OMB Control No.: 2060-0226

AGENCY USE ONLY

TSCA/SNAP ADDENDUM for Significant New Alternatives

Expires: XX/XX/2017

Date of Receipt:

When completed send CBI and public versions of this form and attachments electronically via CD or USB drive (preferred), or print to:

<u>Via US Postal Service:</u> SNAP Document Control Officer U.S. EPA Mail Code: 6205T 1200 Pennsylvania Ave, NW Washington DC 20460 Via Delivery Service: SNAP Document Control Officer U.S. EPA Stratospheric Protection Division 4th Floor (MC 6205T) 1201 Constitution Ave., NW Washington, DC 20004 Case Number:

Part I: Introduction and CBI Information

Section A: Introduction

GENERAL INSTRUCTIONS

This form may be used in conjunction with the Premanufacture Notice (PMN) for new chemical substances (EPA Form 7710-25 (Rev. 1-19)) to submit chemicals for review under the Significant New Alternatives Policy program as alternatives to Class I and II ozone-depleting substances. In addition to the information provided in the Premanufacture Notice, the Agency is requesting submitters provide information on the following topics. This information will assist EPA in assessing the acceptability of the chemical as an alternative to ozone-depleting substances as required by Section 612 of the Clean Air Act. Please see the Instructions for the TSCA/SNAP Addendum ("Instructions") for guidance on completing this form. The Instructions document is available at http://www.epa.gov/ozone/snap/submit/index.html.

To facilitate Agency review of alternatives, both this form and the complete PMN form (including the physical and chemical properties worksheet) must be filled out as completely as possible. Please provide all information requested to the extent that it is known or reasonably ascertainable. Make reasonable estimates if actual data are unavailable.

Section B: Identification of Alternatives

1. Name of Alternative. Note: Additional information about the proposed substitute must be provided in Part III, Section A	СВІ

2. Indicate the sector and end-use for which you are submitting this SNAP Information Notice.

Sector(s)	End-Use(s)	If you chose "Other" as an end-use, please specify here.	СВІ

Section C: CONFIDENTIALITY CLAIMS

Anyone submitting data which are to be treated as Clean Air Act Confidential Business Information (CBI), must assert and substantiate a claim of confidentiality at the time of the initial submission. All information claimed as CBI will be treated in a manner consistent with 40 CFR Part 2, Subpart B. Failure to assert a claim of confidentiality at the time of submission may result in disclosure of information by the Agency without further notice.

To assert a claim on this form, [bracket] the information you claim as confidential and mark the confidential box in the column on the right-side of the page in the corresponding row. Provide substantiation of all CBI claims below. If any information is claimed as confidential, you must provide a "sanitized" version of this notice, including attachments, to EPA at the time of the initial submission.

For any portion of a submission that you claim as confidential, the following information must be included in a Statement of Data Confidentiality Claims. The confidential information must also be clearly marked within the submission. If you do not provide the required substantiation when submitting information claimed as confidential, EPA may make the complete submitted information available to the public without further notice or may determine that the submission is incomplete.

- Identify specifically by page and line number(s) each portion of the document for which you claim confidentiality.
- Give the reasons why the cited passage qualifies for confidential treatment.
- If you assert that disclosure of this information would be likely to result in substantial harmful effects to you, describe those harmful effects and explain why they should be viewed as substantial.
- Indicate the length of time until a specific date or event, or permanently for which the information should be treated as confidential.
- Identify the measures you have taken to guard against undesired disclosure of this information.
- Describe the extent to which the information has been disclosed, and what precautions have been taken in connection with these disclosures.
- Enclose copies of any determinations of confidentiality previously made by EPA, other Federal agencies, or courts concerning this information.

under an EPA contract for the purpose of assisting EPA in the development and implementation of national regulations for the protection of stratospheric ozone, including the evaluation of SNAP Information Notices. These Authorized Representatives may have access to any information received by the Stratospheric Protection Division within the EPA's Office of the Atmospheric Programs. Access to such information is necessary to ensure that these companies can complete the work required by the contract. Such Authorized Representatives of the Administrator are subject to the provisions of 42 U.S.C. 7414(c) respecting confidential business information as implemented by 40 CFR 2.301(h).

TATEMENT OF DATA CONFIDENTIALITY CLAIMS								

TSCA/SNAP ADDENDUM

Part II: Contact Information

Section A - Submitter Contact Information		
Person Submitting Notice (in U.S.): Enter information for the official who	signs the certification in Part XIV Certification .	
Name of Authorized Official	Title	СВІ
Company/Organization		СВІ
Mailing Address	Telephone Number	СВІ
Email Address		CBI
2. Agent (if applicable): Complete only if you authorize an agent to assist yo	ou in preparing this notice. The agent must also sign	the certification.
Name of Authorized Official	Title	СВІ
Company/Organization		СВІ
Mailing Address	Telephone Number	СВІ
Email Address		CBI
Email Address		СЫ
Is this person granted full access to Confidential Business Information?		<u> </u>
3. Technical Contact (in U.S.): If applicable, identify a person who can provi	de FPA with additional technical information on the	substitute during the
review period. If the authorized agent is also the technical contact, include	hat person's information in both locations.	substitute during the
Name of Authorized Official	Title	СВІ
Company/Organization		СВІ
Mailing Address	Telephone Number	СВІ
Email Address		СВІ
Is this person granted full access to Confidential Business Information?		
4. Joint Submitter (if applicable) : Identify the joint submitter, if any, who is required in the notice.	authorized by the primary submitter to provide som	ne of the information

NOTE: Please [Bracket] the information you claim as confidential

Part II: Contact Information

Name of Authorized Official	Title	СВІ
Company/Organization		CBI
Mailing Address	Telephone Number	СВІ
Email Address		СВІ
Is this person granted full access to Confidential Business Information?		

CONFIDENTIALITY CLAIMS: All contacts listed on this page will be granted access to CBI, unless otherwise noted.

