

Fact Sheet



For Final Permitting Action Under 45CSR30 and Title V of the Clean Air Act

Permit Number: **R30-03500049-2014**
Application Received: **April 12, 2013**
Plant Identification Number: **035-00049**
Permittee: **Armstrong World Industries, Inc.**
Facility Name: **Armstrong Millwood Plant**
Mailing Address: **P.O. Box 220, Millwood, WV 25262**

Physical Location: Millwood, Jackson County, West Virginia
UTM Coordinates: 427.2 km Easting • 4,307 km Northing • Zone 17
Directions: From US-33 E, turn left onto WV 68 S. Continue on WV 68 S for 0.4 miles. Turn right onto WV 2 S. Continue for approximately 6 miles. Turn right onto Jack Burlingame Road.

Facility Description

The Armstrong World Industries Millwood plant is a new slag wool manufacturing facility covered under SIC Code 3296. It typically manufactures slag wool from silicomanganese slag. The plant receives the slag via truck or railcar, stores the slag in outdoor piles, and then transfers the slag to a belt conveyor via front-end loader. The slag is then transferred to a submerged Electric Arc Furnace (EAF) where the slag is melted using graphite electrodes. The molten slag is then transferred to one of two spinners which spin the molten slag into slag wool fibers. The wool fibers are then collected in one of two collection chambers, further processed into slag wool bales, and then shipped off site.

Emissions Summary

Plantwide Emissions Summary [Tons per Year]	
Regulated Pollutants	Potential Emissions
Carbon Monoxide (CO)	41.00
Nitrogen Oxides (NO _x)	50.22

Regulated Pollutants	Potential Emissions
Particulate Matter (PM _{2.5})	99.30
Particulate Matter (PM ₁₀) <i>PM₁₀ is a component of TSP.</i>	103.32
Total Particulate Matter (TSP)	114.66
Sulfur Dioxide (SO ₂)	245.07
Volatile Organic Compounds (VOC)	23.11
Hazardous Air Pollutants	Potential Emissions
Manganese Compounds	9.48

Some of the above HAPs may be counted as PM or VOCs.

This facility does not have the potential to emit equal to or greater than 100,000 tons per year of carbon dioxide equivalent (CO₂e) and 100 tons per year of greenhouse gases (GHGs) on a mass basis.

Title V Program Applicability Basis

This facility has the potential to emit 245.07 tons per year of Sulfur Dioxide and 103.32 tons per year of PM₁₀. Due to this facility's potential to emit over 100 tons per year of a criteria pollutant, Armstrong World Industries, Inc. is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Legal and Factual Basis for Permit Conditions

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR6	Open burning prohibited
	45CSR7	PM limits on manufacturing processes
	45CSR10	SO ₂ limits
	45CSR11	Standby plans for emergency episodes
	45CSR13	Construction Permits
	45CSR16	Performance Standards for New Stationary Sources
	WV Code § 22-5-4(a)(14)	The Secretary can request any pertinent information such as annual emission inventory reporting
	45CSR30	Operating permit requirement
	45CSR34	Emission Standards for HAPs
	40 CFR Part 61	Asbestos inspection and removal
	40 CFR Part 82, Subpart F	Ozone depleting substances
	40 CFR Part 60, Subpart IIII	Stationary Compression Ignition Engines NSPS
	40 CFR Part 63, Subpart ZZZZZ	Reciprocating Internal Combustion Engine MACT
State Only:	45CSR4	No objectionable odors.

Each State and Federally-enforceable condition of the Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR34 and 45CSR30.

Active Permits/Consent Orders

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit (<i>if any</i>)
R13-2864A	40862	N/A
CO -R13-E-2013-14	41501	

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table," which may be downloaded from DAQ's website.

Determinations and Justifications

This is an initial Title V Permit.

45CSR7 - To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations. The main requirement of 45CSR7 is the PM stack emission limit based on the process weight rate in section 4 of the rule. The following sources are subject to the process weight rate based emission limitations (all are "type a" sources):

Source	Proc. Weight Rate (lb/hr)	Rule 7 Limit (lb/hr)	Permit Limit (lb/hr)
1S (Raw material transfer and EAF)	26685	20.01	2.6
3S (Spinner collection chamber #1)	30360	22.2	14.2
4S (Spinner collection chamber #2)			
5S (Housekeeping vacuum system)	350	0.42	0.34
6S (Hydrated lime storage silo)	40000	28	0.53
15S (Slag wool processing line #1)	19532	15.7	2.4
16S (Slag wool processing line #2)			

The PM limits from 45CSR§7-4.1. are streamlined with the PM limits from Permit R13-2864A. Armstrong proposes to meet these requirements mainly through the use of control devices and water sprays. Compliance will be demonstrated by proper operation of the dust collectors, and determining optimal pressure drop across the baghouses as listed in Conditions 4.1.4., 4.1.17., and 4.2.3., and through recordkeeping as listed in Conditions 4.4.1., 4.4.2., and 4.4.8. Testing in accordance with Conditions 4.3.1. and 4.3.2. will be required for the EAF and the spinner collection chambers.

