

1) Establishing the total amount of resin in impregnated fibreglass for grinding wheels

Some fibreglass discs, corresponding to a surface of 5 dm², are weighed on an analytic scale. The material is put on a pyrex glass disc and introduced into a muffle furnace with a light air circulation where it is incinerated at a temperature 650° C. It usually takes 3 hours at this temperature to assure complete elimination of every organic part.

The residual fibreglass fabric weave is weighted again. If (**Pi**) is the starting weight of the material to be subjected to calcination and if (**Pf**) is the weight of the fibreglass material after calcination then the total amount of resin is given, as a percentage, by the following formula:

$$\text{Resin \%} = \frac{\mathbf{P_i} - \mathbf{P_f}}{\mathbf{P_i}} \times 100$$

2) Establishing the amount of volatile parts contained in the resin on impregnated fibreglass for grinding wheels

A certain quantity of fabric, shaped into 5 dm² discs or squares, is weighed on an analytic scale. The material is then put into an oven and is left there to dry for 2 hours and half at a temperature of 160° C and with a light air circulation. After it has cooled in the drying-chamber the sample is weighed again. If (**Pi**) is the starting weight of fibreglass and if (**Pf**) is the final weight of fibreglass, the difference between the two weights (**Pv**) represents the drop of weight due to volatile parts. Knowing the percentage of the total resin contained in the material before drying (**R**), the following formula must be used to determine the volatile parts:

$$\mathbf{V \%} = \frac{\mathbf{P_v}}{\mathbf{R}} \times 100$$

3) Establishing resin flow on impregnated fibreglass for grinding wheels

Six 1 dm² fibreglass samples (discs or squares) are weighed on an analytic scale to find the starting weight (**Pi**).

The samples are then put between two hostaphan sheets and then under a press with a pressure of 20 kg/cm² at 155° for 5 minutes.

After the samples are pulled out from the press, it is necessary to remove the hostaphan sheets and the resin that poured out from the sides, and then they must be weighed again.

This is how the final weight (**Pf**) is obtained.

The following formula is then used to determine the flow:

$$F \% = \frac{P_i - P_f}{P_i \times (\text{Resin\%} / 100)} \times 100$$

4) Establishing ultimate breaking strength of impregnated fibreglass for grinding wheels

Preparing fill threads (warp threads): A piece of resined fibreglass 20 cm long, on the side of the fill (warp), and 10 cm wide is put into an oven with a light air circulation and it is dried at 80° C for two hours and a half. After the sample has cooled in the oven, it must be freed of the warp threads (fill) with the use of scissors or of a cutter. The ends of each single thread, 5 cm long, must be protected with 5 turns of paper adhesive tape and then subjected to traction at a speed of 10 cm/min. The clamps must be 10 cm one from the other. The average value obtained from the results of five tests is the breaking strength expressed in Newton.