possibilities of metastasis, the complications of treatment, and the risk for ultimate enucleation. Other indications for enucleation include the presence of neovascular glaucoma in an eye with retinoblastoma and the suspicion of optic nerve, choroidal, or orbital tumor extension. Seeding of retinoblastoma into the pars plana or into the anterior chamber are

associated hemorrhagic or exudative retinal detachment. This is seen as a localised subretinal area of higher signal intensity compared to vitreous on both T1-and T2-weighted sequences. Immunohistochemical and biochemical studies show an S-antigen detected in well-differentiated retinoblastomas using immunoperoxidase staining of paraffin sections and interphotoreceptor retinoid-binding protein (IRBP) [1; 2]. The aim of immunohistochemical studies is to decide whether retinoblastomas come from a common progenitor cell capable of differentiation into either glial or neuronal cells or from neuron-committed cells. Numerous variables alter the results in these studies. These variables include tissue fixation, staining procedures, specific areas taken into consideration, tumor cell differentiation, antigen expressivity, and age of tumor. Caution is required when interpreting most immunohistochemical results because of the related controversies associated with these tests. An experienced

atrophy and a sunken appearance to the prosthesis, as well as decreased tear production with chronic discharge mucous drying on the prosthesis. The use of the integrated hydroxyapatite implant with rectus muscles attached improves the motility of the prosthesis [4]. For years, various techniques of external beam radiotherapy represented the only available method of irradiation for retinoblastoma. It is still one of the favored methods for advanced tumors involving the entire eye, especially when there is extensive vitreous seeding. Because of the concern for the development of related second cancers after external radiotherapy and, less importantly, cosmetic problems, episcleral radioactive plaques have been used increasingly. These serious problems are much less common with plaque treatment. Relative indications for a radioactive plaque include a retinoblastoma that is less than 15 mm in diameter and 9 mm in thickness. Customdesigned plaques with proper shielding are essential for important findings that often lead to enucleation. In bilateral cases, the eye with the most advanced tumor traditionally has been enucleated and the less involved eye managed with irradiation or other methods. If the most advanced eye has sparing of more than half of the retina, an attempt can be made to salvage both eyes with treatment. If both eyes have far-advanced tumors and there is no hope of any vision, bilateral enucleation may be necessary. Trying chemoreduction, bilateral external beam irradiation, or both with close follow-up may be justified if the parents are fully informed and refuse bilateral enucleation. The cosmetic results of enucleation for retinoblastoma generally are excellent.

If the child had external beam radiotherapy in addition to enucleation, then the cosmetic result often is less satisfactory, related to radiation-induced orbital fat radiotherapy represented consideration, tumor cell capable, Ultrasonography is useful in distinguishing retinoblastomas from nonneoplastic conditions. It is also useful in detecting calcifications.

Tumor control rate was 87%. The average tumor had a 7-mm base and 4-mm thickness. The median dose to the tumor apex was 4000 cGy and to the tumor base was 15,000 cGy, delivered over a mean duration of 65 hours. In 30% of cases, plaque radiotherapy was the primary treatment, and in 70% of cases, it was used as a secondary treatment after failure of other methods, most often failure of external beam radiotherapy [4].Photocoagulation can be used for selected small retinoblastomas. It may be used as primary treatment in some patients or as supplementary treatment in patients who were initially treated with irradiation or cryotherapy. Xenon arc photocoagulation was the first photocoagulator used, but its size and operation were cumbersome. Recently, it has found that the indirect ophthalmoscope laser delivery system using argon or diode is adequate to treat small retinoblastomas.

When it is administered properly,

tumors near the optic disc. This treatment can be used for both unilateral and bilateral cases. Plaque treatment can be repeated on a single eye to retreat the same tumor or treat one at a new site. It can be used when mild to moderate vitreous seeding is present over the tumor. Recurrent or residual tumors that have been uncontrolled with external beam irradiation, photocoagulation, thermotherapy, chemothermotherapy, or cryotherapy may be treated by plaque radiotherapy [5]. Most tumors show a dramatic response to irradiation within the first 4 weeks after removal of the plaque. The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully irradiated retinoblastoma usually appears as a shrunken white mass that resembles cottage cheese. There may be pigmentary alterations and scar tissue around the regressed tumor. Shields JA, Shields CL have been reported their preliminary results with episcleral plaque radiotherapy for retinoblastoma. In an evaluation of 103 consecutive patients with retinoblastoma treated by solitary plaque application, local For years, various techniques of external beam radiotherapy represented the only available method of irradiation for retinoblastoma. It is still one of the favored methods for advanced tumors involving the entire eye, especially when there is extensive vitreous seeding. Because of the concern for the development of related second cancers after external radiotherapy and, less importantly, cosmetic problems, episcleral radioactive plaques have been used increasingly. The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully

