Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Title V, Operating
Permit: V-25-007
Accuride Corporation
Henderson, KY 42420
February 17, 2025
Sandra M. Cooke, Reviewer

SOURCE ID:	21-101-00030
AGENCY INTEREST:	1786
ACTIVITY:	APE20240001

Table of Contents

SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3499 – Fabricated Metal Products, NEC (Other Metal Products)

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Henderson
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☒ SO_2 ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No
If yes, list which pollutant(s):

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Accuride Corporation (Accuride), located in Henderson County, Kentucky, is a manufacturer of wheels for heavy, medium, and light-duty trucks. The facility uses two main processes to produce its products.

The company manufactures wheels by means of two processes. The first process starts with the rolling flat steel to form the wheel rim. Discs are manufactured by spinning and stamping and the two parts are washed and conveyed to the assembly area. The disc and rim and are then welded together to form the wheel. The assembled wheel travels to the paint line where it undergoes a multistage electro-coating paint process. The coated wheel is dried in a curing oven and then conveyed to the stacking area where it is prepared for shipping or sent to a second process for powder coating.

A portion of the electro-coated wheels from the assembly area are processed through a powder coating system. The powder coating process includes pre-washing, drying, powder coating, and oven curing stages. Stage 1 of the pre-wash involves the use of a slightly acidic surfactant cleaner. Stage 2 of the pre-wash is a clean water rinse followed by Stage 3 which is a water/surfactant spray rinse. From the pre-washing cycle, the wheel passes through a natural gas fired drying unit and a chilled-air cooling tunnel. The wheel is then powder coated in an environmentally controlled room

where the booth exhaust is re-circulated into the booth (integral recirculation system). The wheels pass through a natural gas-fired curing oven and are finally conveyed to the stacking area where they are prepared for shipping.

While this source's current PTE is below the major source thresholds for HAPs, the facility has opted to continue being regulated as a major source of HAP and complying with all applicable requirements for major sources of HAP such that operational flexibility in future coating choices is retained.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-25-007 Activities: APE20240001

Received: August 14, 2024 Application Complete Date(s): October 3, 2024

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☐Yes ☒No NSR Applicable? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☒Yes ☐No

- *APE20200001 – Off-Permit Change* – EP 12 (19) rated at 21 MMBtu/hr has been replaced by EP 52, Boiler #2, a new natural gas fired boiler, rated at 20.251 MMBtu/hr
- *APE20210001 – Off-Permit Change* – EP 09 (27) rated at 21 MMBtu/hr has been replaced by EP 53, Boiler #1, a new natural gas fired boiler, rated at 20.8 MMBtu/hr

Description of Action:
In this renewal, permitting language and formatting has been updated to be consistent and clear. Also, EP 32, Pretreatment Burner #3, has been removed from the permit because it no longer burns natural gas, but instead uses steam power, and accordingly has no emissions.

Additionally, on August 10, 2022, updates to 40 CFR 60, Subparts IIII and 40 CFR 63, Subpart ZZZZ to remove the vacated emergency demand response provisions were published in the federal register. Accordingly, the existing Vacatur language for emergency demand response in 40 CFR 60, Subparts IIII and 40 CFR 63, Subpart ZZZZ for emergency engines has been removed from the permit and Statement of Basis, and the regulatory language in the permit has been updated to reflect the published changes.

Below is a table that includes the affected facilities used to determine the emission limits under 401 KAR 59:015:

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU	Fuel(s)	Capacity (MMBtu/hr)	Constructed	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	Basis for SO_2 Limit	Total Heat Input Capacity for SO_2 Limit (MMBtu/hr)	Notes
09	Natural Gas; #2 Fuel Oil	21	1974	Section 4(1)(c)	42	Section 5(1)(c)2.	42	Removed in 2021
12	Natural Gas; #2 Fuel Oil	21	1974	Section 4(1)(c)	42	Section 5(1)(c)2.	42	Removed in 2020
28	Natural Gas	3.8	1981	Section 4(1)(c)	45.8	Section 5(1)(c)2.	45.8	Removed in 2013

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU	Fuel(s)	Capacity (MMBtu/hr)	Constructed	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	Basis for SO_2 Limit	Total Heat Input Capacity for SO_2 Limit (MMBtu/hr)	Notes
30	Natural Gas; #2 Fuel Oil	5	1982	Section 4(1)(c)	59.6	Section 5(1)(c)2.	59.6	
31	Natural Gas; #2 Fuel Oil	3.8	1982	Section 4(1)(c)	59.6	Section 5(1)(c)2.	59.6	Removed in 2019
32	Natural Gas; #2 Fuel Oil	5	1982	Section 4(1)(c)	59.6	Section 5(1)(c)2.	59.6	Started using steam in 2024
33	Natural Gas;	2	1999	Section 4(1)(c)	61.6	Section 5(1)(c)2.	61.6	Replaced by EP 42
52	Natural Gas; #2 Fuel Oil	20.251	2020	Section 4(1)(c)	51.251	Section 5(1)(c)2.	51.251	Added after 12 was removed
53	Natural Gas; #2 Fuel Oil	20.8	2021	Section 4(1)(c)	51.051	Section 5(1)(c)2.	51.051	Added after 09 was removed

