VACUUM-DENSITY-TEST-APPARATUS

for aluminium

Model: MARTECH – VTCM 0017

Density index measurement using the MARTECH-VTCM 0017 in relation to the temperature of the melt

1. Two samples are taken from the melting furnace and filled in the respective iron cones, which were preheated by pre-casting to about 450 °C.

2. An iron cone with the sample is inserted into the vacuum chamber and this closes. The measuring starts automatically. An integrated temperature sensor shows the current sample temperature.

3. Within a few seconds the vacuum pump generates the necessary pressure of exactly 80 mbar in the vacuum chamber, after which the pressure sensor by means of a magnet valve fully closes the chamber.

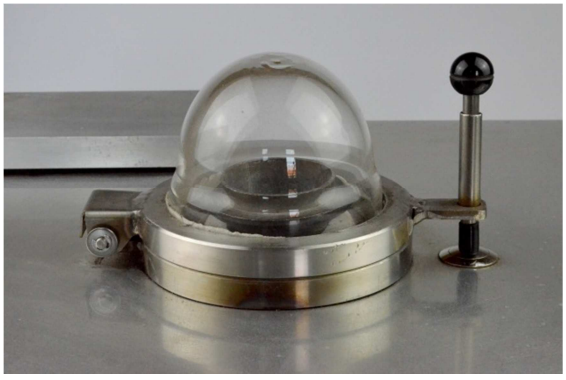
4. The vacuum pump continues to pull air from an additional stainless steel vacuum storage until a pressure of about 30 mbar is reached, then it automatically turns off. This additional vacuum reservoir serves as a buffer to compensate pressure rises in the vacuum chamber.

5. The vacuum sample and the sample solidified at environmental pressure are weighed in air and in water. The results of the weighing are taken over.

6. From this the density index is calculated using the supplied program on your PC. This shows the percentage difference in density between the two samples, and is an indirect measure of the hydrogen content in the melt.

   The density index can also be measured and evaluated directly via a separately available Formatic-Handy.

Vacuum chamber



Formatic-Handy

What distinguishes the MARTECH-VTCM 0017 from other density-index measuring instruments?

- **The integrated temperature sensor**

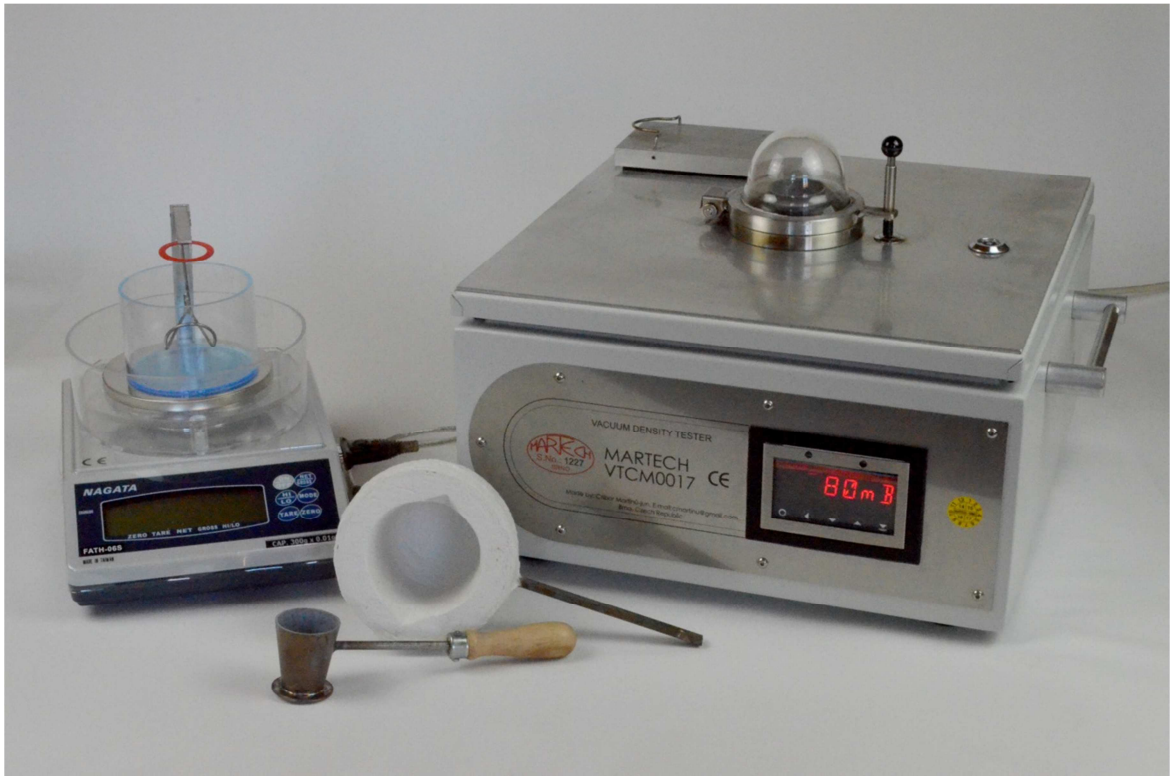
  It captures the density index in relation to the actual temperature of the sample and links it to the batch number. This leads to a better traceability and thus also to an informative capability within the company quality assurance system.

- **The additional vacuum storage**

  The vacuum pump must not be running during the entire duration of the measurement process. Vacuum losses in the chamber can be compensated by pressure sensor and magnet valve from the stainless steel vacuum storage. So the life of the pump is significantly extended and the maintenance costs are reduced.

- **The low weight**

  With its weight of only 22.8 kg MARTECH-VTCM 0017 is easy to transport and can thus be used variably.
  It is nevertheless robust and very suitable for use in the foundry.



Why should the gas content in the aluminium melt be tested?

Aluminium and aluminium alloys can dissolve considerable amounts of gas in the liquid state. The most frequently occurring gas is hydrogen. The existing hydrogen in the molten metal causes porosity during solidification of the metal. This porosity affects the mechanical properties, the density and also the appearance of the mouldings.

With the MARTECH - VTCM 0017, you can monitor the hydrogen content immediately before casting and possibly carry out another degassing operation.

This reduces the reject rate due to porosity of castings and makes it possible to assess the efficiency of the degassing treatment.

An apparatus for determining the density index, an internationally recognized measurement unit, should be present in every aluminium foundry.

If you also want to make a MARTECH-VTCM 0017 an integral part of your business or have any questions, please contact us.

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Let us show you the workings of MARTECH-VTCM 0017 at your site.
For this, please arrange an appointment with us.