

numbers 1650-1636 cm^{-1} , there appear stretching vibrations C=O (Amid I) as a doublet representing two kinds of intermolecular hydrogen bonds of the carbonyl group, with an interaction existing between the groups of cellulose and MCCn nanoparticles, and between cellulose and complex Chit/AlgNaCa.

- An investigation into accelerated ageing documented that the equivalent of a 12 month period did not affect the bactericidal activity and tenacity of the biomaterials prepared, with the absorption capacity being reduced. Therefore we can conclude that the specific process of accelerated ageing according to the requirements of the standard i.e. the storing of the material at 60 °C for 4 weeks, is probably inadequate for material modified with natural polymers with the internal surface developed. The long lasting elevated temperature causes the closure of the porous structure of the active dressing layer, and in consequence the moisture absorption of the material is reduced.



Acknowledgement

The part of investigations presented was carried out within research project No NCBiR/ERA-NET-MATERA/01/2011 supported by the Ministry of Science and Higher Education

References

- Brzoza-Malczewska K, Kucharska M, Wiśniewska-Wrona M, Guzińska K, Ulacha-Bacciarelli A. Modified cellulosic products for application in hygiene and dressing materials (Part I). *Fibres & Textiles in Eastern Europe* 2015; 23, 3(111): 125-131.
- Kumar ABV, Varadaraj MC, Gowda LR. Characterization of chito-oligosaccharides prepared by chitosanolytic with the aid of papain and Pronase, and their bactericidal action against *Bacillus cereus* and *Escherichia coli*. *Biochem. J.* 2005; 391: 167-175.
- Qi L, Xu Z, Jiang X, Hu C, Zou X. *Carbohydrate Research* 2004; 329: 2693-2700.
- Vijayalakshmi K, Gomathi T, Sudha PN. Scholars Research Library. *Der Pharmacia Lettre* 2014; 4: 65-67.

Received 19.02.2015 Reviewed 01.06.2015



INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES

LABORATORY OF PAPER QUALITY

Since 02.07.1996 the Laboratory has had the accreditation certificate of the Polish Centre for Accreditation No AB 065.



The accreditation includes tests of more than 70 properties and factors carried out for:

- pulps
- tissue, paper & board,
- cores,
- transport packaging,
- auxiliary agents, waste, wastewater and process water in the pulp and paper industry.

The Laboratory offers services within the scope of testing the following: raw -materials, intermediate and final paper products, as well as training activities.

Properties tested:

- general (dimensions, squareness, grammage, thickness, fibre furnish analysis, etc.),
- chemical (pH, ash content, formaldehyde, metals, kappa number, etc.),
- surface (smoothness, roughness, degree of dusting, sizing and picking of a surface),
- absorption, permeability (air permeability, grease permeability, water absorption, oil absorption) and deformation,
- optical (brightness ISO, whiteness CIE, opacity, colour),
- tensile, bursting, tearing, and bending strength, etc.,
- compression strength of corrugated containers, vertical impact testing by dropping, horizontal impact testing, vibration testing, testing corrugated containers for signs „B” and „UN”.

The equipment consists:

- micrometers (thickness), tensile testing machines (Alwetron), Mullens (bursting strength), Elmendorf (tearing resistance), Bekk, Bendtsen, PPS (smoothness/roughness), Gurley, Bendtsen, Schopper (air permeance), Cobb (water absorptiveness), etc.,
- crush tester (RCT, CMT, CCT, ECT, FCT), SCT, Taber and Lorentzen&Wettre (bending 2-point method) Lorentzen&Wettre (bending 4-point method and stiffness resonance method), Scott-Bond (internal bond strength), etc.,
- IGT (printing properties) and L&W Elrepho (optical properties), etc.,
- power-driven press, fall apparatus, incline plane tester, vibration table (specialized equipment for testing strength transport packages),
- atomic absorption spectrometer for the determination of trace element content, pH-meter, spectrophotometer UV-Vis.

Contact:

INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES
ul. M. Skłodowskiej-Curie 19/27, 90-570 Łódź, Poland
Elżbieta Baranek Dr eng. mech.,
tel. (+48 42) 638 03 31, e-mail: elabaranek@ibwch.lodz.pl