



PRODUCT BULLETIN

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AUTOMATED ASH FUSION SYSTEM

The Automated Ash Fusion System provides the coal testing laboratory with a convenient and economical means of automatically determining the ash fusion temperatures of coal. The ash fusion furnace is combined with a solid state control system and allows up to 9 samples to be tested in one operation. The furnace is a fast response unit specifically designed for this application. It combines field replaceable, Molybdenum-Disilicide elements with low thermal inertia insulation for uniform heat-up and rapid cool-down. An installed, Type "S" control thermocouple is provided. Mounted in a free-standing cabinet, fan-cooled for operator safety and comfort, the furnace has a rear atmosphere inlet tube (for the customer supplied reducing gas system), a gas flow meter and a sliding quartz viewing window.



The system features a solid-state, current-proportioning, temperature controller with a continuous Digital Read Out of the furnace temperature. Human error in the fusion temperature readout is thus reduced to a minimum. A field adjustable, audio signal is provided to alert the operator when the anticipated fusion temperature range is reached. The program heats or cools the furnace at preset rates, automatically, without attention from the operator. Heating is at a uniform rate of 15 degrees F (8 degrees C) per minute. The average cooling rate is appreciably higher. Power regulation to the furnace is by means of a solid-state Silicon-Controlled-Rectifier module, with automatic current limiting. No adjustments of power are required during a cycle. The control system is calibrated at the factory and normally, does not require adjustments in the field. The system has a six foot power cord with a 230 volt, single phase, three prong plug. In use, the operator need only load the furnace and press the "Start Run" button. As the Fusion points are observed, the temperatures are read from the digital indicator.

When complete, the "Cool" button is pressed. If not prompted, the control system will return to the starting temperature after reaching 2800°F. When at, or near, the starting temperature the specimens are replaced and the cycle is ready to be repeated. A complete ash fusion cycle to ASTM D 1857 specifications, can be run in as little as five hours. With the audio temperature signal provided one operator can monitor several systems.

CATALOG NUMBER	DESCRIPTION
090K-007	Automated Ash Fusion System
090K-100	Camera Monitoring System for Ash Fusion System
090K-110	Ash Fusion Accessory Kit

Furnace Specifications: Overall Dimensions: 20" W x 19" H x 22" D
Chamber Inside Dimensions: 1 3/8" H x 2 1/8" W
Length of Uniform Zone: 1 1/2"
Rated Furnace Temperature: 2800° F
Rated Furnace Power: 3.5 kW
Setpoint Range: 750 - 2800° F, Pre-programmed 32 -c,
Manual Readout Range: 32 -2825° F
Power Requirements: 230 V/Single Phase, 60 Hz, 15 A
or 220 V/1 Ph/50 Hz

Optional Ash Fusion Video Monitoring System

By combining a Ash Fusion Furnace system with a video-camera, monitor, temperature display, and video recorder, it is possible to perform a complete ash fusion test without interrupting the lab technician's duties. A critical moment need never again be missed by a busy operator. The heart of the Ash Fusion Monitor System is a high resolution video camera selected specifically for this severe application. The camera has a burn-proof tube and a telephoto lens with automatic iris control. This camera will yield larger clear images from 1200° F to 2800 °F and beyond. The camera is mounted beside the ash fusion furnace on a rigid support, together with a fully adjustable optical mirror assembly. The use of this unique viewing system allows the camera to be mounted in a safe location and also provide for direct viewing of the furnace chamber at all times. For furnace loading, the mirror assembly is moved aside for full chamber access. The use of this unique viewing system allows the camera to be mounted in a safe location and also provide for direct viewing of the furnace chamber at all times. For furnace loading, the mirror assembly is moved aside for full chamber access. The video monitor is an industrial grade, high resolution unit, with 8" picture tube. Clearly visible from a distance, the monitor allows the operator to observe the test progress without going to the furnace. The furnace temperature is displayed on the video monitor, along with the specimen image and the monitor may be placed anywhere, even in another room, and still permit the instant viewing of the specimens and furnace temperature. A video-tape-recorder is supplied permitting a record of the ash fusion being made without operator attention. The tape may then be replayed at any convenient time to review the critical temperatures.

Optional Ash Fusion Accessory Kit

Ash Fusion Test Accessory Package: Base Mold, 2 piece Brass Cone Mold Pointed-Tip Spatula for Cone Mold Triangular File, 6" (12.7) Glassine Mixing Papers, 6"x4.5", 1000/pkg Agate Mortar & Pestle, 100mm OD Roasting Dishes, 5" Gas Cylinder Support Automatic Gas Regulator, two stage for reducing gas. Gold Wire, 24 gauge, 99.98% Nickel Wire, 24 gauge, 99.98% Amber Lat Tubing, 1/4"x1/8" Aluminum Oxide, reagent, ignited powder, 500gm Alundum Refractory Cement 5lb. 130-68 Dextrin, NF, white 1lb. Kaolin, NF powder, 500gm. 8260-68 Petroleum Jelly salicylic Acid reagent, crystal 500gm. Sieve, 3" 200 mesh Bottom Pan for Camel Hair Dusting Brush