V-25-007 Emission Summary		
Pollutant	2023 Actual (tpy)	PTE V-25-007 (tpy)
CO	5.27	38.59
NO_X	6.29	70.05
PT	1.23	7.75
PM_{10}	1.23	8.46
$PM_{2.5}$	0.49	3.50
SO_2	0.04	180.60
VOC	35.27	57.58
Lead	0.00	0.002
Greenhouse Gases (GHGs)		
Carbon Dioxide	7348	72809
Methane	0.14	0.90
Nitrous Oxide	0.014	0.41
CO_2 Equivalent (CO_2e)	7355	72955
Hazardous Air Pollutants (HAPs)		
1-Methoxy-2-Propanol	*	2.37
Methyl Isobutyl Ketone	0	2.60
Xylenes (Total)	*	2.65

V-25-007 Emission Summary		
Pollutant	2023 Actual (tpy)	PTE V-25-007 (tpy)
Combined HAPs:	0.01**	8.45

* Not Currently In KYEIS

** Only Actual non-criteria HAPs listed for 2023 were Methyl Isobutyl Ketone, Hexane, and metals Cr, Mg, and Ni

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Points #24 (449), Gray Electrocoat Dip Tank for Painting Line 449				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
Organic HAP	< 2.6 lb per gal coating solids per 12-month compliance period	40 CFR 63.3890 (b)(1)	Various, based on coating formula (reported in MSDS)	Monthly calculation of rolling 12-month total

Initial Construction Date: 1982

Process Description:
Assembled wheels are dipped in coatings in the tank after pretreatment and before drying in a curing oven.

Maximum Capacity: 17,500 gallons.

Maximum Throughput: 540 pieces(wheels)/hour.

Applicable Regulation:
401 KAR 63:002, Section 2(4)(rrr). 40 C.F.R. 63.3880 through 63.3981, Tables 1 to 4, and Appendix A (Subpart MMMM), *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products*. This regulation is applicable to each new, reconstructed or existing affected source that uses 250 gal/year or more of coatings that contain hazardous air pollutants (HAPs) to coat various metal parts and products.

Comments:
Calculations are based on coating formulation and engineering estimates from the source. The current coating was substituted in 2013 and eliminated several HAP and VOC emissions. Although the current PTE makes the facility a minor source of HAPs, the continued application of the requirements from 40 CFR 63, Subpart MMMM, allows the source flexibility in the coatings used in the future. This equipment has no control.

Emission Point #30 Pretreatment Burner #1A				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.37 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)	AP-42 Chapter 1.4, Table 1.4-2	Assumed based upon natural gas combustion
Opacity	20% opacity	401 KAR 59:015, Section 4(2)	N/A	Assumed based upon natural gas combustion
SO_2	1.4 lbs/MMBtu	401 KAR 59:015, Section 5(c)(2)	AP-42 Chapter 1.4, Table 1.4-2	Assumed based upon natural gas combustion

Initial Construction Date: 1982

Process Description:
Natural gas burners provide heating to cleaning, pretreatment and rinsing operations for Paint Line 449**.**
Fuel: Natural Gas
Maximum Capacity: 5 MMBtu/hr,, Indirect fired units

Applicable Regulations:
401 KAR 59:015, New indirect heat exchangers. This regulation is applicable to indirect heat exchangers having a heat input capacity greater than one (1) MMBtu/hr commenced on or after April 9, 1972 (401 KAR 59:015, Section 2(1)).

401 KAR 63:002, Section 2(4)(rrr). 40 C.F.R. 63.3880 through 63.3981, Tables 1 to 4, and Appendix A (Subpart MMMM), *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products*. This regulation is applicable to each new, reconstructed or existing affected source that uses 250 gal/year or more of coatings that contain hazardous air pollutants (HAPs) to coat various metal parts and products.