TSCA/SNAP ADDENDUM

Part III: General Information

Section A: Alternative-Specific Information									
1. Identify Proposed Substitute									
(a) Chemical name (preferably IUPAC nomenclature) (b) Percent composition (by weight) (c) Chemical Abstracts Service (CAS) registry number (d) Molecular formula									
2. Commercial/trade name(s) of alternative:					CBI				
3. Generic name: If the name of the proposed substitute is claimed as Confidential I	Business Information, provide a generic name. The name sho	ould reveal the chemical identity	or alternative process description	on to the maximum extent po	ssible				
4. Ozone-depletion potential (ODP): Provide the 100-year ODP of the proposed substitute relative to CFC-11. If the substitute is a blend, provide the ODPs of the individual constituents. Reference the source for each ODP.									
Proposed substitute (If blend, include ODP of each constituent)	(a) ODP relative to CFC-11		Information sources		СВІ				

5. Global Warming Characteristics: Provide the alternative's global warming potential relative to carbon dioxide over a 100-year time horizon and atmospheric lifetime. Reference the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4). Alternate sources may include the 2010 World Meteorological Organization (WMO) Scientific Assessment of Ozone Depletion or the peer-reviewed literature. If the substitute is a blend, provide the GWPs of the individual constituents and an estimate of the blend at its nominal composition.

(b) Provide any additional data on the ODP of the proposed substitute (e.g. chlorine or bromine loading potentials). Reference the source of this information and attach any supporting documentation.

Proposed substitute (If blend, include GWP of each constituent)	(a) 100-year GWP (Relative to carbon dioxide)		(b) Atmospheric lifetime	Information sources		СВІ
(c) Provide any additional data on the G absorption spectrum and in		Supporting documentation attached?	(d) If the proposed substitute or any components of a bler another manufacturing or industrial process, indicate ti	nd is captured as a byproduct of he source of the alternative.	Supporting documentation attached?	СВІ

Supporting documentation attached?

CBI

Attachment name

Section B: End-Use and Application Information

1. Specific End-Use(s): Identify each end-use that may be reasonably anticipated for the alternative. If the alternative is a refrigerant, indicate whether the refrigerant is a candidate for use in retrofits of existing equipment, for use in new equipment only, or both. Identify the ODS and other alternatives used in the end-use or application and the quantity of proposed substitute needed to replace it for each end use (i.e., the replacement ratio).

Note: If the proposed substitute can be used both as a retrofit and in new equipment, these uses should be treated as separate end-uses throughout this form. The applications listed below are not meant to be all-inclusive and do not reflect regulatory requirements. The purpose of defining these applications is to inform the Agency's understanding of how the alternative being submitted to SNAP will be used.

Sector	End-Use	Application	Mark all end-uses and applications that apply	(a) New (N) Equipment, Retrofit (R)Equipment, or both (N,R)? Please disregard if proposed substitute is not a refrigerant.	(b) ODS and other substances being replaced	(c) Replacement ratio (lb: lb)	СВІ
		Centrifugal					
	Chillers (Commercial Comfort AC)	Positive Displacement Chillers (includes Reciprocating, Screw, Scroll, Rotary Compressors)					
	Industrial Process Refrigeration (IPR)						
	Industrial Process Air Conditioning						
	Ice Skating Rinks						
	Cold Storage Warehouses						
		Refrigerated Trailers (Reefers)					
	Refrigerated Transport	Refrigerated Shipping Containers					

