CEREALS CANADA

Welcome to Analytical Services

Wheat and Flour Quality Testing

- Moisture content
- Ash content
- Sprout Damage
- Protein content
- Protein quality

Protein Requirement by End-Product

- Cookies, cakes & pastries: wheat protein 7-11%
- Hearth breads: wheat protein 10-12%
- Pan breads: wheat protein greater than 12%
- Pasta: wheat protein greater than 11%
- Noodles: wheat protein 9-14%

Importance of Protein Content

- Affects water absorption
  - ↑ protein = ↑ absorption
- Affects dough mixing properties
  - ↑ protein = stronger dough properties
- Affects end-product quality
  - ↑ protein = ↑ loaf volume in bread
  - ↑ protein = ↑ pasta cooking quality

Gluten

Gliadin

+

Glutenin

mixing
liquid

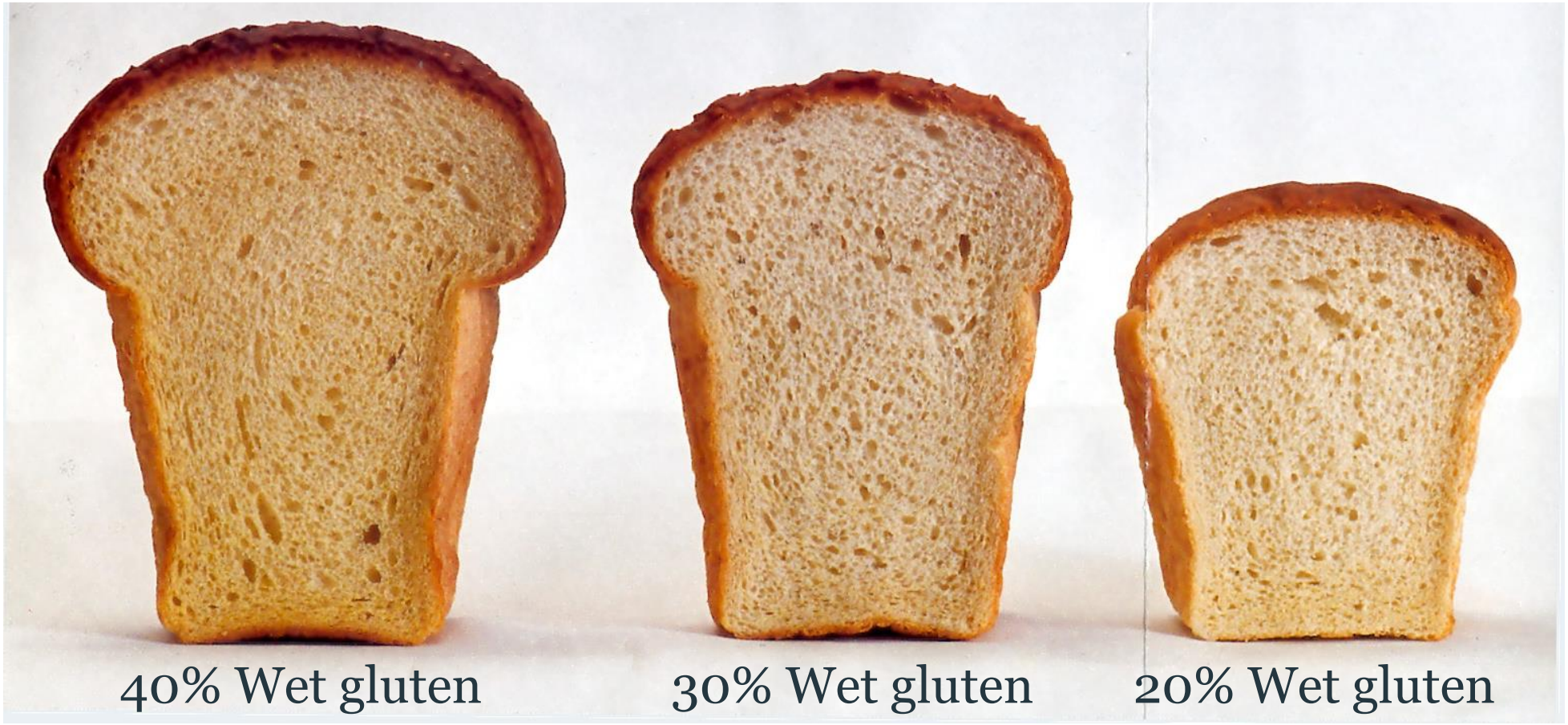
Gluten

Adapted from Dimler. 1963. Bakers Digest. 37: 52.
Adapted from Huebner. 1977. Bakers Digest. 51(10):25-31.

