

ODORLESS ASPHALT

How Annoying is the smell of Asphalt!

How many times have you exclaimed like that as you pass by an asphalt production site or on a road being resurfaced? This year we're introducing you to asphalt odor neutralizing technology so we can eliminate that exclamation forever.

Ecosorb Technology

Ecosorb products are a blend of essential oils, food grade emulsifiers and water; they are effective, safe to use, biodegradable and harmless to the environment. There are currently two product lines, oil-based (essential oils + plant-based thinner) and water-based (essential oils + water + surfactant). The former are used as additives in areas such as asphalt, plastics and recycling. The latter, on the other hand, are sprayed into the air to neutralize those odors arising from industries such as WWT, asphalt, plastics, fertilizers, refineries, tanneries and medical cannabis cultivation.

Asphalt vs Ecosorb 606 A

The treatment of asphalt odor both in the atmosphere and directly in the bitumen is ACAT's workhorse. Throughout Europe there are now many companies that rely on our technology and over the years have confirmed this potential.

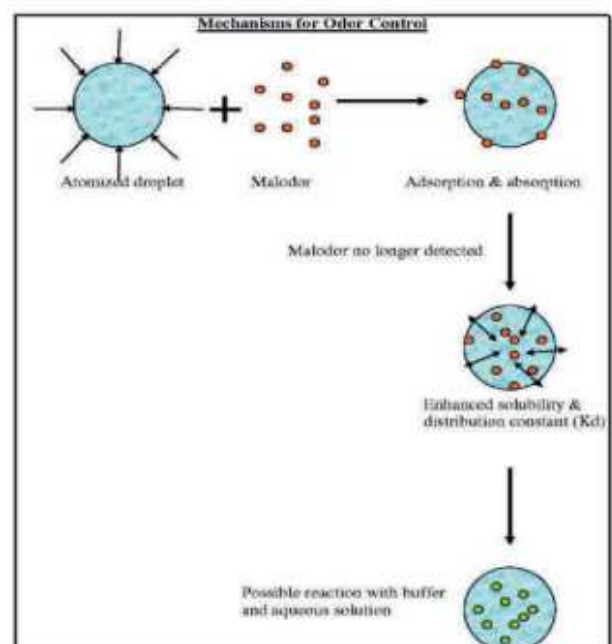
The main application is in bitumen mixing tanks where our Ecosorb 606 A, after being mixed with 0.03% (300 ppm) of asphalt, through adsorption and absorption reactions captures odor-causing molecules and traps them forever. The result is an asphalt that no longer has that annoying, pungent odor.

To better substantiate our argument, I report an odor concentration test conducted in Japan

to quantify the effects of the Ecosorb 606 A additive in a common paving asphalt.

Samples were collected from the vent of a tank receiving fresh untreated bitumen and from the vent of a tank receiving bitumen treated with the Ecosorb additive at a dose rate of 0.01% (100 ppm).

A team of six prequalified and certified odor assessors were tasked with quantifying the odor index of bagged samples using a dilution technique and a sensory technique.



ODORLESS ASPHALT

How Annoying is the smell of Asphalt!

No. of time	1	2	3	4	5	6	7	8	Each panelist's Odor threshold value	exclude highest and lowest value
Test sample Injection quantity	300 ml	100 ml	30 ml	10 ml	3 ml	1 ml	300 µl	100 µl		
Dilution ratio	10	30	10 ²	3×10 ²	10 ³	3×10 ³	10 ⁴	3×10 ⁴		
Panelist A	-	-	-	o	X				2.74	*
Panelist B	-	-	-	o	o	o	X		3.74	*
Panelist C	-	-	-	o	o	X			3.24	
Panelist D	-	-	-	o	o	o	X		3.74	
Panelist E	-	-	-	o	o	o	X		3.74	
Panelist F	-	-	-	o	o	o	X		3.74	

Table 1: Untreated Asphalt Binder (bitumen)

From the odor index, its concentration is calculated mathematically.

The six panelists were instructed to smell the collected sample gas at various dilutions with clean air and identify at which dilution they could no longer smell what was in the bag. To vary the dilution ratio for the test, decreasing amounts of sample gas were added to 3 liters (3000 ml) of clean air. For the first 300 ml of sample air was added to 3 liters of clean air presenting a dilution ratio of 10 (3000 ml/300 ml). The odor concentration of gases from untreated asphalt is 4000!

The odor concentration of gases from treated asphalt is 160! A 96% reduction in perceived odor!

Other applications in asphalt fields

Other applications include the neutralization of odor from exhaust stacks and truck loading and unloading areas. In both cases, our technology involves the use of a water-based

product from the Ecosorb 606 line, sprayed through a pre- dimensioned high-pressure system (HPS).

The table below shows the results obtained at an asphalt production site. In this case a nozzles ring was installed at the top of the gas exhaust stack. The efficiency of Ecosorb products is not only certified by a personal perception of an improvement in odor intensity but is also guaranteed by industrial data and therefore real!

ODORLESS ASPHALT

How Annoying is the smell of Asphalt!

No. of time	1	2	3	4	5	6	7	8	Each panelist's Odor threshold value	exclude highest and lowest value
Test sample injection quantity	300 ml	100 ml	30 ml	10 ml	3 ml	1 ml	300 μl	100 μl		
Dilution ratio	10	30	10 ²	3×10 ²	10 ³	3×10 ³	10 ⁴	3×10 ⁴		
Panelist A	-	○	X						1.74	*
Panelist B	-	○	○	X					2.24	
Panelist C	-	○	○	X					2.24	
Panelist D	-	○	○	○	X				2.74	*
Panelist E	-	○	○	○	X				2.74	
Panelist F	-	○	X						1.74	

Table 2: Asphalt Binder (bitumen) Treated with Ecosorb Additive

Sample code	Sample	dates	time	dilution	(ou/m ³)
100406ASA01	blank	06/04/2010	14.20	2	20000
100406ASA02	With 250 ml/h of ECOSORB 606	06/04/2010	14.25	2	18000
100406ASA03	With 500 ml/h of ECOSORB 606	06/04/2010	14.30	2	10000
100406ASA04	With 750 ml/h of ECOSORB 606	06/04/2010	14.35	2	9200
100406ASA05	With 1000 ml/h of ECOSORB 606	06/04/2010	14.40	2	6200
100406ASA06	100 meter from chimney	06/04/2010	15.00	—	150

Results obtained at an Asphalt Production Site