photocoagulation has fewer complications than irradiation. Photocoagulation is indicated for small tumors confined to the retina that do not involve the optic disc or the macula. It is probably contraindicated if there is ophthalmoscopic evidence of vitreous seeding, choroidal invasion, or involvement of the fovea, optic disc or pars plana. The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully This technique does not eliminate tumor cells in the vitreous. It probably would not destroy tumor cells in the choroid and possibly could promote dissemination of the tumor in such cases. If it is used on the optic disc or fovea, photocoagulation would result in marked visual loss. for the development of related second cancers after external radiotherapy and, less importantly, cosmetic problems, episcleral radioactive plaques have been used increasingly. These serious problems are much less common with plaque treatment. Relative indications for a radioactive plaque include a retinoblastoma that is less than The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully The reported results of 45 retinoblastomas treated with xenon photocoagulation show that photocoagulation alone was successful in eradicating 76% of the tumors, whereas in 24% of the tumors, supplemental treatment with other modalities was necessary. In cases where thetumor was less than or equal to 3.0 mm in diameter and 2.0 mm in thickness and was confined to the sensory retina The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully without vitreous seeding, tumor destruction usually was achieved with photocoagulation.

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Section 7. Machinery and Mechanics

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INVESTIGATION A NEW CONSTRUCTION TURBIN FOR AVIATION

Abstract: *After field visits, it is found that an easy use of an object may make users feel very positive, which also is a good experience. Therefore, a reasonable size of project is closely related to the feeling of user upon using. Ergonomic data is a size design data which is more suitable for many people. It works in such way that according to the use procedures of people, it will find corresponding data.*

Key words: *aviation, turbine, Ergonomic data, optimization, motore.*

An effective method for 3D lattice structure design is proposed using the volumetric distance field (VDF) based on analytic shape functions. By the innovative synthesis of lattice structure and VDF-based Boolean operations, a variety of computational models with intricate exterior shape and arbitrary lattice structure can be constructed. The significant advantage is that this design method can be easily applied to design highly complex lattice structure models. The important parameters such as the cell type and the size of lattice structure are controllable in customized MATLAB program. Design results verify that the presented design method is efficient to generate 3D models with required lattice structure.

Through the SolidWorks software for elevator computer desk 3 d entity modeling, and using the ANSYS Workbench software to model the stress analysis of meshing and the applied load for elevating computer desk overall deformation and stress distribution, thus carries on the strength, stiffness and modal analysis, the model for the first six order natural frequency and modal vibration mode, the analysis of dynamic performance of the model. The analysis results show that the strength and stiffness of the computer table meet the design requirements, and verify that no resonance occurs during the working process. According to the applicable conditions of coating quality of two different coating models in the extrusion coating of lithium battery, the flow state of the slurry in the inner flow channel of the extrusion die is

In China, traditional manufacturing industries are changing into innovative industries, and the labels of commodities are changing from "made in China" to "created in China. The design and production technology of the coffee machines have started early abroad, which are relatively mature, focus on innovative design and development. However, market positioning of most domestic coffee machines is not clear without innovation, just the introduction of foreign design and technology. It would cost much to model or copy domestic and foreign existing products because it would be costly to process with heavy dependence on others. Modeling functions are mostly stereotyped, which are "stiff" and lack a sense of design, and there are many shortcomings in the using functions. So there is a big space for improvement and development.

The non-repetitive run-out(NRRO) of ball bearing critically influences the rotational accuracy of a machine tool. The quality of manufacturing can be improved by reducing the value of NRRO. This article developed a new ball bearing measuring system to investigate the NRRO caused geometrical errors of the bearing parts include inner and outer races and balls. The characteristic of the proposed measuring system as follows:(1) A high-precision hydrostatic spindle is applied to drive the inner race of the test bearing to obtain the system accuracy; (2) Measurable and variable axial preload is adopted to simulate the operating condition of bearings; (3) A 2 degrees of freedom flexure hinge mechanism

simulated by Fluent software. The simulation results show that the coating uniformity of the two models basically meets the requirements. The FLUID1 die is superior to the FLUID2 die in terms of speed uniformity and loss. From the analysis of the uniformity of the outlet pressure, the FLUID1 pressure uniformity at the outlet is excellent with FLUID2.However, when considering the overall compression of the die, FLUID2 can also be selected. The suitable coating style depends on the different craft and coating skill. Angular contact ball bearings have been extensively utilized in machine tool spindles and the bearing preload With the development of high speed sach.

The effect of bearing preload on the dynamic characteristics of the spindle-bearing system was investigated. The working principle of fixed position preloading method of the spindle-bearing system are introduced. For the spindle that utilizing fixed position preloading method, the theory of assembly dimensional chain was applied to analyze the preloading state of the spindle-bearing system in static conditions. The equivalent parametric identification model was established. The finite element dynamic analysis model of the spindle assembly was developed by taking the advantage of the spring-damper elements to simulate the bearing supports. Finite element analysis (FEA) was conducted to evaluate the effect of the preload on the dynamic characteristics of the spindle-bearing system. This paper not only provides guidance on how to correctly assembling high speed and high precision spindle, but also lay a foundation for the investigation of thermal-mechanical-dynamic characteristic of high speed spindle-bearing system.