Fractionation of Wheat Protein

Non- Gluten Proteins (~ 15%)	Albumine	~40%	Soluble in water
	Globulin	~60%	Soluble in salt solution
Gluten Proteins (~ 85%)	Gliadin	~65%	Soluble in ethanol
	Glutenin	~35%	Soluble in alkali

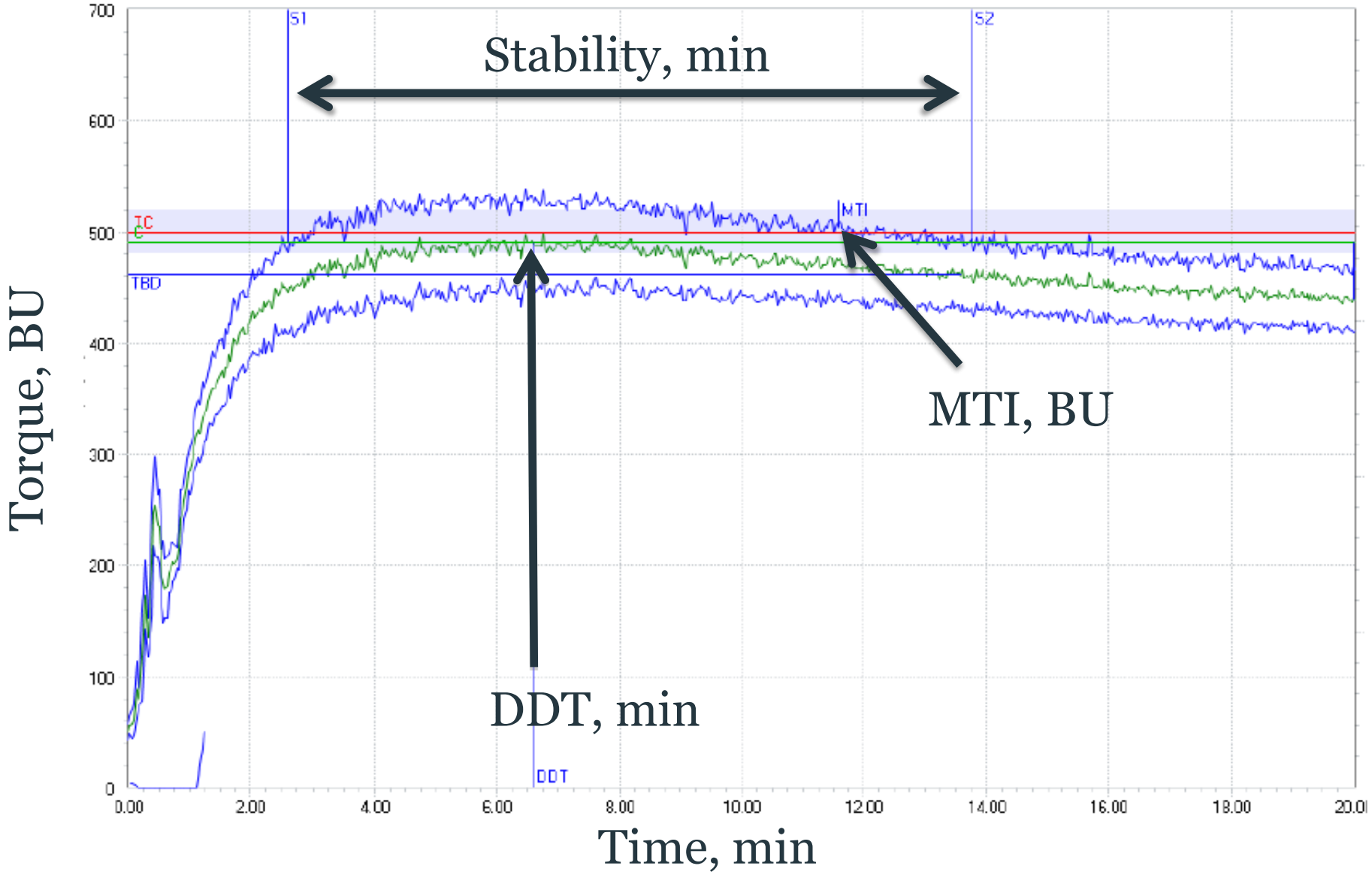
Gluten Content and Loaf Volume