Comments:
Emission calculations are based on AP-42 emission factors for burning natural gas. One pretreatment burner (EP 32, Burner #3), that had been switched to steam use rather than natural gas, was removed in the renewal (V-25-007), but the emission limits are unchanged. Additionally, the current PTE makes the facility a minor source of HAPs, but the continued application of the requirements from 40 CFR 63, Subpart MMMM, allows the source flexibility in the coatings used (Refer to EP #24) and negates the applicability of other NESHAP regulations, i.e 40 CFR 63, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters.*

Emission Points #53 & #52, Boilers #1 & #2				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.38 lb/MMBtu; each	401 KAR 59:015, Section 4(1)(c)	AP-42 Chapter 1.4, Table 1.4-2	1) Assumed when burning natural gas. 2) Monitoring during periods of curtailment #2 fuel oil use.
Opacity	20% opacity	401 KAR 59:015, Section 4(2)	N/A	1) Assumed when burning natural gas. 2) Monitoring during periods of curtailment #2 fuel oil use.
SO_2	1.5 lbs/MMBtu; each	401 KAR 59:015, Section 5(c)(1)(b)	AP-42 Chapter 1.4, Table 1.4-2	1) Assumed when burning natural gas. 2) Monitoring during periods of curtailment #2 fuel oil use.

Initial Construction Date: 2020 Boiler #2, 2021 Boiler #1

Process Description:
Natural gas boilers supplying both process heat (75%) and space heat (25%) for the facility.

For Boiler #1 (EP 53)
Model: Hurst Boiler
Capacity: 20.8 MMBtu/hr, each, Indirect Fired Units
Primary Fuel: Natural gas
Secondary Fuel: #2 Fuel oil, 0.5 % sulfur content, during periods of natural gas curtailment

For Boiler #2 (EP 52)
Model: Hurst Boiler
Capacity: 20.251 MMBtu/hr, each, Indirect Fired Units
Primary Fuel: Natural gas
Secondary Fuel: #2 Fuel oil, 0.5 % sulfur content, during periods of natural gas curtailment

Applicable Regulation:
401 KAR 59:015, New indirect heat exchangers, applicable to indirect heat exchangers having a heat input capacity greater than one (1) MMBtu/hr commenced on or after April 9, 1972 (401 KAR 59:015, Section 2(1)).

401 KAR 63:002, Section 2(4)(iiii), 40 C.F.R. 63.7480 through 63.7532, Tables 1 to 13, (Subpart DDDDD), *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*, applicable to affected sources (existing and new or reconstructed industrial, commercial and institutional boilers and process heaters located at a major source of HAPs.)

Emission Points #53 & #52, Boilers #1 & #2

Comments:
Emission calculations of Criteria and HAPs pollutants were based on AP-42 emission factors for burning natural gas and #2 Fuel Oil. GHG emission calculations were based on 40 CFR 98, and engineering estimates were used for determining PT and PM 2.5 for #2 fuel oil. Finally, the current PTE makes the facility a minor source of HAPs, but the continued application of the requirements of 40 CFR 63, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*, provides future flexibility to the facility. For the renewal, some requirements for the previous existing boilers were removed as not applicable to the new replacement boilers.

Emission Points #40-1, #40-2, & #40-3 Existing Emergency Diesel Generators

Initial Construction Date: 1982

Process Description:
Three emergency diesel generators provide emergency back-up power for various essential equipment in the facility. The engines have no add-on emission controls.

EP 40-1: Model: Allis Chalmers – 6 cylinder
Displacement: 7 liter displacement
Engine Rating: 320 HP
EP 40-2: Model: Cat D330 – 4 cylinder
Displacement: 7 liter displacement
Engine Rating: 150 HP
EP 40-3: Model: Detroit 1034 – 4 cylinder
Displacement: 3.5 liter displacement
Estimated Construction: 1982
Engine Rating: 109 HP

Applicable Regulation:
401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ) *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.* This applies to stationary RICE located at a major or area source of HAP emissions. (Existing CI Emergency RICE <500 HP)

Comments: Criteria and HAPs pollutant emissions calculated using AP-42 emission factors. PTE is based on the maximum 500 hours/yr run time allowed for emergency generators for non-emergency purposes. Since all of the engines were constructed/commenced in 1982, 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable. Additionally, the current PTE makes the facility a minor source of HAPs, but the continued application of the requirements of 40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), that apply to major sources of HAPs, provides future flexibility to the facility.

Emission Points #44 (B-01) & #45 (B-02) Burn-Off Ovens				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	2.34 lb/hr	401 KAR 59:010, Section 3(2)	Oven Model Test for oven emissions, AP-42, Table 1.4-2 for NG combustion.	Compliance assumed while buring natural gas and if minimum afterburner temperature of 1400 °F is maintained
Opacity	20 %	401 KAR 59:010, Section 3(1)(a)	N/A	Qualitative observations. Inspection/repairs or Method 9 if emissions seen.

Initial Construction Date: March 2017

Process Description:
Two identical natural gas-fired burn-off ovens used to remove bits of old coating off of wheels to be refurbished.

