



FOOD PACKAGING GAS MIXER MODELS 8525, 9520



APPLICATION

The Models 8525 and 9520 are specifically designed to mix gases for food packaging applications. The Model 8525 has a range of 0-100% carbon dioxide in nitrogen and the Model 9520 has a range of 0-100% oxygen in carbon dioxide. The input gases are normally supplied from a regulated bulk source of gas storage and then fed through pipelines to the Thermco mixing system. The two gases are then mixed in the Thermco system and the mixture provided to the food packaging machine. Once the operator sets the gas mixture, the mixing system will precisely maintain the gas mixture over the operating flowrate range of 0 to 750 SCFH. The mixing system may serve one food packaging machine or a multiple number of machines.

The wetted surfaces of the gas mixer are specially cleaned to remove particulates that could contaminate the gas mixture and ultimately the food. 20 micron filters are placed on the supply gas inlets of the gas mixer.

The gas mixer is enclosed in a NEMA 4X stainless steel enclosure which enables the gas mixer to be mounted in a washdown area. Since packaging with the wrong gas mixture may cause serious problems with the food, a gas analyzer with high and low alarm setpoints is provided to constantly monitor the gas mixture. If the mixture should go out-of-limits, a horn will sound which alerts personnel that a bad mixture is being created.

FOODS COMMONLY PACKAGED WITH MODELS 8525 OR 9520

- Shredded Cheese
- Ground Meats
- Bakery Goods
- Powdered Milk
- Fish

FEATURES

- Continuous gas analysis of the gas mixture
- Surge tank design allows infinite flowrate turndown from 0 to 750 SCFH
- Mixture range from 0 to 100% carbon dioxide in nitrogen or 0 to 100% oxygen in carbon dioxide
- Gas mixer is placed in NEMA 4X stainless steel enclosure for protection from washdown fluids
- Alarm system to alert personnel when mixture has gone out-of-limits

PRINCIPLES OF OPERATION

The input gases are supplied from regulated bulk storage tanks to the gas mixer. Normally their pressure will be between 100 and 125 PSIG. Within the mixer these gas streams are regulated to 80 PSIG. After the internal regulators, the two streams flow into a unique mixing valve which is precisely machined to create the correct mixture proportion. The gas mixture flows out of the valve and through a solenoid valve and then into a surge tank. Once the pressure in the surge tank reaches the upper setpoint on a pressure switch, the mixed gas solenoid valve is shut off and the pressure in the surge tank falls until it reaches a lower setpoint. At this point the solenoid valve opens and the gas mixture resumes flow into the surge tank and the cycle repeats itself.

The gas analyzer continuously monitors the mixture in the surge tank. The proper gas mixture is set by the operator by turning the mixture adjustment valve to the desired setting shown on the scale. In order to precisely set the gas mixture the operator may then observe the analyzer and change the mixture adjustment valve accordingly.

SPECIFICATIONS

Flowrate

0-750 SCFH (0-20 Nm³/h)

Accuracy

Model 8525

±2% carbon dioxide over 50°F to 80°F (15 to 27°C) temperature range
±3% carbon dioxide over 40°F to 104°F (4 to 40°C) temperature range

Model 9520

±2% oxygen over 50°F to 80°F (15 to 27°C) temperature range
±3% oxygen over 40°F to 104°F (4 to 40°C) temperature range

Stated accuracies assume that the input temperature of the gases are equal.

Gas Analyzer

Thermal Conductivity Type. The analysis is readout on a digital meter reading directly in CO₂% in N₂ or O₂% in CO₂.

Analyzer Output

4-20 mA linear signal proportional to 0-100% CO₂ in N₂ (Model 8525).
4-20 mA linear signal proportional to 0-100% O₂ in CO₂ (Model 9520).

Temperature Range - Ambient and Process Gas

40°F to 104°F (4° to 40°C)

Required Supply Gas Inlet Pressure

100-125 PSIG (6.9-8.6 BARG) for both gases
(Input pressures do not have to be equal)

Mixed Gas Output Pressure

10-50 PSIG (0.7-3.4 BARG) (Adjustable with regulator on the mixer)

Gas Connections

1/2" NPT female pipe for both input gas supplies and mixed gas output.

Enclosure

Stainless steel NEMA 4X, quick release latch, lockable hasp

Surge Tank

5 gallon, carbon steel, ASME coded and CRN registered, pressure relief valve provided. (Surge tank is inside enclosure.)

Power Requirements

115 VAC, ±10 VAC, 60 Hz., .9 Amps
(220 VAC, 50 Hz. available on request)

Materials

All wetted surfaces are cleaned to prevent particulate from contaminating the gas mixture. Lubricants and thread sealants used are acceptable for food processing areas by USDA or FDA.

Weight

Net 75 lbs. (34 kg), Packed 159 lbs. (72 kg)

Dimensions

28" (71 cm) Height; 25" (63.5 cm) Width; 15" (38cm) Depth

CALCULATION OF REQUIRED FLOWRATE

Many food packaging applications require surges of mixed gas flow during the cycle of the food packaging machine. The Models 8525 and 9520 should not be subjected to flowrate demands greater than 750 SCFH; an improper gas mixture will result. In some cases, a surge tank between the gas mixer and food packaging machine will be required to smooth out high short-term flow demands. Consult the Thermco sales department for details on flow calculation. Higher flowrate gas mixers are available from Thermco.

GAS DELIVERY SYSTEM

The gas supply systems and gas pipelines into the gas mixer must be designed to continuously maintain a flowrate of 750 SCFH at a minimum of 100 PSIG. The user of the gas mixer should consult with the gas supplier to determine the proper system.



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THERMCO GAS ANALYZER



The gas analyzer built-in to the mixing system allows the operator to set the mixer to the required proportion. The gas analyzer is constantly monitoring the quality of the gas mixture.

The analyzer is equipped with high and low alarm setpoints so that in the event that an out-of-limit mixture is created, a horn will sound and a lamp on the front panel will light. The horn may be silenced with a push button on the front panel. In this manner the operator is immediately notified of a malfunction in the mixing system or in the supply gas system which would create a bad mixture. A 4-20 mA signal is available from the gas analyzer which can be wired to the user's recorder or data collection system to serve as a permanent record of the gas mixture analysis.

The analyzer provided in the mixing system is of the thermal conductivity type manufactured by Thermco. This instrument is ideal for this application since it is useful for detecting binary gas mixtures. The analyzer requires a minimum amount of maintenance, and does not contain any chemicals or sensors that must be periodically changed.

DOCUMENTATION AND QUALITY CONTROL

Each gas mixer is supplied with one instruction manual which includes complete wiring and flow diagrams. Each gas mixer is fully tested at the factory for proper flow, accuracy, and calibration.

WARNING

Personnel dealing with this equipment should read and understand warning labels and instruction manuals provided by Thermco. Only personnel familiar with industrial gases should attempt to install or service this equipment. Gases from high pressure cylinders must be reduced to the specified pressure before entering the gas mixing system to prevent the possibility of equipment damage and personal injury. Gases from liquid storage sources must be completely vaporized before entering the gas mixing system to prevent the possibility of equipment damage and personal injury.

Flammable gases or corrosive gases should not enter this gas mixing system.

The Model 8525 can not be converted to a Model 9520 and a Model 9520 can not be converted to a Model 8525.

ORDERING INFORMATION

Thermco gas mixers are available through many local industrial gas suppliers. Thermco gas mixers may also be ordered directly from the factory. When ordering specify gas pressures if different from the standard.