All breads made with the same flour quantity under the same conditions

Image courtesy of PerkinElmer

Farinograph Curve



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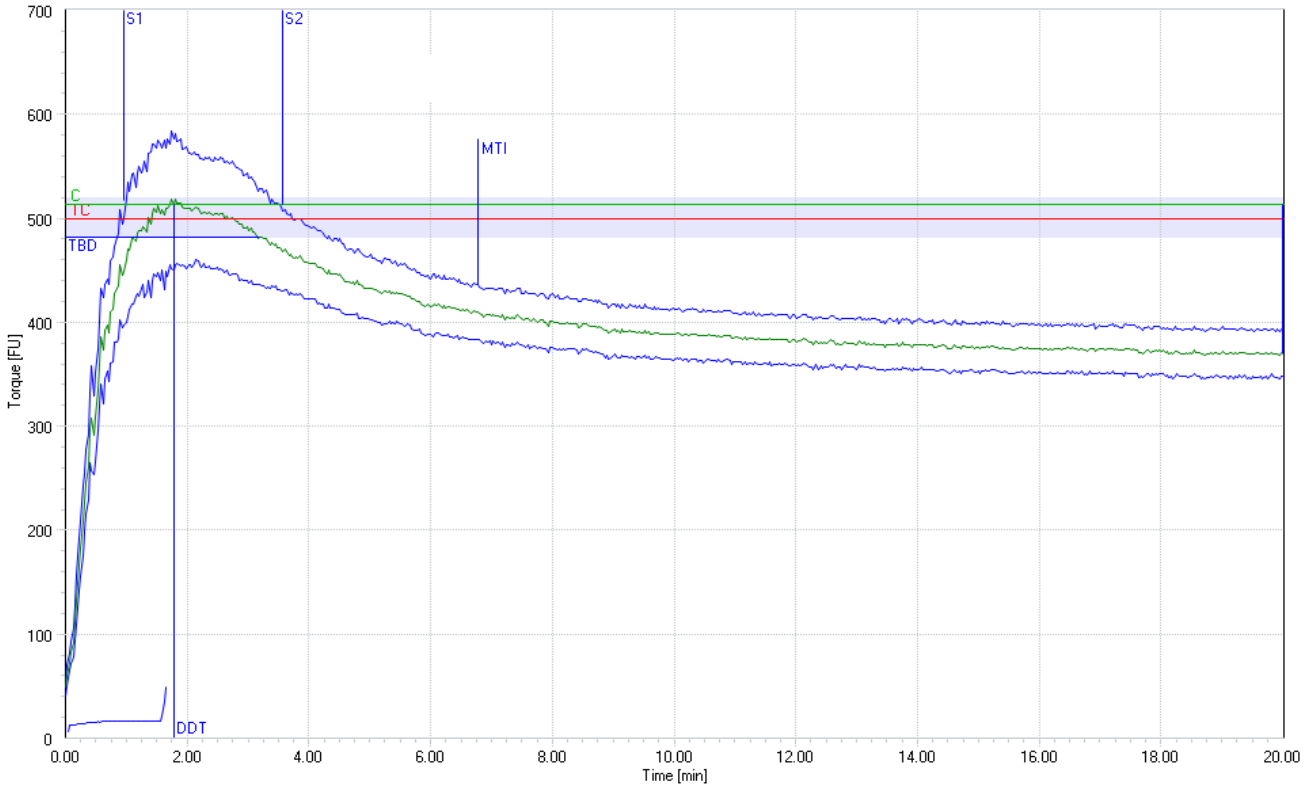
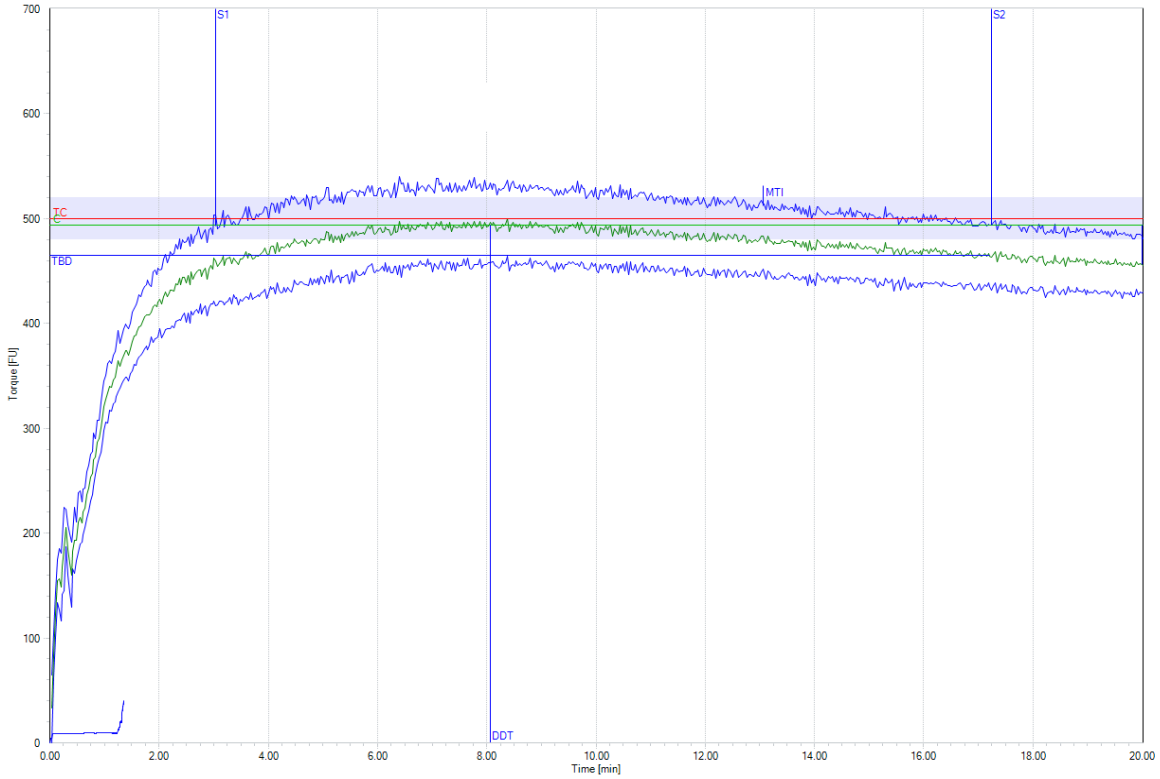
Farinograph Curves and Protein Quality



