



Replacing Talc with AkzoNobel Starches Enhances Body Powder Formulations

June 9, 2010 (Rev. 21 July 2010)

Jaime Hamm, Principal International Technician

Contents

Replacing Talc	1
Water Absorption Testing.....	1
Formulated Product Performance	2

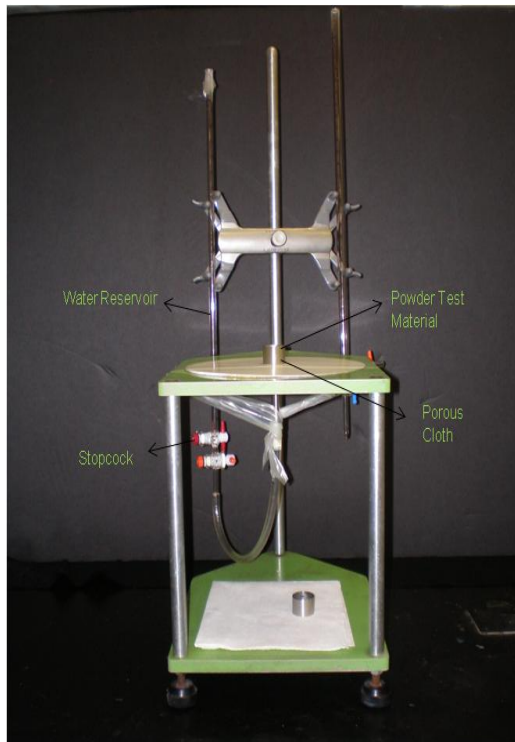
Replacing Talc

Traditionally, body powder products contain talcum powder (magnesium silicate), but more recently, driven by the desire to achieve mildness and performance, there is a trend to replace talc with new ingredients. AkzoNobel's DRY-FLO[®] PURE starch and PURITY[®] 21C PURE starch offer excellent moisture absorption and sensory performance for these body powder products. Testing on both neat starch powders and formulated body powder products demonstrated unique performance benefits of starch when compared to talc.

Water Absorption Testing

Water absorption, one of the key benefits expected from body powders, was evaluated using the Demand Water Absorbency Method. More information on the test can be found in the insert. The water absorbency results are found in Figure 1. Both DRY-FLO PURE starch and PURITY 21C PURE starch show significantly greater water adsorption performance when compared to talc.

Insert: Demand Water Absorbency Methodology



STEP 1: Water is placed into water reservoir and measured

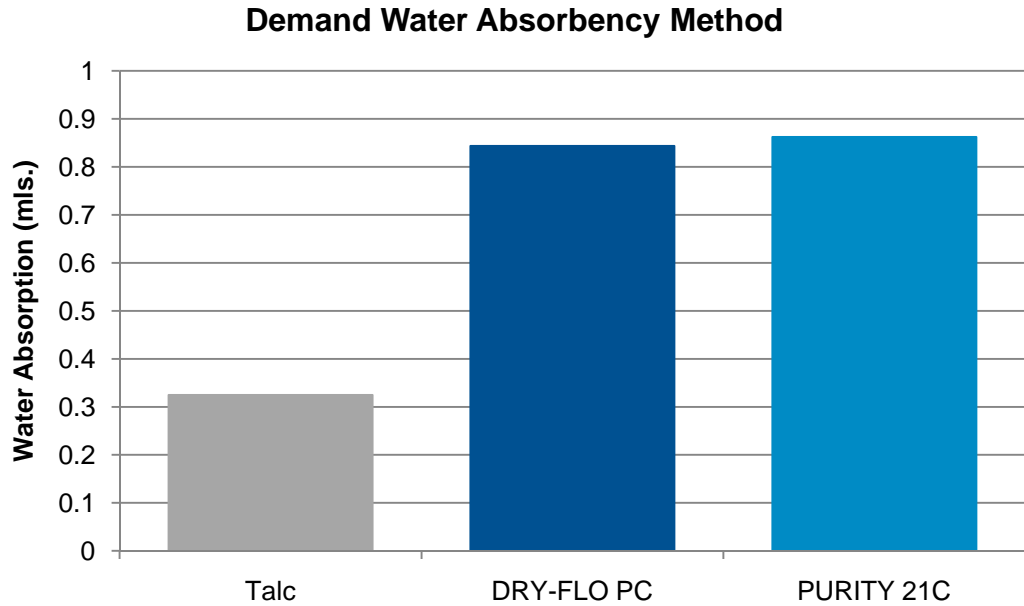
STEP 2: Prescribed amount of test powder is placed on porous cloth inside of metal ring.