Residential and Light Commercial AP Conditioning and Reaf Pumps Residential and Light Commercial AP Conditioning and Reaf Pumps Residential and Light Commercial AP Conditioning and Reaf Pumps Residential and Light Commercial AP Conditioning and Reaf Pumps Residential Commercial AP Conditioning and Reaf Pumps Residential Commercial AP Conditioning and Reaf Pumps Residential Dehumidiffore Residential Dehumidiffore Residential Dehumidiffore Residential Dehumidiffore Residential Conditioning Residential Condit	Markey For Control Park System, bedder According Markey For Control According Markey For Contr	Hadden in the Control of Control						
Retail Food Redigeration Retail Redigeration Retail Redigeration Retail Redigeration Retail Retail Redigeration Retail Re	Renal Tool diefequention Renal Tool diefequ	Remails front designations Bearill Front designations Be			delivery, ice cream truck, ship			
Retail Food Redigeration Retail Redigeration Retail Redigeration Retail Redigeration Retail Retail Redigeration Retail Re	Renal Tool diefequention Renal Tool diefequ	Resident for and inforgenesian Internal for and internal for and internal for an internal internal for an internal interna			Remote Rack System Direct			
Partial Food Redigeration Authorized Contracting Wilsolar Author	Netal Food fire Tigeration Partial Food fire Tigeration Food fir	Section of sections and Air Conditioning Redisposition and Air Co			-			
Mode of Confederation of Multiples Providing Michaelse Uniform Contains Working Contains (Confederation) Working Michaelse Contains (Washer Contains Establish Working Contains) Internation Internation (Contains) Internation (C	With the Coulting Analysis Section of the County	Note of the Continue of the Co		Retail Food Refrigeration	contained equipment such as individual reach-in coolers, glass			
Normalis New Joseph General Control Co	Final Bushamer of Conditioning Notice in Proceedings of Conditioning Final Bushamer of Condi	Vocating Machines Vocating Machines Drining Water Codes Shall a Water Securities Drining Water Codes Shall a Water Securities And shows yet dever Codes Shall a Water Securities Proceeded Randgerators and Focass Shall a Water Securities Household Randgerator and Focass Shall a Water Securities Household Randgerator and Focass Shall Shall Randgerator and Process Randgerator and Process Randgerator and Randgerator			Walk-in Coolers or Multiple			
Drinking Water Codes Suits Above Visit Codes Commercial Ine Mechanism Commercial Ine Mechanism Codes Commercial Ine Mechanism Codes Commercial Ine Mechanism Codes	Drilling Voter Cooler Rate of John Mark Programmer (1987) Connectable to Mark Nate (1987) Connectable Staffingmarker and Frontiers Connectable Staffingmarker (1984) Connectable Staffingmarker (1	Doubley Water Codes Same allows Water Codes Commercial for Michaeles Refligeration and Air Conditioning Residential and Eight Commercial Air Conditioning and State Planes Residential and Eight Commercial Air Conditioning and State Planes Residential and Eight Commercial Air Conditioning and State Planes Residential Columnial Residency (Part A) Conditioning Air Conditioning and State Planes Residential Columnial Residency (Part A) Residential Columnial Residency (Par			fountain beverage dispenser,			
Director Vertice Coolers Commercial to Machainen Commercial to Machainen Commercial to Machainen Hasserboald Bindingerston and Franzes Bendingerston and Ar Conditioning Hasserboald Bindingerston and Franzes Bendingerston and Ar Conditioning Bendingerston and Franzes Bendingerston and Franzes Bendingerston and Ar Conditioning Bendingerston and Franzes Bendingerston and Ar Conditioning Bendingerston and Franzes Bendingerston and Bendingerst	Printing Winfor Coolins Commercial for Machines Accordinate Reinigeration and Air Conditioning Proceeding Reinigeration and Processor And Special Conditioning And Specia	Commercial lar Machines Estad-desire Water Coolairs Medification and Mark Candifiscoring Focusion in Machines Focusion in Machin		Vending Machines				
Stand-Stander Water Coolers Commercial to Markhoms Processor Pr	Accordance of the Multi-Dries Section of the Conference of the Multi-Dries Section of the Multi-Dries	State-decide Nation (Coolers State Coolers State Coolers State Coolers State Coolers State Coolers State State State Coolers State State State Coolers State State State Coolers State State State State State State Sta		Drinking Water Coolers	Built-in Water Fountain			
Semantic La Mushimes From Art Conditioning Manuel Hold Retrigenation and Fromes Manuel Hold Retrigenation and Hold Art Conditioning Pendidential and Edyla Communical Air Conditioning Pendidential and Fromes Manuel Fromes Pendidential and Fromes Manuel Fromes	Conservation for Manushald Residential and Light Connectical Air Conditioning Residential and Light Connectical Air Conditioning and Federal Residential Control Air Conditioning and Fe	Commercial late Motivines Remote to the Authories Nousehold Reference or and AP Conditioning Plantingeration and AP Conditioning Reference or and AP Conditioning Remote AP Conditioning or and AP Conditioning or and the AP Commercial Control		States essies	Stand-alone Water Coolers			
Nemia for Machine Nemia for Nemia for Nemia Nemia for Machine Nemia for Nemia for Nemia Nemia for Machine Nemia for Nemia for Nemia Nemia for Nemia for Nemia for Nemia Nemia for Nemia for Nemia Nemia for Nemia for Nemia for Nemia Nemia for Nemia for Nemia Nemia for Nemia for Nemia for Nemia Nemia for Nemia for Nemia Nemia for Nemia for Nemia for Nemia Nemia for Nemia for	Pennshit to Markhama	Recorded Engineering and Air Conditioning Recorded Engineering and Processing State (Recorded State (Recor			Self-contained Ice Machines			
Process	Redigeration and Air Conditioning Redigeration and Light Commencial And Conditioning and Read Funges Redigeration and Conditioning and Read Funges Conditioning and Read Funges Redigeration and Conditioning and Read Funges Redigeration and Conditioning and Read Funges Redigeration and Redigera	Precent Control of the Conditioning Should Refrigerate and Freeze Should Sheet		Commercial Ice Machines	Remote Ice Machines			
Process	Redigeration and Air Conditioning Redigeration and Light Commencial And Conditioning and Read Funges Redigeration and Conditioning and Read Funges Conditioning and Read Funges Redigeration and Conditioning and Read Funges Redigeration and Conditioning and Read Funges Redigeration and Redigera	Refrigeration and Air Conditioning Refrigeration and Air Conditio			Household Refrigerator and			
Redigeration and Air Conditioning Redigeration and Light Commencial Air Conditioning and least Pumps Redigeration and Light Commencial Air Conditioning and least Pumps Redigeration and Light Commencial Air Conditioning and least Pumps Redigeration and Light Commencial Air Conditioning and least Pumps Redigeration and Red Red Redigeration Redigeration and Red Redigeration Red Redigeration and Red Red Red Redigeration Red Redigeration and Red Red Red Red Red Red Red Red Red Re	Religioration and Air Centificationing Religioration and Religioration R	Refrigeration and Air Conditioning Refrigeration and Air Conditioning Research to Conditionary Study as vision with a public depression of the program of						
Residential and Light Commercial AP Conditioning and Reaf Pumps Residential and Light Commercial AP Conditioning and Reaf Pumps Residential and Light Commercial AP Conditioning and Reaf Pumps Residential and Light Commercial AP Conditioning and Reaf Pumps Residential Commercial AP Conditioning and Reaf Pumps Residential Commercial AP Conditioning and Reaf Pumps Residential Dehumidiffore Residential Dehumidiffore Residential Dehumidiffore Residential Dehumidiffore Residential Conditioning Residential Condit	Residential and Light Commercial Art Scridiosining and fisch Plumps Residential and Light Commercial Art Conditioning and fisch Plumps Residential and Light Commercial Art Conditioning and fisch Plumps Art Conditioning and fisch Plumps Residential Duhumidiffers Residential Residential Residential Duhumidiffers Residential Res	Noon mechanical Near Transfer Neclassical Near Transf	Defrigeration and Air Conditioning	Household Refrigerators and Freezers	Appliances (e.g., chilled kitchen drawers, wine coolers, and			
Residential and Light Commercial AS Conditioning and Heat Pumps ACCONDITIONING AND ACCONDITIONING ACCONDITIONI	Residential and Light Commercial ASP Conditioning and feet Pumps Alloh Splits, Non-Ducted Splits, Spring, Ducted, Light Commercial ACV Splits, Spring, Ducted, Light Splits, Spring, Ducted, Light Splits, Spring, Ducted, Light Commercial (Central ACV) Residential Central ACV Residential Central ACV Residential Dehumidiflers Residential Dehumidiflers Light duty Vehicles (e.g., possenger can) Light duty Vehicles (e.g., possenger can) Light duty Vehicles (e.g., possenger can) Motor Vehicle Air Conditioning Motor Vehicle Air Conditioning	Moltis Agiltis, Non-Duzede Spillis, Non-Spillis, Non-	Reiniger ation and Air Conditioning		window units, packaged terminal air conditioners (PTAC) and heat pumps (PTHP), and portable self-contained air			