Weak



Strong

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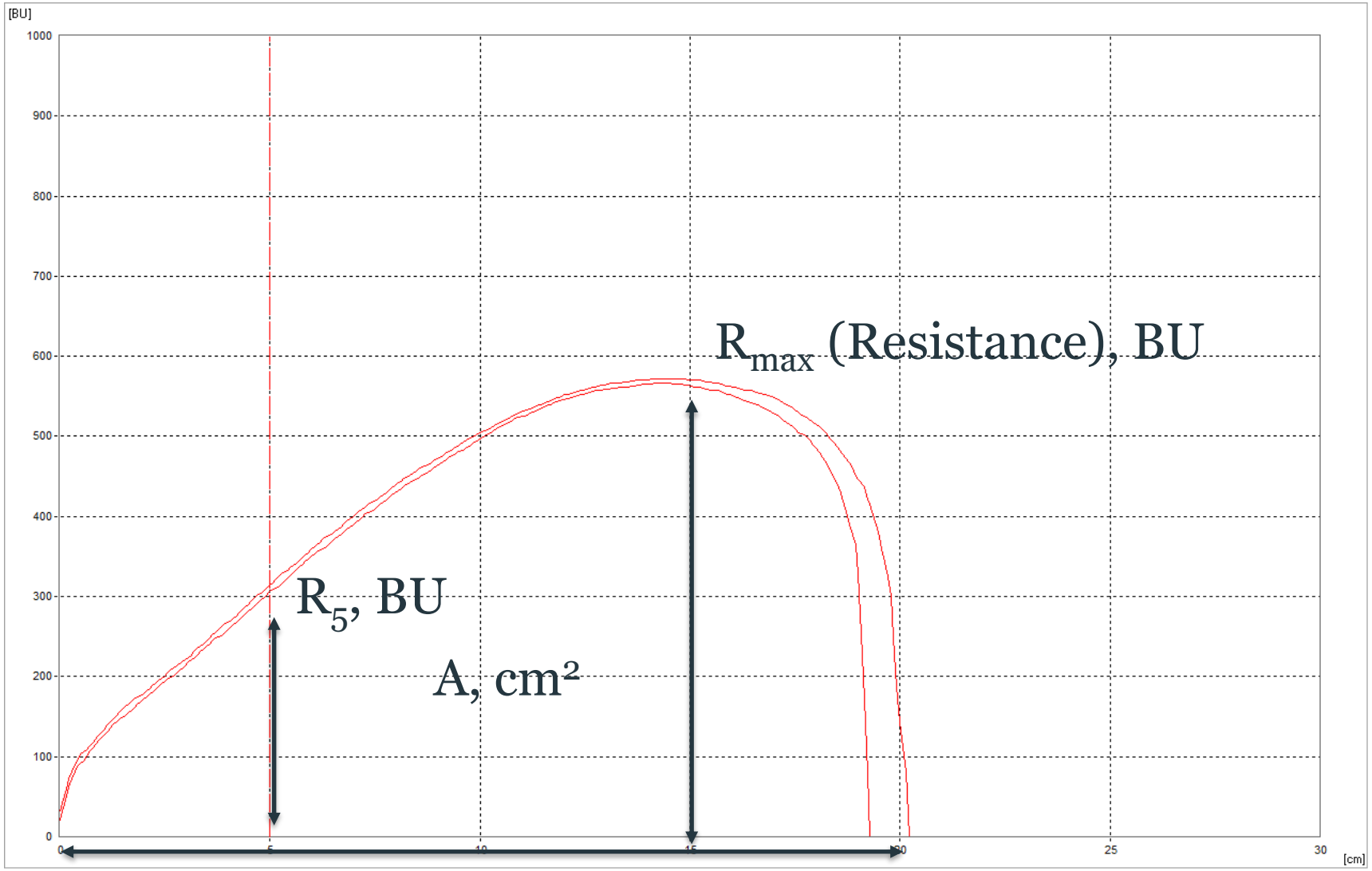
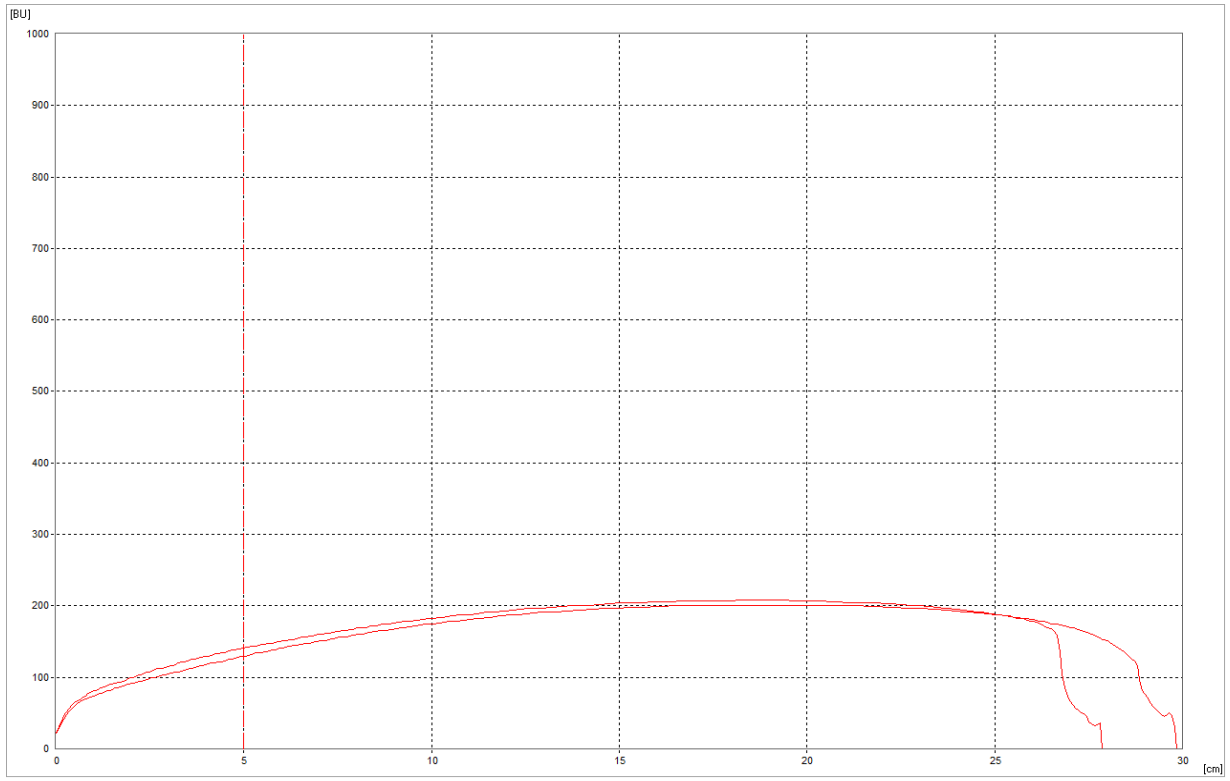
Extensograph Curve



