



NATIONAL ASPHALT PAVMENT ASSOCIATION

## **Fact Sheet for VOC content in asphalt pavement**

### **Issue**

Increasingly, project contractors are requiring suppliers to certify their building materials for VOC content, including asphalt pavement. This becomes somewhat difficult regarding especially since asphalt pavement is not an indoor construction material.

### **Background**

A number of green construction codes and building practices call for using building materials with “low” or “no” volatile organic compound (VOC) content. This is a common requirement with paints and solvents especially in regards to construction for environmentally sensitive areas (e.g., wetlands) or facilities (e.g., hospitals, schools).

The methodology used to measure VOC emissions is well developed. The official method accounts for the impact of VOC off-gassing indoors. VOC emissions is different from VOC content, although both are somewhat interchangeable when looking at indoor air quality. VOC content is also comparable to the amount of “solvent” added to a particular material.

### **VOC content documentation**

Below are four specific points, with corresponding documentation, identifying that asphalt pavement contains less than 0.1 percent VOC:

- Owens Corning documents that one grade of their AC, by direct analysis, contains ~ 0.099 percent VOC. A typical asphalt mix that containing ~ 5 percent liquid binder would then constitute ~ 0.005 percent VOC. <http://www.owenscorning.com/trumbull/VOCContentOxidizedAsphalt.pdf>
- EPA reports that VOC “emissions” during loadout of HMA run ~ 780 lbs/200,000 tons mix = ~ 0.000002 lbs/lb or ~ 0.0002 percent on a mix basis.  
See Table 9 @ <http://www.epa.gov/ttn/chief/ap42/ch11/related/ea-report.pdf>
- Maricopa County, Arizona, identifies that hot-mix asphalt cement contains no solvent; i.e., a Method 24 Test would yield a VOC content of zero.  
[http://www.maricopa.gov/aq/divisions/permit\\_engineering/docs/pdf/tg98-003.pdf](http://www.maricopa.gov/aq/divisions/permit_engineering/docs/pdf/tg98-003.pdf)
- The European Environment Agency (EEA) identifies road paving asphalt contains approximately 0.00002 grams VOC (actually NMVOC- non-methane VOC) per gram pavement material or ~ 0.002 percent of the pavement. See Table 3.1 at:  
<http://www.eea.europa.eu/publications/emep-eea-emission-inventory-guidebook-2009/part-b-sectoral-guidance-chapters/2-industrial-processes/2-a-mineral-industry/2-a-6-road-paving-with-asphalt.pdf>

Note that the above documentation is for (hot-mix) asphalt pavement. The EEA, as well as other agencies, show a greater amount of VOCs contained in cut-back asphalts, and various asphalt emulsions using solvent-type diluents.

### **Summary**

As green building practices increase, including the requirement for low or no VOC content in building materials, the above information may serve as documentation for the minimal to non-existent VOC content of asphalt pavement.