

## Ecomate<sup>®</sup> Blowing Agent: Better Products... Better for the Environment...Better for Your Bottom Line.



If you're looking for improved performance and cost efficiency from your polyurethane products, ecomate<sup>®</sup> blowing agent from Foam Supplies, Inc. can give you a competitive edge. That's because ecomate<sup>®</sup> is the efficient and sustainable blowing agent that is friendly to the environment.

Ecomate<sup>®</sup> has zero ozone depletion potential, zero global warming potential, and is VOC exempt. It meets all current and future regulatory requirements, and is U.S. EPA SNAP approved to replace HFCs and SMOG producing hydrocarbons. What's more, ecomate<sup>®</sup> has been field proven in a wide range of applications since 2002 – including refrigeration, marine, automotive, construction and many more. Plus, ecomate<sup>®</sup> is backed by FSI's global service, logistics and sales support.

Better products. Better for the environment. Better for your bottom line. Add up all the advantages, and you'll choose ecomate<sup>®</sup> blowing agent from FSI.



**THERMALLY  
EFFICIENT**



**ENVIRONMENTALLY  
BENIGN**



**ECONOMICALLY  
EFFICIENT**



**STRUCTURALLY  
SOUND**



## Get the ecomate® advantage!

### Field Proven

- In use since 2002
- Range of Applications

### Better Performance

- Thermal Efficiency
- Excellent Mechanicals
- Superior Blends

### Hygienically Safe

- GRAS Approval
- Ultra-Low Emissions

### Environmentally Benign

- ODP = 0
- GWP = 0
- VOC = Exempt
- No Legacy Issues
- Sustainable

### Regulatory Compliant

- U.S. EPA SNAP
- Montreal Protocol
- Kyoto Protocol

### Cost Effective

- Low "In the Door" Cost
- Use Current Equipment
- Cycle Time Improvements

### Available Globally

## Environmental Impact

Blowing Agent	ODP	GWP	VOC	Atmospheric Lifetime, Years	*CO <sub>2</sub> e	MWt	**ratio
ecomate®	0	0	Exempt	0.02	1	60	1.00
CFC-11	1	4750	Exempt	45	10878	137.4	2.29
CFC-12	1	10900	Exempt	100	22018	120.9	2.02
HCFC-22	0.055	1810	Exempt	12	2606	86.5	1.44
HCFC-141b	0.11	725	Exempt	9.3	1414	117	1.95
HCFC-142b	0.065	2310	Exempt	17.9	3881	100.5	1.68
HFC-134a	0	1430	Exempt	14	2431	102	1.70
HFC-152a	0	124	Exempt	1.4	136	66.05	1.10
HFC-227ea	0	3220	Exempt	34.2	9145	170.3	2.84
HFC-245fa	0	1030	Exempt	7.6	2297	134	2.23
HFC-365mfc	0	794	Exempt	8.6	1961	148	2.47
n-C5	0	<25	YES	0.008	29	72	1.20
c-C5	0	<25	YES	0.008	28	70	1.167

Data from US EPA

\*Carbon Dioxide equivalents [=GWP \* Ratio]

\*\*Ratio = MW/60, showing extra blowing agent for same density foam.

## Economic Efficiency

Blowing Agent	Relative Price / Weight <sup>1</sup>	MW	Weight Factor <sup>2</sup>	Relative Cost to ecomate® <sup>3</sup>
ecomate®	**	60	Ref	Ref
HCFC-141b	**	117	1.95	1.95
HFC-245fa	*****	134	2.23	7.82
HFC-365/227	*****	149	2.48	9.44
n-C5	**	72	1.20	1.20
c-C5	**	70	1.17	1.46

ecomate has excellent solubility in most polyols and in both sides of A+B systems. It is also soluble with most other blowing agents, including HCFCs, HFCs and HCs. By blending it with the various products available, it is easy to customize your product design. The chart above illustrates how ecomate® uses less material, and is less expensive at equal density.

<sup>1</sup>Relative price per unit of weight [e.g. \$/lb or €/kg]

<sup>2</sup>Weight factor [MW/60] illustrates extra blowing agent necessary for same density foam.

<sup>3</sup>Cost relative to ecomate® for same density of foam.

## Environmental Impact

	ODP	GWP	VOC
ecomate®	0	0	Exempt
HCFC-141b	0.12	725	Exempt
HFC-245fa	0	1030	Exempt
HFC-365mfc	0	794	Exempt
c-C5	0	11	Yes

## Flammability

Lower Flammable Limit (Vol %)	5.0
Upper Flammable Limit (Vol %)	23.0
Flash Point (closed cup)	-19°C/-2°F
Auto Ignition Temp	465°C/869°F
Heat of Combustion (kJ/g / BTU/lb)	-16.2/6965
Min Ignition Energy (mJ / BTU)	0.5/4.74 x 10 <sup>-7</sup>

Data above is for neat blowing agent. Isocyanates and Polyols/Resins can be blended with ecomate® so the flash point is high enough to not require use of "red label."

**Better Products. Better for the Environment.**

www.ecomatesystems.com