Residential and Light Commercial AS Conditioning and Heat Pumps ACCONDITIONING AND ACCONDITIONING ACCONDITIONI	Residential and Light Commercial ASP Conditioning and feet Pumps Alloh Splits, Non-Ducted Splits, Spring, Ducted, Light Commercial ACV Splits, Spring, Ducted, Light Splits, Spring, Ducted, Light Splits, Spring, Ducted, Light Commercial (Central ACV) Residential Central ACV Residential Central ACV Residential Dehumidiflers Residential Dehumidiflers Light duty Vehicles (e.g., possenger can) Light duty Vehicles (e.g., possenger can) Light duty Vehicles (e.g., possenger can) Motor Vehicle Air Conditioning Motor Vehicle Air Conditioning	Moltis Spills, Non-Distance Moltis Controllitoring and Heat Pumps Moltis Spills, Non-Distance Moltis Controllitoring and Heat Pumps Provided (Central A/C) Spills, Spiress, Dutterd, Light Commercial (Central A/C) Packaged Bookspublis Water Source Af Conditioning and Heat Pumps Residential Dehumidifiers Resi			Mini Calita Nan Duated			
Recidential and Light Commercial Air Conditioning and Heat Pumps Spile-Systems, Ducked, Light Commercial Air Conditioning and Heat Pumps Spile-Systems, Ducked, Light Commercial Air Conditioning and Heat Pumps Spile-Systems, Ducked, Light Commercial Air Conditioning and Heat Pumps	Reidertial and Light Commercial Afforditioning and feat Pumps And Conditioning and feat Pumps And Feat P	Residential and Light Commercial Air Confittioning and Priest Pumps Solit-Seytems, Duteds (Schrift AVC) Spill-Seytems, Duteds Light Commercial Air Confittioning and Priest Pumps Water Source Air Conditioning Water						
Recidential and light Commercial ArC September Sep	Recidential and tight Commercial (Entral A/C) Springsystem, Ducted Light Commercial (Entral A/C) Package Records (Control A/C)	Residential and tight Commercial (Central A/C) Conditioning and freat Pumps Residential Dehumidifiers Residential Dehumidifiers Residential Dehumidifiers Residential Dehumidifiers Light duty Vehicle (e.g., passanger carl) Light-duty Tuck (e.g., passanger carl) Light-duty Vehicle (e.g., passanger carl) Light-duty Vehicle (e.g., passanger carl) Autor Vehicle Air Conditioning and Search (e.g., passanger carl) Motor Vehicle Air Conditioning Amotor Vehicle Air Conditionin						
Conditioning and Heat Pumps Spill-Systems, Detect Light Commercial Central AVC) Packaged Rooftey Units	Conditioning and Heat Pumps Spills Systems, Duted Light Commercial (Central AVC) Packaged Rooftoy Units Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidifiers Light-duty Vehicles (e.g., passenger cars) Light-duty Vehicles (e.g., passenger cars) Motor Vehicle Air Conditioning Moto	Conditioning and Heat Pumps Conditioning and Heat Pumps		Residential and Light Commercial Air	Split-Systems, Ducted,			
Spins systems (Lockeds Light Packaged Roottop Units Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidiffers Light-duty Vehicles (e.g., passenger can) Light-duty Vehicles (e.g., passenger can) Light-duty Trucks (e.g., minorise, full tile pick-up trucks, and full sies SU/s) Motor Vehicle Air Conditioning Heavy-duty picking trucks and and heavy-duty on-lightway vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger land Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rootine Veryle (ORC) Very Low Temperature Refrigeration Very Low Temperature Refrigeration Very Low Temperature Refrigeration Very Company Refrigeration Very Company Refrigeration Very Low Temperature Refrigeration Very Low	Seal Section of the Conditioning and Heat Pumps Bealderdial Dehumidiffers Bealderdial Dehumidifers Bealderdial Dehumidiffers Bealderdial Dehumidiffers	Spein systems I. Luckeds Age Packaged Rooftep Units Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidifiers Alghe-duty Vehicles (e.g., passenger can) Light-duty Tunks (e.g., minorise, fall size pick-up trucks, and full size SUVu) Motor Vehicle Air Conditioning Heavy-duty picking trucks and and heavy-duty on-lightway vehicles) Motor Vehicle Air Conditioning Heavy-duty picking trucks and and heavy-duty on-lightway vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Mon mechanical Heat Transfer Mechanica		Conditioning and Heat Pumps				
Packaged Rooftop Units Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidifiers Light-dary Vehicles (e.g., passeger an) Motor Vehicle Air Conditioning Motor Vehicle Air Conditioning Heavy-duty Pickels (e.g., passeger and full-size sulvey) Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., passeger and full-size sulvey) Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., passeger and full-size sulvey) Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., passeger and full-size sulvey) Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., passeger and full-size sulvey) Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., passeger and full-size sulvey) Non-mechanical Heat Transfer Mechanical Heat Transfer Organic Raskine Cycle (ORC) Very Low Temperature Refrigeration Processing Other (specify) Le Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spaliance Rigid Polyurethane: Spaliance Rigid Polyurethane: Spaliance Rigid Polyurethane: Spaliance Rigid Polyurethane: Sandwich Passels Rigid Polyurethane: Sa	Packaged Rooftop Units Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidifiers Alght-duty Vehicles (e.g., passesper cars) Alght-duty Vehicles (e.g., passesper cars) Motor Vehicle Air Conditioning Packaged Rooftop Water (e.g., passesper cars) Motor Vehicle Air Conditioning Packaged Rooftop Water (e.g., passesper cars) Motor Vehicle Air Conditioning Packaged Rooftop Water (e.g., passesper cars) Packaged Rooftop Water (e.	Packaged Boothop Units Water-Gource Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidiffers Light-duty Vehicles (e.g., passenger rate) Hotor Vehicle Air Conditioning Motor Vehicle Air Conditioning Motor Vehicle Air Conditioning Motor Vehicle Air Conditioning Meavy-duty Vehicles (e.g., farm and control fundion vehicles) Air Conditioning Non-mechanical Heat Transfer Mechanical Heat Transfer Mecha			Split-Systems, Ducted, Light			
Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumdillers Light-duty Valorites (e.g., passenger cars) Motor Vehicle Air Conditioning Assort Valorites (e.g., passenger cars) Resear and Passenger Pail Anon mechanical Heat Transfer Processing Passenger Pail Processing Passenger Pail Other (specify) Light Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Pol	Water-Source Air Conditioning and Heaf Pumps Graund-Source Air Conditioning and Heaf Pumps Residential Dehumidifiers Residenti	Water-Source Air Conditioning and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidiffers http://duty Varieties (e.g., passenger cars) Light-duty Varieties (e.g., passenger cars) Light-duty Varieties (e.g., passenger cars) Light-duty Varieties (e.g., passenger cars) Anotor Vehicle Air Conditioning Areny-duty vicking to g., passenger cars and varieties (e.g., farm and construction equipment) Buse and Passenger Pail Anon-mechanical Heat Transfer Pricad Vehicles (e.g., farm and construction equipment) Buse and Passenger Pail Anon-mechanical Heat Transfer Areny-duty vicking to g., farm and construction equipment) Desire and passenger Pail Anon-mechanical Heat Transfer Areny-duty vicking to g., farm and construction equipment) Buse and Passenger Pail Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Other (specify) Areny duty vicking to g., farm and construction equipment) Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Very Low Temperature Refrigeration Other (specify) Areny duty vicking to g., farm and construction equipment) Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Very Low Temperature Refrigeration Other (specify) Areny duty vicking to g., farm and construction equipment) Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Anon-mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Anon-mechanical Heat Transfer Organic Rankine						
and Heat Pumps Ground-Source Air Conditioning and Feet Pumps Residential Dehumidiffers Light-duty Valories (e.g., passeper cars) Light-duty Valories (e.g., passeper cars) Light-duty Valories (e.g., passeper cars) Motor Vehicle Air Conditioning Assert Vehicle (e.g., passeper cars) Motor Vehicle Air Conditioning Assert Vehicles (e.g., passeper cars) Assert Vehicles (e.g., passeper cars) Off-oract Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail Anon-mechanical Heat Transfer Account Vehicles (e.g., farm and construction equipment) Buses and Passenger fail An	and Heat Pumps Ground Source Air Conditioning and leaf Pumps Residential Dehumidiffers Residential Dehumidiffers July Vehicles (e.g., parameter car) Heavy-duty Vehicles (e.g., parameter car) Heavy-duty Vehicles (e.g., parameter car) Off-road Vehicles (e.g., farameter car) Off-road Vehic	and Heat Pumps Ground-Source Air Conditioning and Heat Pumps Residential Dehumidifiers Light-duty Vehicles (e.g., passenger cars) Light-duty Vehicles (e.g., passenger cars) Light-duty Trucks (e.g., minimum, full size pick-up minimum,			Раскадей коопор оппіз			
