

## STATEMENT OF BASIS

for the issuance of Air Permit # 1145-AR-4

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality  
8001 National Drive  
Post Office Box 8913  
Little Rock, Arkansas 72219-8913

2. APPLICANT:

GS Roofing Products Company, Inc.  
2701 E. Roosevelt Road  
Little Rock, Arkansas 72206

3. PERMIT WRITER:

Siew Low

4. PROCESS DESCRIPTION AND NAICS CODE:

NAICS Description: Asphalt Shingle and Coating Materials Manufacturing  
NAICS Code: 324122

5. SUBMITTALS: August 11, 2003, August 18, 2003, August 29, 2003, September 29, 2003, January 14, 2004, February 20, 2004, and March 1, 2004.

6. REVIEWER'S NOTES:

GS Roofing (AFIN # 60-00049) at 2701 E. Roosevelt Road, Little Rock, Arkansas 72206, owns and operates an asphalt roofing manufacturing facility. This permitting action includes revised language and specific conditions to reflect the applicability of the Standard of Performance for Asphalt Processing and Asphalt Roofing Manufacture. The permit also authorized the revision of VOC emissions by increasing the permitted materials usage and incorporating more representative emission factors (from ARMA and U.S. Intec Modified Asphalt Coater), the installation of a 1,000 cubic feet per minute blower on a sand silo baghouse (SN-908) with additional duct work to extend the exhaust point above the building roof, and an increase of the allowable VOC content limits to 2.0 lb per gallon for paint and ink and 8.0 lb/gal for solvent. Opacity limits are increased from 5% to 20% for SN-901, SN-902, and SN-907. The facility is also required to monitor the inlet temperatures of SN-907, and pressure drop across unit of SN-901 and SN-902.

7. COMPLIANCE STATUS:

The facility is operating under an active CAO (LIS# 02-176). The following is a summary of the facility's permit violations:

1. The facility is an NSPS affected sources. However, the permittee had been operating without an NSPS permit until they received Air Permit 1145A-AR-3. The permittee self-report to the Department that they are subject to NSPS Subpart UU.
2. SBS flux usage at the facility exceeded the permit limit.
3. Roofing Line HEAF unit (SN-901) was not operational. Therefore, the permitted opacity of 5% may have been exceeded.

The issuance of Air Permit 1145-AR-4 will satisfy unresolved requirements of the CAO.

8. APPLICABLE REGULATIONS:

a. Applicability

Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, et cetera) (Y/N)  N

Has this facility underwent PSD review in the past (Y/N)  No  Permit # \_\_\_\_\_

Is this facility categorized as a major source for PSD? (Y/N)  No

\$ 100 tpy and on the list of 28 (100 tpy)?(Y/N) \_\_\_\_\_

\$ 250 tpy all other (Y/N) \_\_\_\_\_

9. EMISSION CHANGES:

The following table summarizes plantwide emission changes associated with this permitting action.

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 1145-AR-3	Air Permit 1145-AR-4	Change
PM	69.7	73.7	+4.0
PM <sub>10</sub>	69.7	73.7	+4.0
SO <sub>2</sub>	1.1	1.7	+0.6
VOC	98.9	95.5	-3.4
CO	13.1	13.1	0
NO <sub>x</sub>	9.5	9.6	+0.1
<i>Formaldehyde</i>	1.08	1.41	+0.33
<i>Carbonyl Sulfide</i>	0.70	0.73	+0.03
<i>Naphthalene</i>	0.01	0	-0.01
<i>2-Methyl phenol</i>	0.01	0	-0.01
<i>Phenol</i>	0.01	0	-0.01
<i>Dibenzofuran</i>	0.01	0	-0.01

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Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 1145-AR-3	Air Permit 1145-AR-4	Change
<i>Di-n-butylphthalate</i>	0.01	0	-0.01
<i>Polycyclic Organic Matter</i>	0.02	0.08	+0.06
<i>Glycol Ethers</i>	0.05	0	No longer a HAP
<i>Toluene</i>	0.33	0.37	+0.04
<i>Benzene</i>	0	0.19	+0.19
<i>1,1,2,2-Tetrachloroethane</i>	0	0.02	+0.02
<i>Ethylidene Dichloride</i>	0	0.05	+0.05
<i>Propionaldehyde</i>	0	0.21	+0.21
<i>HAPs*</i>	-	5.0	+5.0

HAPs emission limits used at Sn-106, SN-107, SN-130, and SN-140 only.

#### 10. MODELING:

##### Non-Criteria Pollutants

This permit contains a TLV table for non-criteria pollutants. Modeling was used to determine the permitted emission rates for ranges non-criteria pollutants (grouped by TLVs) which would pass the PAER .

