



Southwest Gas February 15, 2006





Vent-Free Gas Products Alliance

The Vent-Free Gas Products Alliance is a Coalition
of Members of the Vent-Free Gas Products Division
of

GAMA

An Association of Appliance and Equipment Manufacturers
Headquartered in Arlington, VA.

Vent-Free Gas Products Alliance

Preserves Current Markets

- **Removes Barriers**
- **Provides Consumer Information**
- **Works with Gas Utilities and Propane Groups**

Work with Code Groups

- **Works with Codes and Standards Groups**
Our outstanding Code Story today:

At the September 30, 2005 IAPMO Annual Convention, the membership voted to allow the use of vent-free gas products in the 2006 UMC.



Wording of Proposal

- **924.1 Prohibited Installations.** Unless specifically permitted by the Authority Having Jurisdiction, unvented room heaters shall not be installed as primary heat sources. Unvented heaters shall not be permitted in spaces that do not have the required volume of indoor air as defined in section 902.1(B)

Wording Cont:

- 924.1.1 Unvented room heaters shall not be installed in bathrooms or bedrooms, (NFPA 54:9.23.2) Exceptions: 1) Where approved by the Authority Having Jurisdiction, one listed wall-mounted unvented room heater equipped with an ODS shall be permitted to be installed in a bathroom provided the input rating shall not exceed 6,000 Btu/hr and combustion and ventilation air is provided as specified in 902(B) (NFPA 54:9.23.1)

Wording Cont:

- (2) Where approved by the Authority having Jurisdiction, one listed wall-mounted unvented room heater equipped with an ODS shall be permitted to be installed in a bedroom provided that the input rating shall not exceed 10,000 Btu/hr and combustion and ventilation air is provided as specified in 902.0 (B) (NFPA 54:9.23.2)

“When you look at things differently...things begin to look different.”

Dr. Wayne Dyer

Vent-Free Supplemental Gas Heating Products

- Used for Supplemental Zone Heating
- Do Not Require a Vent, Flue or Chimney
- Certified to ANSI Z21.11.2
- Range of 2,000 – 40,000 Btu (Limited to 40,000 Btu)
- Oxygen Detection Safety Pilot
- Fixed Installation, Internal Regulator, Gas Valve, Variable Heat Settings
- More Than One Million Units Shipped Annually



Categories of Vent-Free Gas Products

1. Vent-Free Supplemental Gas Space Heaters

- ❖ Radiant or Convection Heat
- ❖ Infrared (Plaque and Blue Flame Burner Designs)
- ❖ 5,000 - 40,000 Btu/hr Input with Turndown to 2,000 Btu/hr
- ❖ Floor or Wall Mounted
- ❖ Manual or Thermostatic Controls
- ❖ Fan Accessory Option

Most Vent-Free Gas Products Do Not Require Electricity₁₂



2. Vent-Free Gas Logs

- ❖ Yellow or Blue Flame Burners
- ❖ 8,000 - 40,000 Btu/hr
- ❖ Concrete, Clay, Ceramic, or Ceramic Fiber
- ❖ Specific Positioning
- ❖ Installed in Existing Masonry or Manufactured Fireplace
- ❖ Damper may be Closed During Use



3. Vent-Free Gas Fireplace Inserts

- ❖ Self Contained Units - Zero Clearance
- ❖ Fits into Existing Fireplace
- ❖ Incorporates Vent-Free Gas Logs
- ❖ Optional Thermostatic Controls and/or Blower
- ❖ UL 127 Certified



4. Vent-Free Gas Fireplaces

- ❖ Self Contained Realistic Fireplace Unit Without a Flue
- ❖ Full Choice of Full or Compact Designs
- ❖ Logs may be Installed at Factory or Sold Separately
- ❖ Built in or Recessed Inserts
- ❖ Available with Surrounds or Mantels





5. Vent-Free Gas Stoves

- ❖ Self Contained
- ❖ Resemble Wood Stoves
- ❖ Incorporate Vent-Free Gas Logs



American National Standards Institute

ANSI Z21.11.2



- Accredited Standards Making Body
- Develop and Maintain Standards for Testing and Evaluation of Gas Products
- ANSI Z21.11.2 Addresses Unvented Gas Room Heaters (Includes Vent-Free Hearth Products). All Vent-Free Gas Products Marketed in the U.S. are Design Certified to this Standard
- Safety, Performance, and Construction of the Product
- Manufacturing and Production Tests and Audits³

