FACILITY PERMIT REVIEW SHEET

DATE: 5/13/2011 **APPLICATION NUMBER:** 0310486-010-AF

FACILITY NAME: Firestone Building Products Company

FACILITY DESCRIPTION: Foam insulation manufacturing

PERMIT PROCESSOR: C. Blane Johnson

MAJOR FOR CRITERIA POLLUTANTS AND/OR HAPs (Circle)

CO PB NO_x PM SO_2 VOC HAP

SUBJECT TO: (Circle)

NSR(PSD) PERMIT NUMBER: _____

NSR(NAA) PERMIT NUMBER: _____

BACT EU NUMBER: _____

MACT EU NUMBER: _____

RACT EU NUMBER: _____

NSPS EU NUMBER: _____

FACILITY EMISSION SUMMARY

	POTENTIAL EMISSIONS	ALLOWABLE EMISSIONS	
	TPY	LBS/HR	TPY
PM	0.6	2.83	12.4
PM10			
SO2			
NOX			
CO			
VOC	80.7		100
TOC			
PB			
TOTAL HAP	0.022		25
SINGLE HAP (highest)	0.022		10

COMMENTS: _____

Effective 2/27/97

EMISSIONS CALCULATIONS

APPLICATION NUMBER: 0310486-010-AF **EU NUMBER:** 001

REFERENCES: 0310486-010-AF application, annual test data, and quarterly reports

POLLUTANT: Volatile Organic Compounds (VOC's)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER
	100			$457X10^6$ brd.ft./yr

POTENTIAL EMISSION CALCULATIONS

process rate (brd.ft./yr) X material usage (lb/brd.ft.) X % that is VOC X % loss in process / (lb/ton) = process release (tons/yr)

4.57E+08	0.163	6.88%	6.28%	2000	=	160.9

process release (tons/yr) X RTO % capture efficiency = mass to RTO (tons/yr)

160.9	80.00%	=	128.7

mass to RTO (tons/yr) X (1 - RTO % destruction efficiency) = PTE from RTO (tons/yr)

128.7	95.00%	=	6.4

process release (tons/yr) - mass to RTO (tons/yr) = PTE from process (tons/yr)

160.9	128.7	=	32.2

PTE from process (tons/yr) + PTE from RTO (tons/yr) = Total EU PTE (tons/yr)

32.2	6.4	=	38.6

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-210.200(239)	2.301

COMMENTS:

POLLUTANT: Hazardous Air Pollutants (HAP's)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER
	10			

POTENTIAL EMISSION CALCULATIONS

brd.ft. / board thickness (in.) X # of sides X (m^2/ft^2) = surface area (m^2)

4.57E+08 2.2048 2 0.0929 = 3.85E+07

constant X vap.press. (atm) X mol.wgt. (g) X surf.area (m^2) X air speed ($0.56^{0.78}$m/sec) X tack free time (sec) / temp. (˚K) / (g/lb) / (lb/ton) = process release (tons/yr)

25.4 5.26E-06 250 3.85E+07 0.63618974 30
295 454 2000 = 0.092

process release (tons/yr) X RTO % capture efficiency = mass to RTO (tons/yr)

0.092 80.00% = 0.074

mass to RTO (tons/yr) X (1 - RTO % destruction efficiency) = PTE from RTO (tons/yr)

0.074 95.00% = 0.004

process release (tons/yr) - mass to RTO (tons/yr) = PTE from process (tons/yr)

0.092 0.074 = 0.018

PTE from process (tons/yr) + PTE from RTO (tons/yr) = Total EU PTE (tons/yr)

0.018 0.004 = 0.022

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-210.200(239)	2.301

COMMENTS: The sole sorce of HAP's is the Methylene Diphenyl Diisocyanate (MDI) used for the polyeurathane manufacturing process.