Model: Jackson Oven Batch Burn-Off Ovens, Model 8706
Capacity: 100,000 wheels per year, total
Fuel: Natural Gas, 7.65E-04 MMcf/hr (0.79 MMBtu/hr), each

Applicable Regulation:
401 KAR 59:010, **New process operations**, applicable to all process operations, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after July 2, 1975.

401 KAR 63:020, Potentially hazardous matter or toxic substances. This regulation is applicable to each affected facility which emits or may potentially emit hazardous matter or toxic substances.

Comments:
The facility originally requested authorization of four burn-off ovens, but only installed two. For the installed ovens, emission calculation are based on AP-42 emission factors for those due to burning natural gas. For particulate produced from wheel burn-off, emission factors for PT and PM_{10} are from testing an identical model oven and engineering estimates for $PM_{2.5}$. Note that the HAPs emitted from the combustion of natural gas are subject to 401 KAR 63:020, but the use of natural gas, as opposed to other fuels, is sufficient to keep the equipment in compliance with the regulation. Compliance with potential HAPs emissions from wheel burnoff is also assumed if the afterburner remains at a temperature of 1400 °F or above during operation.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

The source, at the time of renewal V-25-007, has not been required to perform any testing.

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
Organic HAP Emissions shall be no more than 2.6 lb organic HAP per gal coating solids for each rolling 12-month compliance period.	40 CFR 63.3890(b)(1)	EPs 24 & 30 (Painting Line 449)

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010, *New process operations*. Applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in Chapter 59, commenced on or after July 2, 1975.	EPs 44 & 45
401 KAR 59:015, *New indirect heat exchangers*. Applies to each affected facility commenced on or after April 9, 1972 for a facility with a capacity of 250 MMBtu/hr heat input or less, that is subject to 40 C.F.R. 60.40 through 60.46 (Subpart D), 60.40Da through 60.52Da (Subpart Da), 60.40b through 60.49b (Subpart Db), or 60.40c through 60.48c (Subpart Dc) shall be exempt from Sections 3 through 6 of this administrative regulation for each pollutant covered under this administrative regulation with a specific emission standard in the applicable New Source Performance Standard (NSPS) codified at 40 C.F.R. Part 60.	EPs 52, 53, & 30
401 KAR 63:002, Section 2(4)(rrr). 40 C.F.R. 63.3880 through 63.3981, Tables 1 to 4, and Appendix A (Subpart MMMM), *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products*. Applies to affected facilities that use 946 liters (250 gallons) per year, or more of coatings that contain HAPs in the surface coating of miscellaneous metal parts and products defined in 40 CFR 63.3881(a); and that is a major source, located at a major source, or is part of a major source of emissions of HAPs.	EPs 24 & 30 (Painting Line 449)
401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ) *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.* This applies to stationary RICE located at a major or area source of HAP emissions.	EPs 40-1, 40-2, & 40-3
401 KAR 63:002, Section 2(4)(iiii). 40 C.F.R. 63.7480 through 63.7532, Tables 1 to 13, (Subpart DDDDD), *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters* applies to affected sources (existing and new or reconstructed industrial, commercial and institutional boilers and process heaters located at a major source of HAPs.	EPs 52, & 53
401 KAR 63:020, *Potentially hazardous matter or toxic substances.* This regulation is applicable to each affected facility which emits or may potentially emit hazardous matter or toxic substances.	EPs 44, & 45

Table C - Summary of Precluded Regulations:

N/A

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

Combustion equipment Compliance with 401 KAR 63:020 is demonstrated by subject through the use of natural gas as fuel. For the Burnoff Ovens (EPs 44 and 45), compliance with this regulation is demonstrated through the use of operating the afterburner at 1400 °F or higher.

For welding equipment (EPs 22, 26 and IA-1) the Division performed SCREEN View on January 28, 2020 of potentially hazardous matter or toxic substances (Chromium, Nickel and Manganese) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant.

Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
V-98-039	Initial	Log #F505 APE20050001 (ARM Record)	2/20/1998	3/5/1998	Initial Operating Permit	N/A
V-07-015	Renewal	APE20020001	8/8/2007	8/19/2008	Renewal	N/A
V-13-042	Renewal	APE20130001	10/2/2013	12/10/2014	Renewal with Construction of Powder Coat Booth	N/A
V-13-042 R1	Admin. Amendment	APE20150001	2/23/2015	3/13/2015	Fix signing error	N/A
V-13-042 R2	Minor Revision	APE2017002	2/28/2017	6/12/2017	Addition of Burn-off Ovens	N/A
V-19-021	Renewal	APE20190001	6/28/2019	6/24/2020	Permit renewal	Renewal

SECTION 6 – PERMIT APPLICATION HISTORY

None

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
BACT – Best Available Control Technology
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
ESP – Electrostatic Precipitator
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
NSR – New Source Review
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PSD – Prevention of Significant Deterioration
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds