

## **Note on the Application of the Donelson-Yamazaki Damaged-Starch Procedure to High-Damage Wheat Flour and Starch<sup>1</sup>**

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The Donelson-Yamazaki procedure (1) for estimation of damaged starch is based on the rapid, enzymatic hydrolysis of cold-gelatinizable (damaged) starch. The method is designed for use on 1.0-g. flour samples and was standardized against autoclaved wheat starch to simulate a maximum starch-damage content in flour of about 12% (14% m.b.). This level of testing is sufficient for soft wheat flours and is applicable to most hard wheat flours.

Occasionally, flours have greater quantities of damaged starch than the limit stated above. In addition, flours and flour fractions have been subjected to ball-milling or similar forms of particle-size reduction as well as other treatments which tend to increase damaged starch in a sample. It is often desirable to determine the damaged-starch content of such products.

The procedure may be applied simply by reducing the sample size so that the limit of starch damage noted above is not exceeded. This approach to starch-damage testing of high-damage materials is enhanced if a preliminary approximation is made with a 0.1-g. sample, since this amount will suffice for any level of starch damage. To minimize errors, further determinations may be made at

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more appropriate sample sizes in accordance with the following table:

<i>Amount of Sample for Test</i>	<i>Damaged-Starch Level (d.b.)</i>
g.	%
1.00	< 10
0.50	10-20
0.25	20-30
0.10	> 30

Within these ranges, we have found that the results are not influenced by serial reductions in sample sizes.

#### Literature Cited

1. DONELSON, J. R., and YAMAZAKI, W. T. Note on a rapid method for the estimation of damaged starch in soft wheat flours. *Cereal Chem.* 39: 460-462 (1962).

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