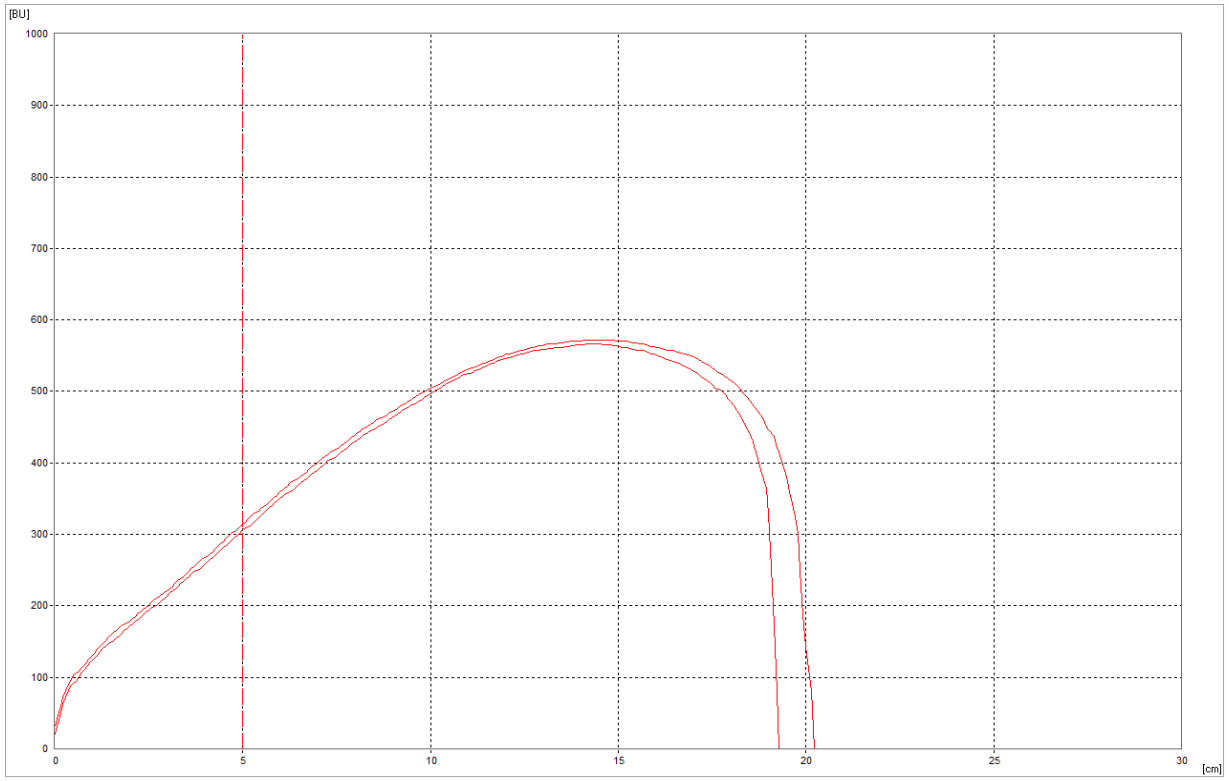
Torque, BU

E (Length/Extensibility), cm

Extensograph Curves and Protein Quality



Weak Dough



