

PALMER MELT SHOP

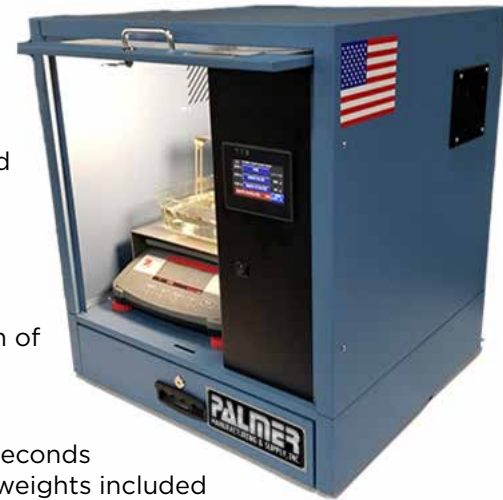
Palmer PAS3000 Porosity Analysis

The Palmer PAS3000 is a better way to measure and control the porosity in your aluminum casting process. This hydrogen porosity analysis system uses a repeatable, scientific method to measure the level of porosity in Reduced Pressure Test (RPT) samples. No more sawing, polishing, and comparing to a chart. Just measure your RPT sample using the PAS3000 and in less than 30 seconds you have the result. Whether using in conjunction with a RPT machine, the PAS3000 is a safer, quicker, and more accurate way to measure and control the gas levels in your aluminum melt.

The PAS3000 includes: full enclosure to reduce dust, automatic calculation of the results, a touch screen interface to guide the operator, calibration weights, and an Ethernet port to transfer the data to a computer.

Advantages

- Easy to use
- Scientific method of evaluating RPT samples (gas slugs)
- Eliminates sawing and polishing of RPT sample
- Safer, more accurate and less expensive method
- Automatic calculation of specific gravity
- Wide door with easy access tray
- Results in just a few seconds
- Precision calibration weights included



Palmer PAS5000 Melt Quality Control System

Performs & Reports RPT Sample Density, % Porosity, & Density Index all in one machine

The Palmer PAS5000 represents a breakthrough in hydrogen porosity control of the aluminum melt and castings. With precise computerized control of the vacuum setting and quick automated measurements of sample density, the long-standing problem of operator variation is virtually eliminated. The PAS5000 is the only system on the market with the ability to perform and report RPT sample density, % Porosity, and Density Index all in one machine. Test results are stored by date/time, vacuum setting, and alloy along with company information, such as furnace number and part number. Data can be directly exported to a SCADA system or retrieved through either the easy access USB port or ethernet port.

Advantages

- Digital HMI interface to Allen Bradley PLC
- Password protected Set-up Screen to enter vacuum level, solidification timing, and to populate drop-down menus for alloys
- Calibration screen to check and record calibration
- Precision digital control of vacuum setting eliminates operator from manually setting a gauge and variables
- Automatic ABORT mode if vacuum level is not reached or maintained, ensuring sample is run correctly
- Reports Density (S.G.), % Porosity, or Density Index Number
- Data stored to PLC and/or directly exported to SCADA
- Industrial Ohaus computerized scale system with wide access trays for easy operation
- Internal industrial vacuum pump with easy access
- Built-in sample quenching station
- Heavy duty welded steel frame
- Stainless steel working top and handle
- Drop-down steel cover protects system from dust
- Internal LED lighting



Palmer Rotary Degasser for Aluminum

Features:

- Low Cost With High Efficiency
- Stainless Steel Construction
- Variable Speed Air Motor
- Portable and Lightweight - Under 50 Pounds
- Versatile - Can be used in dip-out or crucible furnaces with capacities from 40 to 3000#
- Unique one piece lance reduces cost by eliminating shaft/impellor design
- Eliminates use of hazardous degassing tablets and chlorine or freon gas

General Specifications:

- Motor Horsepower - 3/4 HP
- Motor RPM - 3600 RPM Variable Speed
- Lances - 24" and 36" are available. Note that 12" of lance length are contained within the unit shroud
- Body Size - 8" Diameter x 17" Long x 12" Base Flange - Suspension Hook 14" above body
- Customer Requirements - Compressed air source (90-100 PSI), Overhead Hoist, Dry Nitrogen, Argon or proprietary dry gas

Included with Purchased Unit

- Degas unit, combination air regulator/filter/lubricator for air motor, four standard lances either 24" or 36" (non-impellor). See system picture to the upper left.
- Customer supplies interconnecting hoses for compressed air, filtered gas and inert gas to suit the needs of the installation.

Degas Times (Estimated)

- 70-500 lb crucible: 1-5 minutes
- 500-3000 lb crucible: 5-10 minutes

Options

- Three leg mounting for support on flat top crucible furnaces
- Impellor style lances available
- Reduced pressure tester

Aluminum Degassing

The degassing of aluminum is based on the principle that dissolved hydrogen gas will move from an area of high concentration (in the melt) to an area of low concentration (in the inert gas). Hydrogen gas disperses in molten metal as it would if it were released in any confined space. It will maintain a constant concentration throughout the melt. Hydrogen gas can migrate in liquid metal almost as fast as it can in air.

Therefore, it is unnecessary to bring every ounce of metal in contact with the inert gas. The efficiency of aluminum degassing is determined by two factors, the transfer rate across the metal/gas interface and the total surface area available for transfer.



Before



After



Reduced Pressure Tester

Whenever degassing is a requirement of the melting process, it is desirable to verify the effectiveness of the degassing process.

Palmer supplies a simple, easy to use partial pressure test unit for this verification.

To use, the operator warms a sample cup, dips the cup into the furnace for a metal sample, quickly places the sample into the vacuum chamber, and starts the vacuum pump.

The aluminum solidifies under a vacuum causing any entrained hydrogen gas bubbles to expand greatly. Once solid and cooled, the sample is cut in half and compared to the chart below for gas level analysis.



Test Bar Mold

- Complies with ASTM B108-02
- CNC machined from class 30 gray iron.
- Optional digital temperature read out available.
- Portable
- Weight 150 lb (68 kg)



Spectrographic Coupon Mold

- CNC machined from A36 steel
- Heat dissipating handle
- Homogeneous element distribution within the sample.
- Depressed center to aid lathe machining
- Easy sample removal
- Portable
- Weight 7 lb (3 kg)



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