##### 1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The PAER was deemed by the Department to be the product, in lb/hr, of 0.11 and the Threshold Limit Value ( $\text{mg}/\text{m}^3$ ), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV ( $\text{mg}/\text{m}^3$ )	PAER (lb/hr) = 0.11*TLV	Proposed lb/hr	Pass?
Formaldehyde	0.37	0.0407	1.28	No
Carbonyl Sulfide	TLV Not Established			
Polycyclic Organic Matter*	0.2	0.022	0.11	No
Toluene	188	20.68	0.30	Yes
Benzene	1.59	0.1749	0.16	Yes
1,1,2,2-Tetrachloroethane	6.87	0.7557	0.02	Yes
Ethylidene Dichloride	403.6	44.396	0.04	Yes
Propionaldehyde	47.5	5.225	0.18	Yes

The TLV for POM is based on the TLV for Phenanthrene.

A HAP table was prepared for SN-106, SN-107, SN-130, and SN-140 to establish Non-Criteria pollutant hourly emission rates in order to stay below 1/100 of the TLV. This table is a format of maximum allowable TLV vs. HAP content (by weight).

**2nd Tier Screening (PAIL)**

ISCST3 air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound was deemed by the Department to be one one-hundredth of the Threshold Limit Value, as listed by the ACGIH.

Pollutant	(PAIL, $\mu\text{g}/\text{m}^3$ ) = 1/100 of Threshold Limit Value	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Pass?
Formaldehyde	15**	10.68	Yes.
Polycyclic Organic Matter	2.0	1.75	Yes

\*\* Surrogate screening value adopted by ADEQ (see Steve Patrick memo of October 19, 1998).

11. CALCULATIONS:

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
SN-104, 105, 133, 134, 135, 136, 137	AP-42 Section 13.2.4	0.00032 lb PM/PM <sub>10</sub> per ton of material	-	-	Surfacing PM/PM <sub>10</sub> - All PM/PM <sub>10</sub> is composed of organic compounds. Therefore, the total VOC emissions are the sum of THC (as carbon) and the emitted PM/PM <sub>10</sub> .
	Roofing Line	0.85 lb			Saturant is only used on

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
	<p>emission factors are from Asphalt Roofing Manufacturer's Association (ARMA), and the modified asphalt VOC emission factor is based on test data from U.S. Intec modified asphalt coater (Asphalt Roofing Industry Fourier Transform Infrared Spectroscopy Modified Bitumen, U.S. Intec, Port Authur, Texas, EPA -454/R-99-027)</p>	<p>PM/PM<sub>10</sub> per tons of coating asphalt            4.23 lb PM/PM<sub>10</sub> per ton of saturant asphalt.  <u>Coater</u>            CO            7.54e-2 lb/ton of coating asphalt            VOC            3.59e-1 lb/ton of non-modified coating asphalt            2.4e-1 lb/ton of modified coating asphalt            Toluene            6.18 e-3 lb/ton of</p>			<p>the Roofing Line and only included in the Roofing Lin Cooling Section.</p> <p>CO, VOC, and HAPs emissions are based on ARMA coater and saturator emission factors.</p> <p>50 % of the Roofing Line Coater and Modified Line Coater emission factors are used. 25% of the Roofing Line Saturator emission factors. The 50% and 25% reduction are based on engineering judgment.</p>

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
		coating asphalt  Formaldehyde 9.15e-3 lb/ton of coating asphalt  Carbon sulfide 8.08e-3 lb/ton of coating asphalt  <u>Saturator</u>  CO 5.46e-3 lb/ton of coating asphalt  VOC 1.58 lb/ton of coating asphalt  Formalde			

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		hyde 2.68e-4 lb/ton of coating asphalt			
SN-106, SN-107, SN-130, SN-140, and SN-178	Mass Balance	-	-		Paint, ink, and part washer usage.
SN-116, 117, 118, 120, 142, 144, 156, and 159	ARMA	0.105 lb PM/PM <sub>10</sub> per ton of material.  0.243 lb VOC per ton of material.  0.0704 lb CO per ton of material.  <u>APP</u> VOC 8.10e-2 lb/ton  CO	-	-	All PM/PM <sub>10</sub> is composed of organic compounds. Therefore, the total VOC emissions are the sum of THC (as carbon) and the emitted PM/PM <sub>10</sub> .  HAP emission factors are based on ARMA Storage Tank emission factors.  SN-118 and SN-156 are using SBS. SN-159 is using APP. SN-116, SN-117, and SN-120 are routed to control equipments. A ten percent PM/PM <sub>10</sub> control efficiency applied.