Strong Dough

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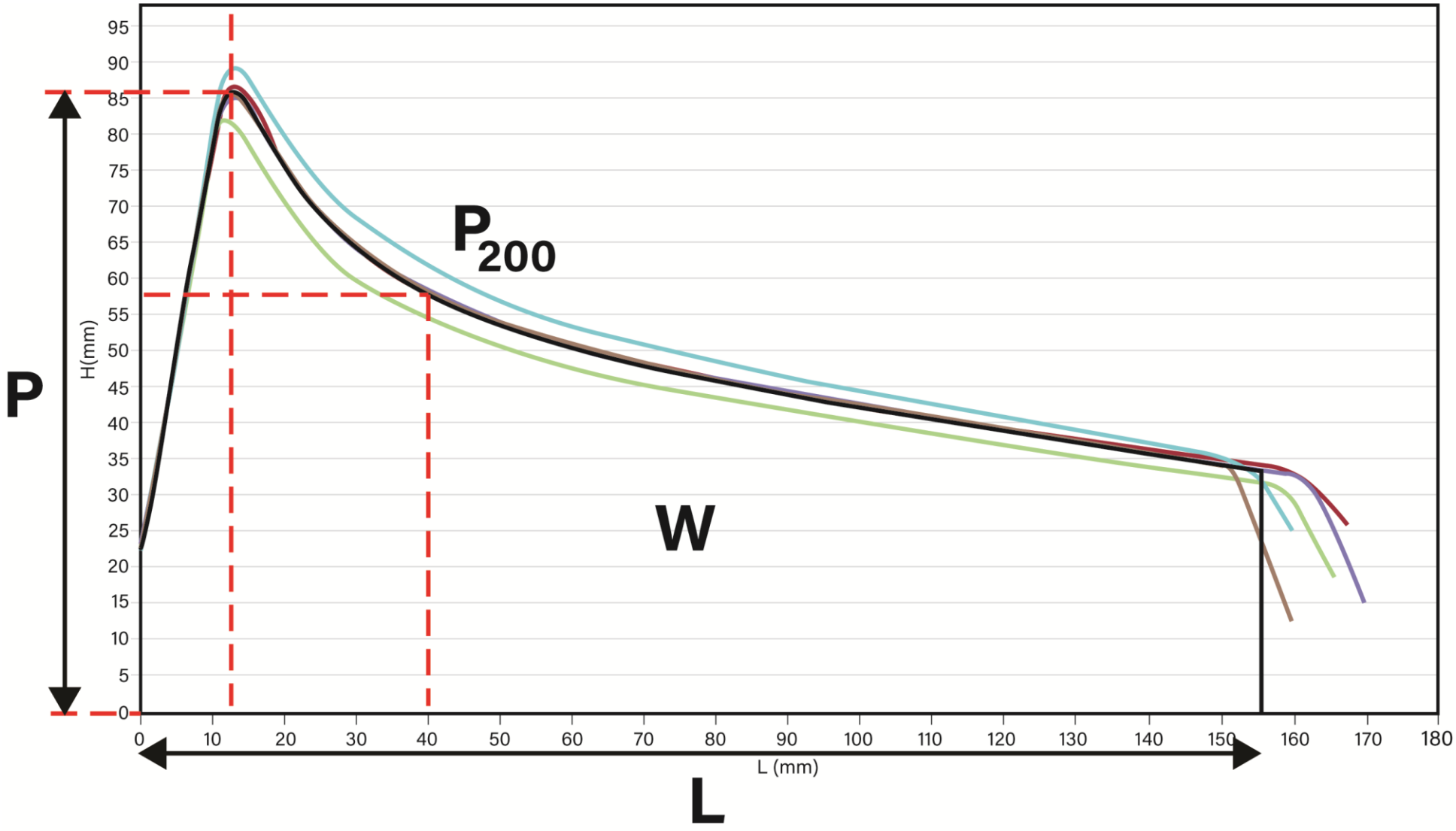
Alveograph Curve