Requirements for All Vent-Free Gas Products

- **Safety Grills**
- **Meets Emissions Guidelines**
- **Defined Instructions, Permanent Markings**
- **Installation Required to Conform to National Fuel Gas Code (NFGC)**
- **Piezo Igniter**
- **Oxygen Detection Safety-Pilot (ODS)**

ANSI Z21.11.2 Cont:

- **ANSI requires that no more than 10,000 Btu be installed in bedrooms and no more than 6,000 Btu for bathrooms**
- **Precise Positioning Logs**
- **Fixed Position of Loose Materials**

Current Code Status

- **The Following Model Building Code Groups Permit the Installation of Listed Vent-Free Gas Products in the United States:**
 - ❖ **National Fire Protection Association (NFPA)**
 - ❖ **Building Officials and Code Administrators (BOCA)**
 - ❖ **Southern Building Code Congress International (SBCCI)**
 - ❖ **Council of American Building Officials (CABO)**

Regulatory Status of Vent-Free Gas Products

- The Following Codes Permit the Installation of Listed and Labeled Vent-Free Gas Products:
 - ❖ Uniform Mechanical Code (UMC)
 - ❖ International Mechanical Code (IMC) IMC Code Specified that Vent-Free Gas Appliances be Used Only as Supplemental Heat.
 - ❖ National Fuel Gas Code (NFGC) and International Fuel Gas Code (IFGC)
 - ❖ Required that Vent-Free Gas Appliances be Listed, Labeled and Installed in Accordance with the Listing and Manufacturers' Instructions.

The ODS Standard

- **1950s** **Development of ODS**
- **1962** **Publication of ANSI Z21.11.2 Standard**
- **1971** **U.S. Consumer Product Safety Act Passed**
- **1977** **CPSC Mandates ODS**
- **1980** **All Vent-Free Gas Product Manufacturers
Comply with Voluntary Standard
Requiring ODS**

Safety Record of ODS Equipped Vent-Free Gas Products

- **Over 60 Million Plus Units Installed Throughout the World.**
- **16 Million Plus Units Installed in the U.S. Since 1980.**
- **According to ODS Manufacturers, No Documented Deaths have been Attributed to Emissions from an ODS Equipped Product.**

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Technological Advances of ODS (Oxygen Detection Safety-Pilot)



- **Normal Operation:**
 - **20.9 Percent Oxygen – The Flame Touches Tip of Thermocouple, Generating the Necessary Millivoltage Needed to Hold the Safety Valve Open**
- **Oxygen Level Drops:**
 - **19 Percent Oxygen – The Flame Begins to Lift-Off the Precision Pilot Burner**

Technological Advances of ODS (Oxygen Detection Safety-Pilot)



- **Safety Shutdown – 18 Percent Oxygen:**
 - The Unstable Pilot Flame Moves Away from the Thermocouple Causing it to Instantly Cool
 - The Thermocouple Stops Generating the Electricity Needed to Hold the Spring Loaded Solenoid Valve Open
 - The Valve Shuts the Heater Down and Cannot be Started Until the Oxygen Level in the Room Returns to Normal

What about IAQ?

- Are these units safe?
- 1996 – AGAR IAQ Research
- All certified supplemental vent-free gas products tested within nationally recognized guidelines for IAQ

Indoor Air Quality: “Let’s Clear the Air”



AGA Research Comparison of Related IAQ Guidelines to Vent-Free Gas Products’ Emissions

Products of Combustion	Specifying Agency	National IAQ Standard/Guidelines Exposure Level/Time	Vent-Free Gas Product
CARBON MONOXIDE (CO)	Consumer Product Safety Commission	15 PPM Avg/8 Hours 25 PPM Avg/1 Hour	2.5 PPM/8 Hours 1.5 PPM/1 Hour
NITROGEN DIOXIDE (NO ₂)	OSHA and Gas Industry Experts	0.5 PPM Avg/1 Hour	0.22 PPM/1 Hour
CARBON DIOXIDE (CO ₂)	Residential IAQ Guidelines/ Canada	3500 PPM Ave/1 Hour	1500 PPM/8 Hours
OXYGEN (O ₂)	NIOSH	19.5% Minimum/Continuous	20.4% Continuous
HUMIDITY (H ₂ O)	ASHRAE	60% - 40%* Maximum	36.5% Maximum with no Condensation

