Permit by Rule (PBR) Registration
Technical Review

Company:	Arlanxeo USA LLC	**Registration No.:**	179261
Nearest City:	Orange	**Project No.:**	389357
County:	Orange	**Project Type:**	Initial
Project Reviewer:	Clare Hubbell	**Regulated Entity No.:**	RN100825363
Unit Name:	Arlanxeo Orange Site	**Customer Reference No.:**	CN605127042
PBR No(s).:	106.261, 106.262	**Project Received Date:**	February 25, 2025
Physical Location:	4647 FM 1006		

Project Overview / Process Description
Arlanxeo owns and operates the Orange Site located in Orange, Orange County, Texas. This site is currently authorized under multiple permits including NSR 22508 and Title V O2281.

At the Orange Site is the Polybutadiene Rubber Unit (BR Unit) which consists of multiple production trains, and each production train is capable of producing and is permitted for manufacturing a number of polybutadiene rubber products and grades on each of the lines. The BR unit may generally be subdivided into two units: the Lithium Butadiene (LiBR) Unit, and The Cobalt Butadiene Rubber (CoBR) Unit. All the projects included in this registration took place in the CoBR Unit. Emission rates under 261/262 were combined by pollutant instead of being separated by project in order to be conservative. The distance to nearest receptor is the minimum distance for all projects.

This registration is to authorize piping modifications in the BR Unit under rules 106.261 and 106.262. None of the projects listed in the application will result in upstream or downstream effects.

This registration should be incorporated into NSR Permit 22508 at the next amendment or renewal.

Project List

Project No.	MOC	Distance to Nearest Receptor (feet):	Description
1	2022-0052	700	Moved pressure safety valve (PSV) 0700-0018 location and modified inlet piping (including new piping connections) in order to avoid dead legs where popcorn polymer could form.
2	2022-0076	700	B Cement Surge Pump #3 was replaced with a new pump and piping modifications were undertaken to increase reliability.
3	2023-0185	700	The space condenser and associated piping were replaced for improved reliability.
4	2022-0217	700	Pressure relief devices in the Relief System were upgraded to align with new design codes. This involved minor piping modifications.
5	2023-0078	700	The Reactor Reflux Condenser was refurbished which required piping modifications such as new piping connections and valves installed for emergency relief system for safety purposes.
6	2024-0003	700	New piping was installed to remediate dead legs to prevent popcorn polymer formation.
7	2022-0158	700	The A3 Stripper Vessel was replaced which required piping modifications. A pressure safety valve (PSV) system was installed to align with engineering design requirements.
8	2023-0152	700	Piping modifications were made to the flare stack knock out drum drain to protect piping systems from potential over-pressure. There were no changes to the flare itself.

Permit by Rule Requirements - 30 TAC Chapter 106

General Requirements	
Registration Fee Reference No.:	**Application fee: 752822 / 582EA000654831**
Is this registration certified?	**Yes**
Is planned MSS included in the registration?	**No**

Permit by Rule (PBR) Registration

Are there affected NSR or Title V authorizations for the project?	**Yes**
NSR and/or Title V authorizations:	**NSR Permit 22508, Title V O2281**
If there are affected Title V authorizations, is monitoring being submitted as part of this registration?	**Yes**
Are there any upstream or downstream affects associated with this registration?	**No**
Are associated upstream/downstream emissions either included in the registration OR within current permitted limits with no changes to underlying air authorizations for the applicable units regarding BACT, health and environmental impacts, or other representations.	**NA**
Are emissions for each PBR authorized facility less than the § 106.4(a)(1) limits?	**Yes**
Are total emissions from all sitewide PBR authorized facilities less than the § 106.4(a)(4) limits, OR has the site been subject to public notice requirements? **NSR 22508 has been to Public Notice.**	**Yes**
Are there permit limits on using PBRs at the site?	**No**
Is the facility in compliance with all other applicable rules and regulations?	**Yes**
Does the registration include an appropriate PBR workbook, and has the workbook been verified?	**Yes**

Federal Applicability	
Does this project trigger a PSD or Nonattainment review?	**No**
Does the Major NSR applicability analysis include all associated upstream and/or downstream emissions?	**NA**
Are there any applicable standards under NSPS, NESHAP, or NESHAP for source categories (MACT)?	**Yes**
If Yes, list applicable subparts:	**MACT U**

Permit by Rule Requirements - Compliance Demonstrations

PBR 106.261/262 Facilities (Emission Limitations / Emission and Distance Limitations)

- The emission point(s) associated with the facilities or changes to facilities are located at least 100 ft **(Actual: 700 ft)** from the nearest off-site receptor.
- The total new or increase emissions will comply with the applicable hourly and annual emission limits as represented in the table below.
- No chemicals authorized under 106.262(a)(4).
- There are no changes to or addition of any pollution abatement equipment.
- Visible emissions to the atmosphere, from any point or fugitive source, do not exceed 5.0 percent opacity in any six-minute period.
- This registration does not authorize construction or changes to a facility authorized under another section of this chapter or under standard permit.