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		1.19e-2 lb/ton  SO <sub>2</sub> 2.1 e-2lb/ton  Formaldehyde 1.19e-2 lb/ton  Carbonyl sulfide 2.85e-4 lb/ton  Benzene 1.50e-2 lb/ton  Ethylidene Dichloride 3.68e-3 lb/ton  Propionaldehyde 1.65e-2  <u>SBS</u> VOC			



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		7.05e-2 lb/ton  CO 3.00e-2 lb/ton  Formaldehyde 2.55e-2 lb/ton  Carbonyl sulfide 4.05 e-4 lb/ton			
SN-122	AP-42 Section 1.4 and 1.5	Look at AP-42	-	-	Emission rate calculations are based on propane.
SN-126, 146, 147, 150, 179	AP-42 Section 13.2.4	0.00032 lb PM/PM <sub>10</sub> per ton of material	-	-	-
SN-129	AP-42 Section 1.4 and 1.5	Look at AP-42	-	-	Emission rate calculations are based on propane.
SN-142	ARMA		-	-	
SN-175	Tank Program	-	-	-	-
		-			Parts Washers Solvents

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SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
SN-178	Mass Balance		-	-	usage.
SN-901	ARMA	4.23 lb PM/PM <sub>10</sub> per ton of saturant	Ceco Filter	90%	10 % of VOC are assumed to be condensable PM/PM <sub>10</sub> but are not controlled by filter.
SN-902	ARMA	0.85 lb PM/PM <sub>10</sub> per ton of Asphalt	HEAF	90%	10 % of VOC are assumed to be condensable PM/PM <sub>10</sub> but are not controlled by filter
SN-903	Publication from EPA's Clean Air Technology Center (CATC)	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 5400 cubic feet per minute (cfm).
SN-904	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 1000 cfm.
SN-905	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 900 cfm.
SN-906	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 12,800.
SN-907	NSPS Subpart UU	0.08 lb/ton	Monsanto Coalescing Filter	-	-
SN-908	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 1000 cfm, passive.

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
SN-909	CATC	0.02 g/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 900 cfm, passive.
SN-910	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 1800cfm.
SN-911	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 1000 cfm.
SN-912	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 4500 cfm.
SN-913	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 1050 cfm.
SN-914	CATC	0.02 gr/ft <sup>3</sup>	Baghouse	-	Baghouse exit flow rate: 433 cfm, passive.

12. TESTING REQUIREMENTS:

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Justification
SN-131 and SN-132	PM/PM <sub>10</sub>	5A, 22, 9	To demonstrate compliance with the

(Outlet of SN-907)			permitted emission limits.
SN-145 (Outlet of SN-907)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.
SN-120 (Outlet of SN-902)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.
SN-148 (Outlet of SN-908)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.
SN-149 (Outlet of SN-909)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.
SN-151, SN-152, and SN-153 (Outlet of SN-910)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.
SN-154 (Outlet of SN-911)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.
SN-165, SN-166, SN-167 (Outlet of SN-913)	PM/PM <sub>10</sub>	9	To demonstrate compliance with the permitted emission limits. Please see Specific Condition 22 for details.

13. MONITORING OR CEMS

The following are parameters that must be monitored with CEMs or other monitoring equipment (temperature, pressure differential, etc), frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
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907	Inlet temperature reading	Thermocouple	Continuously	N
901 and 902	Pressure Drop Across Unit	Pressure Gauge	Weekly	N

\* Indicate frequency of recording required for the parameter (Continuously, hourly, daily, etc.)

\*\* Indicates whether the parameter needs to be included in reports.

#### 14. RECORD KEEPING REQUIREMENTS

The following are items that must be tracked and recorded.

SN	Recorded Item	Permitted Twelve Month Rolling Total	Frequency*	Report (Y/N)**
Plantwide	Asphalt	89,045 tons	Monthly	No
Plantwide	Saturant	5,608 tons	Monthly	No
Plantwide	Modified Line Roofing Material Production	80,810 tons	Monthly	No
106, 107, 130, 140, and 178	VOC usage	5.0 tons	Monthly	No
106, 107, 130, 140	HAPs usage	5.0 tons	Monthly	No

\* Indicate frequency of recording required for the item (Continuously, hourly, daily, etc.)

\*\* Indicates whether the item needs to be included in reports

#### 15. OPACITY

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
122, 129	20%	19.503	Monthly
104, 105, 106, 107, 118, 126,	20%	60.472(a)(2)	Monthly

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
130, 133, 134, 135, 136, 137, 140, 142, 146, 147, 150, 156, 159, 175, 178, 179, 903, 904, 905, 906, and 912.			
901	20%	19.503	Monthly
902 - when SN-103 is operating.	20%	19.503	Monthly
- when SN-103 is not operating, and SN-120 is operating	0%	60.472(c)	
907 - when SN-131 and SN-132 are operating.	20%	19.503	Monthly
- when SN-131 and SN-132 are not operating and SN-145 is operating.	0%	60.472(c)	
144	0%	40 CFR Part 60.472(c)	Monthly
908, 909, 910, 911, and 913.	1%	40 CFR Part 60.472(d)	Monthly

16. DELETED CONDITIONS:

No Specific Conditions from the previous permit were deleted.

17. VOIDED, SUPERSEDED OR SUBSUMED PERMITS

List all active permits for this facility which are voided/superseded/subsumed by issuance of this permit.

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18. CONCURRENCE BY:

The following supervisor concurs with the permitting decision:

\_\_\_\_\_  
*Lyndon Poole, P.E.*