Source: AGA Research Study, GRI Report 96/0093 – 1996

* Depending on Doe Heating Region

Sizing Guidelines

- Because of the AGAR Research, Consumers have Sizing Guidelines to Assist Them with the Proper Sizing of Vent-Free Gas Products
- All Vent-Free Gas Products Offer a Range of Heat Settings, Whether Manually or Thermostatically Controlled
- In Terms of IAQ, Any Size of Product can be Chosen Based on Personal Preference in All Applications Other Than in the Exception of DOE Heating Region V.
- The *Consumer Guide to Vent-Free Gas Products* Lists All Sizing Guidelines for the United States and is Available through Fireplace Retail Stores and the Alliance office.

Sizing Guidelines

- For the Comfort of the Homeowner, the Vent-Free Gas Product Should be Sized Prior to Purchase.
- Sizing Guidelines are Available from:
 - ❖ The Vent-Free Gas Product's Manufacturer
 - ❖ The *Consumer Guide to Vent-Free Gas Products* from the Vent-Free Gas Products Alliance

Humidity?

- Water vapor is a naturally occurring combustion product from burning gas. Do vent-free gas appliances generate enough water vapor – in addition to other sources in the home – to raise indoor relative humidity high enough and long enough to foster mold growth?

Results of the Probabilistic Analysis for Combined Cases

DOE REGION	OUTDOOR TEMPERATURE (°F)	OUTDOOR HUMIDITY RANGE (%)	INDOOR REL. HUMIDITY (%)			PERCENT OF CASES < 70% RELATIVE HUMIDITY
			MEAN	90TH PERCENTILE	MAXIMUM	
I	56° F	50 to 90%	47.2%	57.2%	76.3%	99.9%
	% Contribution of vent-free appliance to total indoor RH		4.2%	4.7%	12%	
II	45° F	50 to 90%	35.7%	43.5%	59.3%	100%
	% Contribution of vent-free appliance to total indoor RH		11.0%	11.0%	17%	
III	36° F	50 to 90%	29.1%	36.5%	51.6%	100%
	% Contribution of vent-free appliance to total indoor RH		18.0%	19.0%	12%	
IV	26° F	50 to 90%	23.6%	31.9%	46.3%	100%
	% Contribution of vent-free appliance to total indoor RH		29.0%	34.0%	22%	
V	13° F	50 to 90%	19.6%	29.1%	43.5%	100%
	% Contribution of vent-free appliance to total indoor RH		43.0%	48.0%	33%	

Key Findings

- In most homes in the U.S., vent-free gas appliances do not generate enough water vapor to raise indoor relative humidity high enough to foster mold growth.
- Greater emphasis should be placed on other factors that may cause indoor relative humidity to exceed mold formation thresholds, such as aging homes, outdated or poor construction, leaky windows, deficient wall insulation, insufficient ventilation, etc.

Consumer Information

- The Members of the Vent-Free Gas Products Alliance have Made Available:
 - ❖ *Consumer Guide to Vent-Free Gas Products*
 - ❖ *Builder's Guide to Vent-Free Gas Product*
 - ❖ *Sizing Guidelines for the U.S.A.*
 - ❖ *Presentation Materials*
 - ❖ *Impacts of Vent-Free Gas Heating Products on Indoor Relative Humidity*

Alliance Members

Beckett Gas, Inc.

**Copreci S. Coop./Mondragon
Components USA, Co.**

**DESA International/FMI
Corporation**

Empire Comfort Systems, Inc.

Lennox Hearth Products

Maxitrol Company

**Monessen Hearth Systems,
Inc.**

**Rasmussen, The Gas Log
Company**

Rinnai America Corporation

S.I.T. Controls U.S.A., Inc.

**Vermont Castings/Majestic
Products/CFM /Temco
Fireplace Products, Inc**

Williams Comfort Products

Worgas, Inc.



Alliance Members



QuickTime™ and a TIFF (Uncompressed) decompressor are needed to see this picture.



QuickTime™ and a TIFF (Uncompressed) decompressor are needed to see this picture.



Trade Alliances





Contact:

VENT-FREE GAS PRODUCTS ALLIANCE

2107 Wilson Blvd.

Suite 600

Arlington, VA 22201

703-525-7060 X 240 Phone

703-525-6790 Fax

mcarson@gamanet.org

www.gamanet.org

www.ventfree.org