Residential Dehumidifiers Dight-duty Vehicles (e.g., passenger carn)	Residential Dehumidifiers Light-duty Vehicles (e.g., passenger cars)	Residential Dehumidifiers Sight-duty Vehicles (e.g., passenger cars)			Water-Source Air Conditioning and Heat Pumps			
Applicative Vehicles (e.g., passenger care)	ight-duty Trucks (e.g., passenger care) Light-duty Trucks (e.g., minivars, full size pick-up trucks, and full-size SUVs) Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., heavy-duty pickup trucks and vars, and commercial medium vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Ranikine Cycle (ORC) Very Low Temperature Refrigeration Uranium botope Separation Processing Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Spray Rigid Polyurethane: Sandvich Panels Rigid Polyurethane: Sandvich Panels Rigid Polyurethane: Sandvich Panels Rigid Polyurethane: Sandvich Panels Rigid Polyurethane: Shorbscovanurate arminated Boardscok.	Sigh-duty Vehicles (e.g., passenger carn)			Ground-Source Air Conditioning and Heat Pumps			
Dassenger cars)	passenger cars) Light-dufy Trucks (e.g., minivans, full dire piek-up trucks, and full-size SUV) Motor Vehicle Air Conditioning Heavy-duty pickup trucks and vans, and commercial medium vehicles (e.g., heavy-duty pickup trucks and vans, and commercial medium vehicles) (e.g., farm and construction equipment) Bues and Passenger Rail Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium botope Separation Processing Other (specify) Lee Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Salastock and Other Rigid Polyurethane & Polyisocyanurate atminated Boractocks Rigid Polyurethane & Polyisocyanurate atminated Boractocks Flexible Polyurethane	Dassenger cars) Dassenger		Residential Dehumidifiers				
Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., farm and construction equipment) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Non-mechanical Heat Transfer Mechanical Heat Transfer Merchanical Heat Transfer Mery Low Temperature Refrigeration Very Low Temperature Refrigeration Other (specify) Ite Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Snadwich Panels	Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., heavy-duty vehicles) And commercial medium and heavy-duty or-highway vehicles) Off-road Vehicle (e.g., farm and commercial medium and heavy-duty or-highway vehicles) Off-road Vehicles (e.g., farm and commercial medium and heavy-duty or-highway vehicles) Non-mechanical Heat Transfer Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Other (specify) te Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: S	Motor Vehicle Air Conditioning Heavy-duty Vehicles (e.g., heavy-duty pickup trucks and heavy-duty on-highway vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Non-mechanical Heat Transfer Non-mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Very Low Temperature Refrigeration Other (specify) Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Spray Rigid Polyurethane: Soray Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Shabstock and Other Rigid Polyurethane: Apolysiocyanurate Laminated Boardstock			Light-duty Vehicles (e.g., passenger cars)			
vans, and commercial medium and heavy-duty on-highway vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Non-mechanical Heat Transfer Recirculating Goolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Other (specify) Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Spray Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other	vans, and commercial medium and heavy-duty on-highway vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Non-mechanical Heat Transfer Refriculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Vranium Isotope Separation Processing Other (specify) Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane	wans, and commercial medium and heavy-duty on-highway vehicles) Off-road Vehicles (e.g., farm and construction equipment) Buses and Passenger Rail Non-mechanical Heat Transfer Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other			Light-duty Trucks (e.g., minivans, full size pick-up trucks, and full-size SUVs)			
Buses and Passenger Rail Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other	Buses and Passenger Rail Non-mechanical Heat Transfer Thermosiphon Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock	Buses and Passenger Rail Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock		Motor Vehicle Air Conditioning	vans, and commercial medium and heavy-duty on-highway			
Buses and Passenger Rail Non-mechanical Heat Transfer Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other	Buses and Passenger Rail Non-mechanical Heat Transfer Thermosiphon Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock	Buses and Passenger Rail Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock			Off-road Vehicles (e.g., farm and			
Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Non-mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane Feam Blowing Flexible Polyurethane	Non-mechanical Heat Transfer Thermosiphon Recirculating Coolers						
Non-mechanical Heat Transfer Recirculating Coolers Recirculating C	Non-mechanical Heat Transfer Mechanical Heat Transfer Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ite Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing Fexible Polyurethane	Non-mechanical Heat Transfer Recirculating Coolers Recirculating C						
Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Salbstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Flexible Polyurethane Flexible Polyurethane	Recirculating Coolers Mechanical Heat Transfer Organic Rankine Cycle (ORC) Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock		Non-mechanical Heat Transfer	Thermosiphon			
Very Low Temperature Refrigeration Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other	Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing	Very Low Temperature Refrigeration Uranium Isotope Separation Processing		meenanicarrieat ridiisiei	Recirculating Coolers			
Very Low Temperature Refrigeration Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other	Very Low Temperature Refrigeration Uranium Isotope Separation Processing Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing	Very Low Temperature Refrigeration Uranium Isotope Separation Processing Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other		Mechanical Heat Transfer	Organic Rankine Cycle (ORC)			
Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other	Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Flexible Polyurethane	Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Shadwich Panels						
Other (specify) Coccessing	Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane Fexible Polyurethane	Other (specify) Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Appliance Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other		, ,	Uranium Isotope Separation			
Other (specify) Ice Cream Makers	Other (specify) Ice Cream Makers Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane Fexible Polyurethane	Other (specify) Ice Cream Makers			Processing			
Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing Flexible Polyurethane	Rigid Polyurethane: Appliance Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other		Other (specify)				
Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing	Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock		other (specify)				
Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing	Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock						
Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing	Rigid Polyurethane: Spray Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock		Digid Debuggeth A "				
Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock	Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing Flexible Polyurethane	Rigid Polyurethane: Commercial Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock						
Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing	Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing Flexible Polyurethane	Refrigeration Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing						
Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing	Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Feam Blowing Flexible Polyurethane	Rigid Polyurethane: Sandwich Panels Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing		Rigid Polyurethane: Commercial Refrigeration				
Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing	Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing Flexible Polyurethane	Rigid Polyurethane: Slabstock and Other Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing						
Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing	Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing Flexible Polyurethane	Rigid Polyurethane & Polyisocyanurate Laminated Boardstock Foam Blowing						
Foam Blowing	Foam Blowing Flexible Polyurethane Flexible Polyurethane	Foam Blowing		Rigid Polyurethane & Polyisocyanurate				
Flexible Polyurethane			Foam Blowing					
	minogram only a strains							
POLYSTAL GIBERT STATE OF THE ST	Polystyrene: Extruded Sheet	Polystylelle. Extruded Sileet	I	r diystyrene. Extruded Sheet				

