

## Bergmann-Junk Testing -- Glassware for 5A/5B

### MODERNIZED STABILITY TESTER FOR BERGMANN-JUNK METHODS

Bergmann-Junk (5A/5B) and Bergmann-Junk-Siebert (5C) tests are traditional methods for the determination of chemical stability of nitrocellulose, single and double based smokeless powders, rocket fuels and nitro compounds.

#### Application

Chemical stability of energetic materials is an essential quality parameter for reliable risk and safety management. Bergmann-Junk Test was developed in 1904 as a response to severe problems with stability of nitrocellulose (NC) and NC based powders. It was significantly modified in 1942 by Siebert and further presented as different test method Bergmann-Junk-Siebert Test. These methods were implemented in several variations by most of the stability testing guidelines and national authorities for standardization.

Bergmann-Junk Tests are reliable quantitative methods with high reproducibility. These tests are fast, affordable and require no additional laboratory skills. Standard consumable materials further extend its accessibility by eliminating expensive, standard test papers

#### Principle

Unstable behavior of nitrocellulose and NC based energetic materials is associated with the liberation of heat and gaseous decomposition products, which also contain nitrogen oxides ( $\text{NO}_x$ ). Exposition of the sample to a higher temperature increases its decomposition rate. Bergmann-Junk based testing methods were developed to evolve  $\text{NO}_x$  in defined conditions and to absorb it in exact apparatus. Further quantitative analysis provides reliable and reproducible values of nitrogen oxides in decomposition gases. Further consideration of these values provides an overview of material stability and their lifetime.

Bergmann-Junk method is usually combined with Heat test (Methyl Violet Test), Abel Heat Test, Vacuum Thermal Stability Test and HPLC. The result of Bergmann-Junk Test is presented as a volume (in ml) of titration agent of given concentration per gram of the sample or as weight (in mg) of nitrogen per gram of the sample.

#### Compliance

STANAG 4178 (5A, 5B), TL: 1376-0589, TL: 1376-0600  
 ČOS 137602, UK M28/89

#### 5A/5B Setup

<b>Bergmann-Junk Test</b>	
<b>STANAG 4178 5A - non chalked material</b>	
<b>STANAG 4178 5B - chalked material</b>	
<b>UK M28/89</b>	
Tube Diameter x Length	19±0.5 x 350 mm
Absorber type	Cylinder with insert
Immersion depth / diameter	150 mm / 20 mm
Absorbing medium	Water

#### Specifications

<b>Bergmann-Junk 5A/5B absorbers (set)</b>	
Code No.: 3500-016A	
Packing	PE foam in box
Cap absorber / Insert / Stopper	6 Sets
<b>Bergmann-Junk 5A/5B test tubes</b>	
Code No.: 3500-015A	
Packing	PE foam in box
Test tubes	6 pcs

