ANDEREN LIMITED

Registered in England number 4514202

Wherever in the world quality matters

The Anderen "Gallenkamp type" Torsion Viscometer

The Torsion Viscometer (also known as the Gallenkamp or Universal Torsion Viscometer) has been used throughout the world as the standard method to check ceramics slips and glazes for over 50 years.

It is a reliable instrument requiring low levels of operator skill.

The Anderen Torsion Viscometer has been specifically designed for use in the difficult environments found, typically, in ceramic slip and glaze production areas. It is also a useful laboratory tool.

Careful consideration has been given to ensure that cleaning and routine maintenance is as easy as possible and can be done by a reasonably skilled technician and should not require the use of any tools

It is a simple and easy to use piece of equipment and should give repeatable readings over a long period of time

The "Anderen" torsion viscometer can help to ensure that ceramic slips and glazes will be of consistent quality and also will identify the times when the rheological properties have changed and so ensuring that measures can be taken to adjust them and so avoiding costly manufacturing problems.

It is helpful to have a basic understanding of how the torsion viscometer presents data to the user

Firstly, it should be remembered that the readings are given as "degrees overswing" and this is basically a reading of FLUIDITY.

The operator needs to establish what readings produce a workable material.

Typically this will be within a 10-20 spread. If the reading gives a higher reading then the material is "to thin" and below this reading "too thick". By having a repeatable method of

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checking the properties of the materials simple adjustments can be made to create the ideal characteristics

The instrument can also be used to test THIXOTROPY, by taking a fluidity reading then allowing the material to stand and repeating the reading.

Subtract the second reading from the initial reading and this gives an answer for Thixotropy. This should be quoted as the difference in “degrees overswing” at (time)

For example if the first reading is 260 and the second reading is taken after 2 minutes giving a result of 250 the result is recorded as Thixotropy at 2 minutes is 10 (the numbers quoted are just to show a simple calculation)

A comprehensive guide to the processes of ceramic slip and glaze manufacture are outside the scope of this document. However, we have listed below a chart that we hope will help

Fault	Description	Cause	Cure
Poor filling	Too long to fill moulds	Fluidity too low	Increase water addition or increase deflocculant
Flabby casts	Soft casts – difficult to handle	Thixotropy too high	Increase deflocculant
Brittle casts	Hard Casts – difficult to fettle	Thixotropy too low	Decrease deflocculant addition
Poor draining	Slip not draining from narrow sections	Fluidity too low/Thixotropy too high	Increase water addition or increase deflocculant addition

Wreathing	Small uneven fringes on slip side of cast	Thixotropy too low	Decrease deflocculant addition or decrease water addition
Pinholes	Small holes just below surface on mould side of cast piece	Fluidity too low	Increase water addition or increase deflocculant
Cracking	Small cracks e.g. where a handle joins a piece	Thixotropy too low	Decrease deflocculant addition or decrease water addition
Cast spot & casting flash	Discoloured patch occurring on the mould side of an article	Fluidity too high/Thixotropy too low	Decrease water addition or decrease deflocculant addition

Remember a torsion viscometer will help to identify slip or glaze problems at an early stage enabling you to make changes to the slip or glaze before it is used.

We also recommend the use of a pyknometer to measure slip density

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