			-		
	Polystyrene: Extruded Boardstock & Billet				
	Polyolefin				
	Phenolic Insulation Board & Bunstock				
	Other (specify)				
	Metal cleaning				
Cleaning Solvents	Electronics cleaning				
	Precision cleaning				
	Total Flooding Agents	Normally Occupied Areas			
Fire Suppression and Explosion Protection		Normally Unoccupied Areas			
	Streaming Applications				
		Consumer			
	Propellants	Technical			
Aerosols		Medical			
Aerosois		Consumer			
	Solvents	Technical			
		Medical			
Sterilization	Sterilant				
	Adhesives				
Adhesives, Coatings, and Inks	Coatings				
	Inks				
Tobacco Expansion	Tobacco Expansion				

2. End-Use Specific Standards: List any standard-setting organizations (U.S. or ANSI/ISO) that will evaluate the proposed substitute and/or equipment in the proposed end-use(s) and identify the associated standard.

Standard-Setting Organization	End-Use	Application	Standard number and title	Status (e.g., under development, final)	СВІ
American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) (e.g., ASHRAE 15)					
Underwriters Laboratories (UL) (e.g., UL 484, UL 250)					
Society of Automotive Engineers (SAE) International					
Other (e.g., International Electrochemical Commission (IEC), International Organization for Standardization (ISO)), National Fire Protection Association (NFPA)					

3. Technology Changes and Costs: Describe any new equipment technology changes and associated costs that will be necessary in order to use the proposed substitute.

(f) Maximum rate of pressure increase during combustion (refrigeration and air conditioning only)

End-Use	Application	(a) Technology changes to use alternative and address material compatibility issues when retrofitting	(b) Capital costs associated with proposed substitute, alternative process, new equipment, and/or new materials	(c) Changes in labor and energy costs	(d) Ongoing operational costs of equipment	СВІ

4. Production and Market Share: Provide estimated information on production of the proposed substitute by end-use. If possible, estimate the percentage of the market held by the ODS being replaced that will be captured by this proposed substitute.

End-Use	Application	(a) Year proposed substitute or technology will be available (or note if currently available)	(b) Anticipated first year annual production for end-use (kg)	(c) Years until maximum market penetration	(d) Maximum annual production at market penetration	(e) Anticipated market share at market penetration (%)	CBI

5. Energy Efficiency: Provide the alternative's impact on energy efficiency relative to the substance it is replacing in similar applications for refrigeration, air conditioning, or foam blowing. Attach documentation, if available.

End-Use	Application	Energy efficiency (+/- X%) relative to substance(s) being replaced	Supporting documentation attached?	СВІ
				+

Section C: Flammability			
1. Flammability-Related Physical and Chemical Properties. Provide information on the physical and chemical properties relevant to evaluating to specific sectors, it is noted in parentheses. Also, if any parameter has also been provided in the PMN form, it does not need to be repeated here.	he flammability of the proposed substitute. Please note: If a proj	perty is only required for	СВІ
(a) Lower flammability limit (LFL) (using ASTM E681)		ppm or %	
(b) Upper flammability limit (UFL) (using ASTM E681)		ppm or %	
(c) Flashpoint		°C	
(d) Heat of combustion		kJ/kg	
(e) Maximum pressure of combustion (refrigeration and air conditioning, and cleaning solvents only)		atm	

Part III: General Information

(g) Minimum ignition energy (refrigeration and air conditioning only)	Joules	
(h) Critical temperature (refrigeration and air conditioning only)	℃	
(i) Critical pressure (refrigeration and air conditioning only)	atm	
(j) Explosive range (LEL/UEL) (aerosols, sterilants, and adhesives coatings and inks only)	ppm or %	
(k) Vapor pressure (aerosols, sterilants and adhesives, coatings, and inks only)	@ 20°C	

2. Flammability Assessments and Test Data.

For All Flammable Substitutes	Summary of results	Attached?	CBI
(a) Results of ASTM E681 for flammability limits in air (include temperature at which test was conducted in summary of results)			
(b) Additional analyses (optional)			
For Flammable Refrigerants Only			
(c) Fault Tree Analysis or Failure Mode and Effects Analysis (for each end-use)			
(d) Risk assessment for all end-uses, consumer and occupational (technician) exposure			
(e) Fractionation during Leakage (required only for blends with flammable components)			

3. Flammability Concerns and Mitigation: Provide any information on flammability concerns and mitigation measures.			CBI
(a) Detail any abatement techniques that are used to minimize the risks associated with flammable substances or mixtures:			
(b) For flammable foam blowing agents used in spray foam, provide a training program that addresses flammability concerns	Attached?		
(c) Additional information on flammability concerns and mitigation measures:			

Note: Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version of the submission must be submitted with the bracketed information redacted or removed.

