

GELATINE BLOOM TESTING

Samples of commercial gelatine were prepared and evaluated following recommendations from the Gelatine Manufacturers of Europe (GME) Monograph 2004 and ISO 9665.

Requirement

Gel strength is used by the world's gelatine producers and end-users as a key quality indicator. The functionality of gelatine is directly influenced by its strength, when prepared in accordance to the gelatine Bloom test. The Bloom value obtained is dependent upon sample preparation and evaluation. As higher Bloom values mean higher prices, the industry self-regulates itself. This helps guarantee accurate measurement of Bloom strength between the laboratories of customers and suppliers. Key areas of standardisation are:

- standardised test probe
- concentration and molecular weight
- temperature during mixing and tempering
- hydration times
- test vessel dimensions
- instrumental accuracy and resolution
- test speed
- depth of penetration from trigger

Solution

Standard guidelines for sample preparation and gel strength measurement are fully established and enforced by the relevant geographic manufacturing bodies. The gelatine samples supplied were evaluated following relevant European recommendations for the concentration, preparation and tempering of gelatine gels. The rigidity of the prepared gel was then tested with the AOAC 12.7mm diameter probe with no radius as per GME recommendations, July 1998, following traditional puncture principles.

Benefits

Bloom

- Optimisation of ingredient functionality and blend characteristics to the edible gelatines and industrial markets.

Strength

- Raw material control and quality payment between manufacturers, customers and processors.

Elasticity

- Product formulation and development to gain maximum functionality from gelatine used.

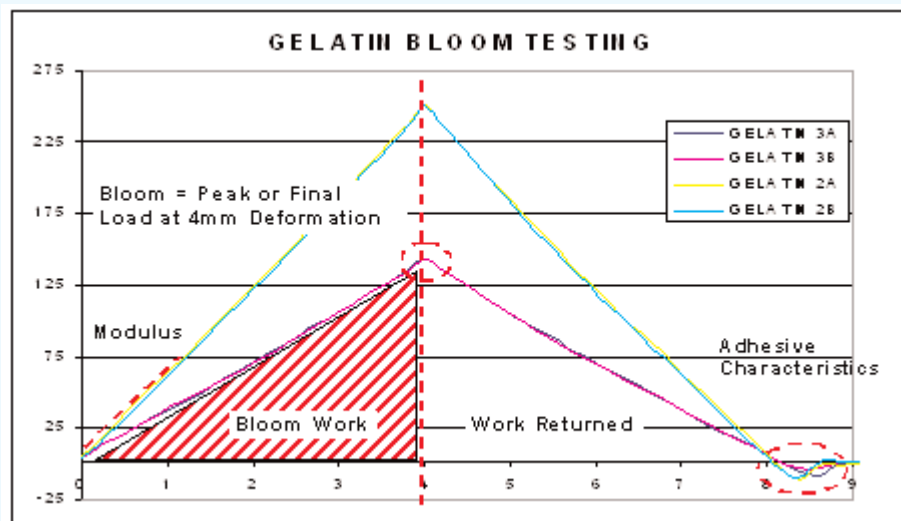
Modulus



The prepared gelatin gel is penetrated to a depth of 4mm from a trigger force of 5gf. Bloom value is taken as the peak load from penetration.



Sample preparation and instrument configuration and calibration are strictly defined within international standards.



Characteristics			
Parameter	FTC System		
	TMS-Pro	TMS-Console	Manual Stand
Bloom	✓	✓	✓
Initial Modulus	✓	✓	
Energy returned	✓		
Bloom Work	✓		

Conclusions

The results from this investigation show good reproducibility between the duplicate samples. The Bloom Strength data exhibits a clear difference between the two gelatines, as indicators of performance and economic value. The additional characteristics of Initial Modulus and Bloom Work are directly related to Bloom Strength. As expected the gelatine samples were highly elastic at 4mm penetration, exhibiting equal proportions of work input and work returned.

The Bloom Strength of the gelatine gel is dependent on its concentration, intrinsic strength (molecular and structural characteristics), pH, temperature and presence of additives. This method can therefore be used to monitor these variables and identify their effect on gel strength.

It is critical that standardised conditions of test monographs are adhered to. Bloom Strength is the critical quality characteristic used by producers and customers to grade the product and therefore international correlation between laboratories is essential.

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