PERMIT PROCESSOR: _____ **DATE:** _____

Effective 2/27/97

EMISSIONS CALCULATIONS

APPLICATION NUMBER: 0310486-010-AF **EU NUMBER:** 002

REFERENCES: 0310486-010-AF application, annual test data, and quarterly reports

POLLUTANT: Volatile Organic Compounds (VOC's)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER
	99			$457X10^6$ brd.ft./yr

POTENTIAL EMISSION CALCULATIONS

process rate (brd.ft./yr) X material usage (lb/brd.ft.) X % that is VOC X % released by cutting / (lb/ton) = PTE (tons/yr)

4.57E+08	0.163	6.88%	1.50%	2000	=	38.4

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-210.200(239)	2.301

COMMENTS:

POLLUTANT: Particulate Matter (PM)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER
	12.4	5	0.03 gr/ft^3	

POTENTIAL EMISSION CALCULATIONS

process rate (brd.ft./yr) X material usage (lb/brd.ft.) X % released by cutting X (1- filter efficiency) / (lb/ton) = PTE (tons/yr)

4.57E+08	0.163	1.50%	0.001	2000	=	0.6

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-296.712(2)	2.1101

COMMENTS:

PERMIT PROCESSOR: **DATE:**

Effective 2/27/97

EMISSIONS CALCULATIONS

APPLICATION NUMBER: 0310486-010-AF **EU NUMBER:** Tanks

REFERENCES: 0310486-010-AF application, annual test data, quarterly reports, and EPA publication 453/R-95-017.

POLLUTANT: Volatile Organic Compounds (VOC's)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER
	99			

POTENTIAL EMISSION CALCULATIONS

Component	# of components	X component emission factor (lb/hr)	X (hr/yr)	/ (lb/ton)	=	PTE (tons/yr)
Valves	8	0.0089	8760	2000	=	0.31
Pumps	2	0.0438	8760	2000	=	0.38
Reliefs	1	0.2290	8760	2000	=	1.00
Connectors	10	0.0040	8760	2000	=	0.18
Total					=	1.9

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-210.200(239)	2.301

COMMENTS: The VOC emissions from all facility tanks [two (2) 10,600 gallon MDI tanks, four (4) 6,000 gallon Polyol tanks, one (1) 6,000 gallon Surfactant tank, and one (1) 6,000 gallon Flame Retardant tank] are insignificant. This also includes the one (1) 20,000 gallon Pentane tank as it is sealed, kept under positive pressure and vented to the truck when filling, there are however, equipment leak emissions associated with the pentane piping system as calculated above.

POLLUTANT: Hazardous Air Pollutants (HAP's)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER
	10			

POTENTIAL EMISSION CALCULATIONS

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-210.200(239)	2.301

COMMENTS: The sole sorce of HAP's is the Methylene Diphenyl Diisocyanate (MDI) used for the polyeurathane manufacturing process. MDI emissions from the two (2) 10,600 gallon storage tanks is insignificant per the TANKS 4.09d program.

PERMIT PROCESSOR: _____ **DATE:** _____

Effective 2/27/97

EMISSIONS CALCULATIONS

APPLICATION NUMBER: 0310486-010-AF **EU NUMBER:** Storage

REFERENCES: 0310486-010-AF application, annual test data, and quarterly reports

POLLUTANT: Volatile Organic Compounds (VOC's)

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER

POTENTIAL EMISSION CALCULATIONS

production rate (brd.ft./yr) X VOC emission factor (lb/brd.ft) / (lb/ton) = PTE (tons/yr)

4.57E+08 7.71E-06 2000 = 1.8

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL
		62-210.200(239)	2.301

COMMENTS:

POLLUTANT:

ALLOWABLE EMISSIONS

LBS/HR	TPY	% OPACITY	CONCENTRATION	OTHER

POTENTIAL EMISSION CALCULATIONS

RULE APPLICABILITY:	FEDERAL	STATE	LOCAL

COMMENTS:

PERMIT PROCESSOR: **DATE:**

Effective 2/27/97