TSCA/SNAP ADDENDUM

Part IV: Sector-Specific Info	ormation					
Section A: Refrigeration and Air Co	onditioning					
-						
1. Application of Proposed Substitute. If the charge size, associated room size, and associated room size.	he substitute is proposed for use in the refrigera ociated equipment size anticipated. Note: If pers	ation and air-conditioning sector (as spe	cified in Part III, Section B, Number are not required to respond to que	r 1), please provide information stions (d) through (f) below.	on the equipment lifetime,	
End-Use	Application	(a) Equipment Lifetime (years)	(b) Typical charge size (kg)	(c) Maximum charge size (kg)	(d) Equipment capacity	CBI
		, , , ,	,,		(kWh, tons)	
End-Use	Application	on	(d) Typical room size (m³)	(e) Minimum room size (m³)	(f) Anticipated room air exchange rate (ACH)	СВІ
a secondary loop? In what types of location	describe the specific uses for which you are app ns will the equipment be used (e.g., for refrigerang?) Is air conditioning for the purpose of human	ation this could include supermarkets, o	onvenience stores, and/or restaur			СВІ
3. Compressor Oil: If the proposed substitu	ute is a refrigerant, provide information on the	chemical class of refrigerant oil you anti	cinate will be used (e.g. nolvalky).	ene glycol nolyolester mineral o	il etc.) and information on	
refrigerant/oil solubility.	ate is a reingerant, provide information on the v	chemical class of remigerant on you and	cipate will be used (e.g., polyalky)	erie grycor, poryolester, minerar c	iii, etc.) and information on	CBI
Section B: Foam Blowing						
Section B. Foam Blowing						
	he substitute is proposed for use in the foam blo . Note: If you provide personal monitoring data			information on the amount of bl	owing agent, associated room	ı size,
End-Use	(a) Typical amount of blowing agent (kg)	(b) Maximum amount of blowing agent (kg)	(c) Typical room size (m³)	(d) Minimum room size (m³)	(e) Anticipated room air exchange rate (ACH)	СВІ
2. Additional End-Use Description: Please using the foam blowing agent/equipment? pressure spray foam?	describe the specific uses for which you are app Will the foam blowing agent be used by consul	olying. For example, what type of mater mers or restricted to commercial use? F	ial will be blown? What method o or spray foams, how many compo	r type of equipment is used for fo nents are used? Will the alternat	oam blowing? Who will be ive be used in high or low	СВІ
Section C: Cleaning Solvents						
Application of Proposed Substitute. If the monitoring data, you are not required to re-	he substitute is proposed for use the cleaning so espond to questions (a) through (b) below.	olvent sector (as specified in Part III, Sec	tion B, Number 1), please provide	information on the following. No	ote: If you provide personal	
End-Use	(a) Provide information on the leak-tightness	of the equipment (e.g., typical and m	aximum leak rate of equipment)	(b) Anticipated room ai	exchange rate (ACH)	СВІ
	describe the specific uses for which you are app ment, conveyorized equipment)? Where will th					СВІ
	, and an					CBI
3. Compatibility: Provide Information on the	he compatibility of the proposed substitute with	THIELAIS AND PIASTICS.				CDI