STEP 3: Stopcock is put into open position allowing flow of water into powder sample.

STEP 4: When water flow stops in water reservoir the level is measured

STEP 5: The difference between the Step 1 measurement and Step 4 measurement (in mls.) is amount of total absorption

Figure 1. Demand Water Absorbency Test Results



Formulated Product Performance

The four powder formulations given in Table 1 were created and evaluated against a talcum-based commercially available powder product. Subjective evaluation was employed to identify preferences in spreadability, application feel, absorbency into the skin, and after feel. Texture Analyzer was employed to quantitatively investigate spread-ability of powders.

Table 1. Four Powder Formulations

Ingredient	Formulation Number / Weight %			
	130-1	130-3	130-4	130-5
PURITY 21C PURE / PURITY 21C starch	58.32%	57.90%	58.20%	58.26%
DRY-FLO PC starch	38.88%	39.20%	38.90%	38.84%
Tricalcium Phosphate	2.00%	2.00%	2.00%	2.00%
Magnesium Stearate	0.50%	0.50%	0.50%	0.40%
Mineral Oil	0.30%	0.40%	0.40%	0.30%
Sodium Bicarbonate	0%	0%	0%	0.20%

Our subjective test consisted of eight paired comparisons of test powder versus the benchmark. A difference detected by the test panel is considered to be statistically significant if 7/8 or 8/8 panelists select one of the test formulations. A favorable difference relative to the benchmark is denoted as a “+”. No significant difference is denoted as “=”.

An unfavorable difference relative to the benchmark is denoted as a “-“.

As seen in Table 2, Formulas 130-1, -3, and -5 showed sensory benefits compared to the talc-based benchmark. Formula 130-4 showed no significant difference.

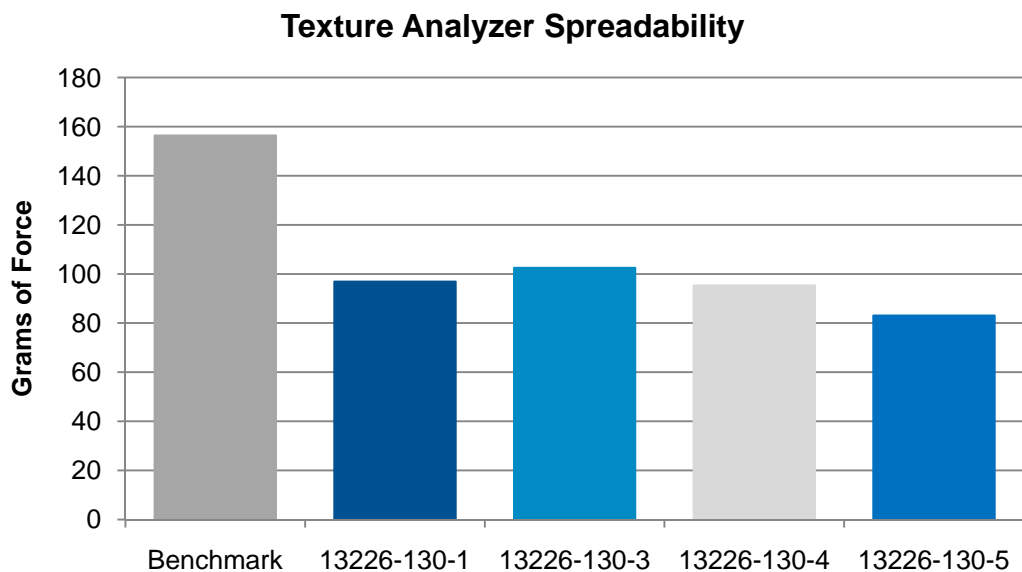
Spreadability of a powder is a significant aspect of the consumer’s experience with powder products. Texture Analyzer enables us to quantify the force required to spread a fixed quantity of powder. The less force required to spread the starch, means that the product is easier to spread. This method was applied to the four formulations in addition to the benchmark.

The data in Figure 2 shows that all four starch-based powders are significantly easier to spread than a talcum based benchmark.

Table 2. Subjective Evaluation Results

Ingredient	Formulation Number / Subjective Results			
	130-1	130-3	130-4	130-5
Spreadability	+	=	=	+
Feel	+	+	=	=
Absorbency	=	=	=	=
After Feel	+	+	=	+

Figure 2. Texture Analyzer Spreadability



Combined, these data demonstrate that DRY-FLO PURE and PURITY 21C PURE starches are a great combination for formulating mild, highly absorbing and great feeling powders with natural and renewable ingredients. Visit the formulation section of <http://www.akzonobel.com/PersonalCare> for starting formulations.