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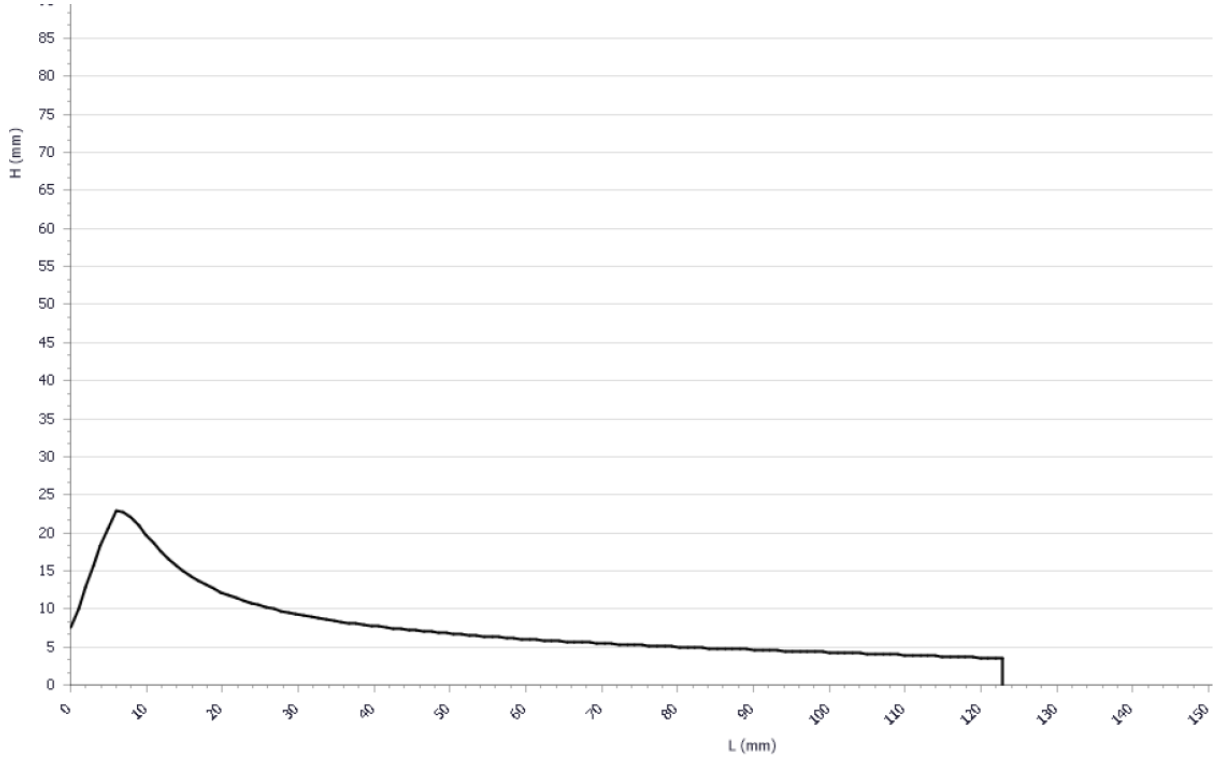
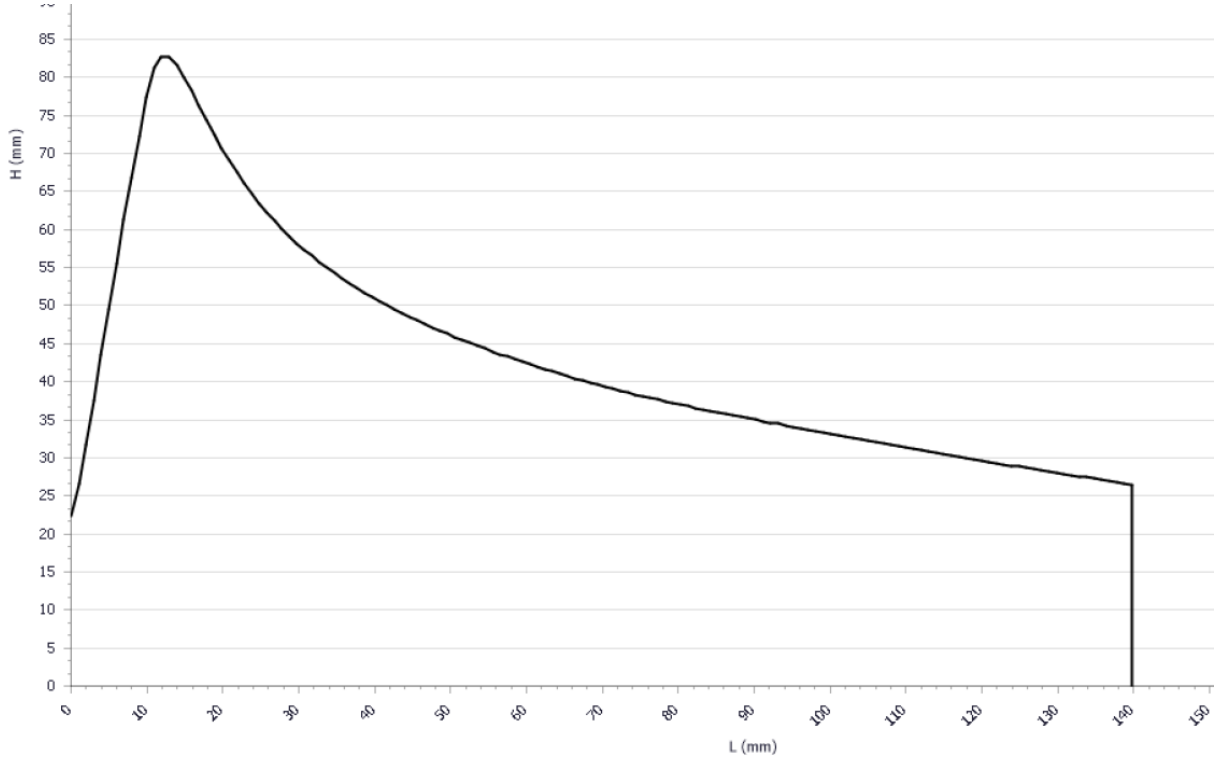
Alveograph Curves and Protein Quality



Weak Dough



Strong Dough

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Thank you!