The facility is also subject to a twenty (20) percent opacity limit in 45CSR§7-3.1 on all process source operations and must have a plan to minimize fugitive emissions as required in 45CSR§§7-5.1. and 5.2. The Hydrated Lime Storage Silo (6S) is also subject to 45CSR§7-3.7. Compliance with the opacity requirements will be demonstrated by monitoring visual emissions in accordance with Condition 4.2.2. of the permit.

45CSR10 - To Prevent and Control Air Pollution From the Emission of Sulfur Oxides. 45CSR§10-4.1 limits the in stack SO₂ concentration to 2,000 ppm. The only sources of SO₂ emissions from the facility are the EAF and emergency generator, however the emergency generator is exempt from Rule 10. Permit R13-2864A limits the total SO₂ emissions from the EAF to 55.94 pounds per hour, equivalent to an in-stack SO₂ concentration of approximately 130 ppm, well below the Rule 10 2,000 ppm limit. Compliance will be demonstrated by analysis of the fuel sulfur content as required in Condition 4.2.5.

45CSR13 - Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation. The facility obtained a Rule 13 permit for construction of the new facility. The emission limits, monitoring, testing, recordkeeping and reporting requirements from the Rule 13 permit were incorporated into the Title V permit. R13-2864A, Condition 4.1.4. required the permittee to determine the optimal ranges for the pressure drops across baghouses 2C, 3C, 4C, and 7C within 180 days of startup. This has been completed with the following results: Baghouse 2C - 1.0" to 7.0", Baghouse 3C - 1.0" to 4.0", Baghouse 4C - 3.0" to 6.0", Baghouse 7C - 0.5" to 4.0". The Title V condition was revised to show this has been completed. R13-2864A, Condition 4.3.1. requires initial testing within 180 days of startup. The testing has been completed and the Title V permit condition was revised to reflect this. Title V permit conditions 5.1.1, 5.1.2., and 6.1.1. are R13 permit conditions that are listed for state emissions inventory purposes only and have been listed as "State-enforceable only".

40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. The permittee has one 565kw diesel fired backup generator. 40 CFR 60 Subpart IIII requires that the new engine meet the following specific emission standards and fuel specifications:

NO _x +NMHC (g/kW-hr)	CO (g/kW-hr)	PM (g/kW-hr)
6.4	3.5	0.2

Armstrong will be required to use nonroad diesel fuel that has a sulfur content of less than 15 ppm.

40 CFR Part 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines - Under 40 CFR §63.6590(c)(1), the backup generator is a new stationary RICE located at an area source of HAPs. In accordance with 40 CFR §63.6590(c), an affected source meets the requirements of 40 CFR Part 63, Subpart ZZZZ by meeting the requirements for 40 CFR Part 60, Subpart IIII.

Consent Order CO-R13-E-2013-14 - The requirements from the Consent Order were incorporated into the Title V Permit under Section 4.6. The facility commenced operation in April 2012. Due to persistent operating problems, Armstrong was not able to conduct performance tests until January 2013. The tests resulted in demonstration of compliance with all permitted emission limits from the EAF except carbon monoxide (CO). The CO emission limit contained in R13-2864A for the electric arc furnace is 5 pph and 21.9 tpy. The average measured rate of the EAF from three (3) performance tests runs was 73.52 pph. Armstrong estimated annual CO emissions for calendar year 2012 were approximately 58.84 tons. Armstrong personnel met with the DAQ on March 26, 2013, to discuss the performance test results and to propose a plan to achieve compliance.

Sulfur Dioxide (SO₂) emissions from the EAF are controlled using a dry lime scrubber. Section 4.1.3 of R13-2864A required Armstrong to operate the scrubber at a prescribed lime injection rate until an alternative compliance rate could be determined during the initial performance test (conducted in January 2013). During the performance test, SO₂ emissions were measured prior to the lime scrubber and found to be less than three (3) percent of the maximum allowable rate of 55.94 pph and 245 tpy. The actual rate measured during the test was 1.52 pph and 6.65 tpy. The SO₂ emission rate was also measured at the outlet of the lime scrubber and determined to be 0.09 pph and 0.39 tpy. Since actual SO₂ emissions were measured well below the permitted

limit without using controls, Armstrong has proposed revising the existing permit (R13-2864A) to allow operation of the EAF without using the lime scrubber.