Stable 3D micromanipulation by light requires that gradient force overcome axial scattering force introduced by an objective lens. Although high numerical aperture (NA) objective lenses in conventional optical tweezers could match the requirement, the dramatic limited axial working range and a narrow view field draw back the application seriously. With purpose to improve the application of micromanipulation, we succeed in the three dimensional (3D) trapping of polystyrene microspheres with a low-(2-DOF FHM) is used to prevent the outer race from rotating; (4)

Two capacitive sensors are used to measure radial error of the test bearing to ensure nano resolution. plays a significant role on spindle stiffness, rotating precision, heat generation and service life span. and high precision machining, especially for high speed grinding and milling, both heavy preload at low speed and light preload at high speed must been abled in series in a single machine tool spindle. In order to investigate the effect of the bearing preload on the performance of the spindle, we developed a spindle test rig. In this paper.

Workpiece with flat end and circular-arc end was analyzed, and the method to effectively control the concavity of rolled piece end surface is brought forward by using circular-arc billet. According to the obtained research results, the volume of stub bar is in direct proportion to the spreading angle, and decreases at first and then increases with the increasing of the forming angle, and increases at first and then decreases with increasing of the area reduction, and increases at first and then keep approximately invariant with increasing of mill length. Finally, the feasibility of using circular-arc billet to reduce the concavity were verified by rolling experiment.

The forming process of rolling workpieces with different end shapes with cross wedge rolling was simulated by the software Deform-3D. And combined with the principle of blank compensation method, the influence of process parameters on the volume of the stub bar of workpiece with flat end and circular-arc end was analyzed, and the method to effectively control the concavity of rolled piece end surface is brought forward by using circular-arc billet. According to the obtained research results, the volume of stub bar is in direct proportion to the spreading angle, and decreases at first and then increases with the increasing of the forming angle, and increases at first and then decreases with increasing of the area reduction, and increases at first and then keep approximately invariant with increasing of mill length. Finally, the feasibility of using circular-arc billet to reduce

numerical-aperture (NA=0.40) objective releasing a long working distance (WD=5.89mm) by utilizing the Laguerre-Gaussian beams. A series of rotating manipulation through modulating the asymmetry of Laguerre-Gaussian beams are presented. This work offers an extended axial trapping range for 3D manipulation and a delicate hand-actuated rotating system for optical manipulation.

The forming process of rolling workpieces with different end shapes with cross wedge rolling was simulated by the software Deform-3D. And combined with the principle of blank compensation method, the influence of process parameters on the volume of the stub bar of Grater, as one of the kitchen utensils can help to cut vegetables or fruits into an expected patterning during cooking in an easy way. It not only can provide human convenience in our life and also acts as the path for us to enjoy life. It is the actual presentation of advanced technology. From many aspects such as function, modeling, material, structural, technology and art, the grater is designed to help to cook easier. With profound theoretical basis and wide application value, it perfectly shows the close combination of ergonomics and design. The design of grader can drive the further theoretical study in the design field of kitchen utensils in our country and development and design of the industrial products for kitchen utensils.

An effective method for 3D lattice structure design is proposed using the volumetric distance field (VDF) based on analytic shape functions. By the innovative synthesis of lattice structure and VDF-based Boolean operations, a variety of computational models with intricate exterior shape and arbitrary lattice structure can be constructed. The significant advantage is that this design method can be easily applied to design highly complex lattice structure models. The important parameters such as the cell type and the size of lattice structure are controllable in customized MATLAB program. Design results verify that the presented design method is efficient to generate 3D models with required lattice structure. traditional manufacturing industries are changing into innovative industries, and the labels of the concavity were verified by rolling experiment.

According to the applicable conditions of coating quality of two different coating models in the extrusion coating of lithium battery, the flow state of the slurry in the inner flow channel of the extrusion die is simulated by Fluent software. The simulation results show that the coating uniformity of the two models basically meets the requirements. The FLUID1 die is superior to the FLUID2 die in terms of speed uniformity and loss. From the analysis of the uniformity of the outlet pressure, the FLUID1 pressure uniformity at the outlet is excellent with FLUID2.However, when considering the overall compression of the die, functions. So there is a big space for improvement and development.

The non-repetitive run-out(NRRO) of ball bearing critically influences the rotational accuracy of a machine tool. The quality of manufacturing can be improved by reducing the value of NRRO. This article developed a new ball bearing measuring system to investigate the NRRO caused geometrical errors of the bearing parts include inner and outer races and balls.

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commodities are changing from "made in China" to "created in China. The design and production technology of the coffee machines have started early abroad, which are relatively mature, focus on innovative design and development. However, market positioning of most domestic coffee machines is not clear without innovation, just the introduction of foreign design and technology. It would cost much to model or copy domestic and foreign existing products because it would be costly to process with heavy dependence on others. Modeling functions are mostly stereotyped, which are "stiff" and lack a sense of design, and there are many shortcomings in the using

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