

Special Prepared Rapeseed Protein for Paper Board Coating

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In the paper industry is used an increasing amount of binder systems made from fossil resources. The utilization of new binder based on renewable resources is an alternative solution proposal to this problem. The utilization of starch and soybean protein as a binder was already examined and partially applied in the paper industry. However rapeseed protein seems to have good quality for this field of application, because its two import protein fractions albumine and globuline have good functionality properties. The globulin fraction (cruciferin) exhibits for example good water binding capacity and good gel formation, while the albumin fraction (napin) is known for a good foaming capacity and high emulsion property.

Protein sample of the rape seed (*Brassica napus*, cultivar Lorenz) were prepared with different composition in accordance with own PPM-procedure. It was produced rapeseed protein isolate (RPI), rapeseed protein concentrate (RPK) and acetylated protein (RPK-A). According to the SDS-PAGE results the RPI is rich in globulin, at the same time RPK contains a high quantity of albumin fraction and the RPK-A shows the two protein fractions. The samples RPK and RPK-A showed small particle size < 30 µm, while the RPI had high particle size.

The color measurement with L*a*b-System indicated that all samples were in the color range yellow-red. In addition their brightness lays <80%. All samples had similar low solubility (≤ 50%). Furthermore they showed other functionality properties which are consolidated in the coating (slow foam capacity).

The manufactured protein samples were tested in coating of paper board. Through a series of different coating formulations the coated board patterns were examined. The first results indicated that the use of rape seed protein in the coating preparation was problem free. The color of the coating was in the range yellow-red, but that depends on the concentration. Other factors, like the picking resistance were not sufficient whereas the roughness showed none affect on the quality of the coating of paper board.