Because Armstrong has completed the Consent Order requirement to install the CO and SO₂ continuous emission monitoring systems (CEMs) on the EAF outlet stack, the requirement to maintain the CEMs was listed as Condition 4.1.18. in the Title V Permit. The CEMs data must be collected for 90 to 120 days and the results submitted to DAQ, and a separate Consent Order will be negotiated to bring Armstrong into full compliance with the Rule 13 permit.

Compliance Plan - As noted in the Consent Order discussion above, Armstrong is not in compliance with the CO emission limit set forth in Permit R13-2864A, Condition 4.1.1. and Title V Permit Condition 4.1.1.a. Therefore, a compliance plan based on the Consent Order requirements has been incorporated into the permit under Section 4.6. The Compliance Plan allows CO emissions of less than 250 tons per year on a twelve month rolling basis. The Table in Condition 4.1.1.a. was revised to note that a higher CO limit is allowed in Condition 4.6.1.6.

Non-Applicability Determinations

The following requirements have been determined not to be applicable to the subject facility due to the following:

40 CFR 60 Subpart CC - The Millwood plant does not include glass melting furnaces.

40 CFR 60 Subpart OOO - Slag does not meet the definition of nonmetallic mineral.

40 CFR 60 Subpart UUU - The Electric Arc Furnace does not meet the definition of a calciner or dryer.

40 CFR 63 Subpart DDD – The Millwood plant is not classified as a major HAP source because potential HAP emissions are < 10/25 tpy for any single/combination of HAPs. In addition, the EAF is not classified as a “cupola” and the plant does not operate a mineral wool “curing oven”. For these reasons the “mineral wool production NESHAP” at 40 CFR 63 Subpart DDD is not applicable.

40 CFR 63 Subpart JJJJJ – The Millwood plant does not operate boilers and is therefore not subject to the Subpart JJJJJ Area Source ICI Boiler NESHAP.

45CSR7 - The Millwood slag processing operations are classified as “type a” operations involving “physical changes” and are not subject to the type b, c , or d standards under 45CSR7, Table 7A.

45CSR17 - WV Fugitive emissions from material handling - Per 45CSR§7-6.1. if sources are subject to 45CSR7 they are exempt from the requirements of this Rule.

45CSR19 & 45CSR21 - WV NSR permitting for non-attainment areas and VOC Regulations - Millwood plant is not located in affected areas.

45CSR27 - WV Emissions of toxic air pollutants - Millwood plant does not operate any “chemical processing units” and does not use listed chemicals.

40CFR64 (Compliance Assurance Monitoring) - The Electric Arc Furnace is the only emission unit with emissions great enough to meet the applicability requirement of 40CFR§64.2(a)(3). However, according to the CAM requirements of 40CFR§64.5(b), CAM plans for PSEUs with potential post-control emissions less than the major source thresholds are not required to submit a CAM plan as part of the initial permit application. The EAF is therefore exempt from the CAM requirements of 40 CFR 64 until the renewal of the facility’s Title V permit.

Greenhouse Gas Permitting - This facility does not have the potential to emit equal to or greater than 100,000 tons per year of carbon dioxide equivalent (CO₂e) and 100 tons per year of greenhouse gases (GHGs) on a mass basis.

Request for Variances or Alternatives

None.

Insignificant Activities

Insignificant emission unit(s) and activities are identified in the Title V application.

Comment Period

Beginning Date: December 17, 2013

Ending Date: January 16, 2014

Point of Contact

All written comments should be addressed to the following individual and office:

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Division of Air Quality
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Procedure for Requesting Public Hearing

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

Response to Comments (Statement of Basis)

The facility requested changes in the design capacities of the EAF (1S), the Spinner Collection Chambers (3S and 4S), and the Slag Wool Processing Lines (15S and 16S). The changes were denied because these were the design capacities that were submitted with the R13 permit application. Similarly, the facility requested deletion of several conditions authorized by the R13 permit. These requests were also denied because 45CSR§30-5.1. and 45CSR§30-2.7.b. requires the incorporation of preconstruction permit terms or conditions. The facility also requested delaying the issuance of the Title V permit until a revised R13 permit could be issued. If the Title V permit was not delayed, the facility requested changing the language of the Consent Order in the Title V permit to make it clear that the facility was responsible for meeting the CO emission limit from the Consent Order and not the CO emission limit from the R13 permit. The Consent Order language was not changed, however Condition 4.1.1.a. of the permit was changed to reference Condition 4.6.1.6. and this Fact Sheet was revised with a heading to discuss the Compliance Plan in order to make this clear.