Compliance History and Site Review

In accordance with 30 TAC Chapter 60, a compliance history report was reviewed on:			**March 3, 2025**
Site rating / classification:	**1.87 / Satisfactory**	Company rating / classification:	**1.87 / Satisfactory**
Has any action occurred on the basis of the compliance history or rating?			**No**
Did the Regional Office provide site approval and confirm distances?			**NA**

106.261(a)(2) Emissions

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	Emission Threshold (lb/hr)	Emission Threshold (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Meets Threshold?
Propane	VOC	74-98-6	6	10	4.47E-04	1.96E-03	Yes
Cyclohexane	VOC	110-82-7	6	10	1.06E-02	4.66E-02	Yes
Cyclohexene	VOC	110-83-8	6	10	4.55E-04	1.99E-03	Yes

106.261(a)(3) Emissions

Permit by Rule (PBR) Registration

Chemical	Criteria Pollutant Designation	L Value (mg/m^3)	CAS No. (optional input)	Emission Threshold (lb/hr)	Emission Threshold (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Meets Threshold ?
1, 2 Butadiene	VOC		590-19-2	1	4.38	3.42E-04	1.50E-03	Yes
1-Butene	VOC		106-98-9	1	4.38	4.55E-03	1.99E-02	Yes
1, 5 Cyclooctadiene	VOC		111-78-4	1	4.38	1.47E-03	6.42E-03	Yes
Cobalt Octoate	VOC		136-52-7	1	4.38	1.46E-05	6.38E-05	Yes
Diethyl Aluminum Cholride	VOC		96-10-6	1	4.38	1.22E-04	5.34E-04	Yes
1-Tert-Butoxy-2-Ethoxyethane	VOC		51422-54-9	1	4.38	1.24E-07	5.44E-07	Yes
Ditetrahydrofurylpropane	VOC		89686-69-1	1	4.38	1.66E-05	7.26E-05	Yes
Ethylaluminum Sesquichloride	VOC		12075-68-2	1	4.38	4.08E-05	1.79E-04	Yes
Butyllithium	VOC		109-72-8	1	4.38	2.70E-05	1.18E-04	Yes
Diisobutylalluminum Hydroxide	VOC		1191-15-7	1	4.38	4.39E-05	1.92E-04	Yes
4-Tert-Butylcatechol	VOC		98-29-3	1	4.38	5.87E-06	2.57E-05	Yes
1-hexene	VOC		592-41-6	1	4.38	2.30E-05	1.01E-04	Yes
Vinyl Norbornene	VOC		3048-64-4	1	4.38	6.19E-12	2.71E-11	Yes

106.262(a)(2) Distance

Distance to nearest off-plant receptor (feet):	700
K value:	54

106.262(a)(2) Emissions – Table 262

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	L Value (mg/m^3)	E, maximum Hourly Emission Threshold (lb/hr)	Actual Emission Threshold (tpy)	Actual Hourly Increases (lb/hr)	Actual Annual Increase (tpy)	Meets Threshold?
Benzene	VOC	71-43-2	3	5.56E-02	2.43E-01	3.62E-06	1.59E-05	Yes
Styrene	VOC	100-42-5	21	3.89E-01	1.70E+00	8.57E-05	3.76E-04	Yes

106.262(a)(2) Emissions – 1997 ACGIH Guide

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	L Value (mg/m^3)	E, maximum Hourly Emission Threshold (lb/hr)	Actual Emission Threshold (tpy)	Actual Hourly Increases (lb/hr)	Actual Annual Increase (tpy)	Meets Threshold?
4-vinyl cyclohexene	VOC	100-40-3	0.44	8.15E-03	3.57E-02	1.97E-04	8.62E-04	Yes
Hexane (n-Hexane)	VOC	110-54-3	176	3.26E+00	5.00E+00	2.02E-02	8.84E-02	Yes
Methanol	VOC	67-56-1	262	4.85E+00	5.00E+00	1.10E-04	4.82E-04	Yes
1,3-Butadiene	VOC	106-99-0	4.4	8.15E-02	3.57E-01	1.14E-02	4.99E-02	Yes
Chlorobenzene	VOC	108-90-7	46	8.52E-01	3.73E+00	2.07E-06	9.05E-06	Yes
Divinyl benzene	VOC	1321-74-0	53	9.81E-01	4.30E+00	4.00E-06	1.75E-05	Yes

Permit by Rule (PBR) Registration

Registration No. 179261 Project No. 389357

Total 106.261/262 Combined Emissions

	Total Hourly Emissions (lb/hr)	Total Annual Emissions (tpy)
Total VOC Emissions:	0.05016	0.21972

Emission Summary

EPN / Emission Source	VOC		NOx		CO		PM_{10}		$PM_{2.5}$		SO_2		Other	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
BRFUG-3 / Process Area Fugitives	0.05	0.22												
TOTAL EMISSIONS (TPY):		**0.22**												
MAXIMUM OPERATING SCHEDULE: Hours/Year														8,760

Clare Hubbell March 14, 2025

Ms. Clare Hubbell Date
Permit Reviewer
Rule Registrations Section

Michael Partee March 17, 2025

Mr. Michael Partee, Manager Date
Rule Registrations Section
Air Permits Division