End-Use	Applica	ation	(a) Typical charge size (kg)	(b) Maximum charge size (kg)	(c) Identify the discharge rate (g/s) of the fire extinguishing device
End-Use	Applica	ation	(d) Typical room size (m³)	(e) Minimum room size (m³)	(f) Anticipated room air exchange rate (ACH)
Additional End-Use Description: Fent aerosolized? Where will the fir	Please describe the specific uses for which you are a e suppression system be installed (e.g., marine, av	applying. For example, what is the methoc iation, data center)? Where will handheld	l of distribution (e.g., localized, sp extinguishers be intended for us	orinkler system, handheld, gaseou e (e.g., residential, commercial, a	Is)? Is it a clean agent? Is the viation)?
ction E: Aerosols					
Application of Proposed Substitut ticipated.	e. If the substitute is proposed for use in the aero				
End-Use	Application	(a) Typical amount of substitute per can (g)	(b) Maximum amount of substitute per can (g)	(c) Typical total weight of aerosol Can (g)	(d) Maximum total weight of aerosol can (g)
	release describe the specific uses for which you are and IDI)?	applying. For example, in what type of pro	ducts will the substitute be used	(e.g., personal care, automotive,	electrical contact cleaner,
		applying. For example, in what type of pro	ducts will the substitute be used	(e.g., personal care, automotive,	electrical contact cleaner,
greaser, medical adhesive spray, N				(e.g., personal care, automotive,	electrical contact cleaner,
greaser, medical adhesive spray, N	/IDI)?			(e.g., personal care, automotive,	electrical contact cleaner,
greaser, medical adhesive spray, N	/IDI)?			(e.g., personal care, automotive,	electrical contact cleaner,
greaser, medical adhesive spray, N Consumer Use: Please indicate wheeter the section F: Sterilants	/IDI)?	sumer use. If yes, describe the anticipated	consumer applications.		
greaser, medical adhesive spray, N Consumer Use: Please indicate wh ction F: Sterilants	nether the proposed substitute will be used for con	sumer use. If yes, describe the anticipated	l consumer applications. B, Number 1), please provide inf	ormation on the amount and asso	ociated room size anticipated
greaser, medical adhesive spray, N Consumer Use: Please indicate wheelers of the second section F: Sterilants Application of Proposed Substitut	nether the proposed substitute will be used for con	sumer use. If yes, describe the anticipated	l consumer applications. B, Number 1), please provide inf	ormation on the amount and asso	ociated room size anticipated
greaser, medical adhesive spray, N Consumer Use: Please indicate wheetien F: Sterilants Application of Proposed Substitut	nether the proposed substitute will be used for con	sumer use. If yes, describe the anticipated	l consumer applications. B, Number 1), please provide inf	ormation on the amount and asso	ociated room size anticipated
Consumer Use: Please indicate where the consum	nether the proposed substitute will be used for con	sumer use. If yes, describe the anticipated	l consumer applications. B, Number 1), please provide infi	ormation on the amount and asso	ociated room size anticipated
Consumer Use: Please indicate where the consum	nether the proposed substitute will be used for consecutive substitute. If the substitute is proposed for use in the sterility. (a) Provide information on the leak-tightness.	sumer use. If yes, describe the anticipated	l consumer applications. B, Number 1), please provide infi	ormation on the amount and asso	ociated room size anticipated
Consumer Use: Please indicate where the consum	nether the proposed substitute will be used for consecutive the substitute is proposed for use in the sterility (a) Provide information on the leak-tightness describe the specific uses for which you are a	sumer use. If yes, describe the anticipated	l consumer applications. B, Number 1), please provide infi	ormation on the amount and asso	ociated room size anticipated
Consumer Use: Please indicate where the consum	nether the proposed substitute will be used for considering the substitute is proposed for use in the sterility (a) Provide information on the leak-tightnesses describe the specific uses for which you are a second secon	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant	B, Number 1), please provide inf d typical leak rate of equipment	ormation on the amount and asso (b) Anticipated room ai	ociated room size anticipated ir exchange rate (ACH)
Consumer Use: Please indicate when the consumer Use: Plea	e. If the substitute is proposed for which you are a see. If the substitute is proposed for the adhesives, on the proposed end-use(s).	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant coatings, and inks sector (as specified in Part III).	B, Number 1), please provide information of typical leak rate of equipment applied (e.g., sterilization chamber III, Section B, Number I), please (b) Maximum amount per	ormation on the amount and asso (b) Anticipated room air	ciated room size anticipated in exchange rate (ACH)
Consumer Use: Please indicate when the consumer Use: Plea	nether the proposed substitute will be used for considering the substitute is proposed for use in the sterility (a) Provide information on the leak-tightnesses describe the specific uses for which you are a second secon	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant	B, Number 1), please provide inf d typical leak rate of equipment applied (e.g., sterilization chamb	(b) Anticipated room ai	ciated room size anticipated ir exchange rate (ACH)
Consumer Use: Please indicate when the consumer Use: Plea	e. If the substitute is proposed for which you are a see. If the substitute is proposed for the adhesives, on the proposed end-use(s).	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant coatings, and inks sector (as specified in Part III).	B, Number 1), please provide information of typical leak rate of equipment applied (e.g., sterilization chamber III, Section B, Number I), please (b) Maximum amount per	ormation on the amount and asso (b) Anticipated room air	ciated room size anticipated in exchange rate (ACH)
Consumer Use: Please indicate when the consumer Use: Plea	e. If the substitute is proposed for use in the steril: (a) Provide information on the leak-tightne Please describe the specific uses for which you are a steril in the proposed end-use(s). Application	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant coatings, and inks sector (as specified in Pa (a) Typical amount per dispenser (g or %)	B, Number 1), please provide information of typical leak rate of equipment applied (e.g., sterilization chamber III, Section B, Number I), please (b) Maximum amount per dispenser (g or %)	ormation on the amount and asso (b) Anticipated room ai (c) Anticipated room ai pers)? person or adhesives (e.g., laminate, hard	ciated room size anticipated r exchange rate (ACH) ciated dispenser size (d) Maximum total weight of dispenser (g)
consumer Use: Please indicate where the consum	nether the proposed substitute will be used for considering the substitute is proposed for use in the steril. (a) Provide information on the leak-tightness describe the specific uses for which you are a second substitute is proposed for the adhesives, of the in the proposed end-use(s). Application	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant coatings, and inks sector (as specified in Pa (a) Typical amount per dispenser (g or %)	B, Number 1), please provide information of typical leak rate of equipment applied (e.g., sterilization chamber III, Section B, Number I), please (b) Maximum amount per dispenser (g or %)	ormation on the amount and asso (b) Anticipated room ai (c) Anticipated room ai pers)? person or adhesives (e.g., laminate, hard	ciated room size anticipated r exchange rate (ACH) ciated dispenser size (d) Maximum total weight of dispenser (g)
Consumer Use: Please indicate when the consumer Use: Plea	e. If the substitute is proposed for use in the steril: (a) Provide information on the leak-tightne Please describe the specific uses for which you are a steril in the proposed end-use(s). Application	ants sector (as specified in Part III, Section ess of the equipment (e.g., maximum and applying. For example, how is the sterilant coatings, and inks sector (as specified in Pa (a) Typical amount per dispenser (g or %)	B, Number 1), please provide information of typical leak rate of equipment applied (e.g., sterilization chamber III, Section B, Number I), please (b) Maximum amount per dispenser (g or %)	ormation on the amount and asso (b) Anticipated room ai (c) Anticipated room ai pers)? person or adhesives (e.g., laminate, hard	ciated room size anticipated r exchange rate (ACH) ciated dispenser size (d) Maximum total weight of dispenser (g)

Factive Specific Information
Note: Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version of the submission must be submitted with the bracketed information redacted or removed.

Part V: Additional Information

Please provide any additional information in this sec	ction.	

Note: Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version of the submission must be submitted with the bracketed information redacted or removed.

TSCA/SNAP ADDENDUM

Part VI: Attachments

Identify attachments below.

Select (X) in the CBI box next to any attachment that contains information you claim as confidential. The public version of the submission form must include the attachment name/citation at a minimum. All claims of confidentiality must be substantiated in Part I.

#	Attachment Name/Citation	Associated Section of TSCA/SNAP Addendum (Part/Section/Question)	Number of Pages	СВІ

Note: Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version of the submission must be submitted with the bracketed information redacted or removed.

Part VII: Certification

United States ENVIRONMENTAL PROTECTION AGENCY Washington, DC 20460

TSCA/SNAP ADDENDUM

Part VII: Certification

I certify to the best of my knowledge and belief that:

- 1. All information provided in this notice is complete and truthful as of the date of the submission.
- 2. I am submitting with this notice all test data in my possession or control and a description of all other data known to or reasonably ascertainable by me.
- 3. If this is a submission of a new alternative, the company named in Part I, Question 1a of this notice:
- (a) intends to manufacture, formulate, import, market, or use a new alternative to a Class I or Class II ozone-depleting substance which is identified in Part I, Section B, Question 2.
- (b) seeks an acceptability determination on a new alternative(s) to a Class I or Class II ozone-depleting substance, which is identified in Part I, Section B, Question 2.
- 4. The accuracy of the statements made in this notice reflects my best prediction of the anticipated facts regarding the alternative described herein. Any knowing and willful misinterpretation is subject to criminal penalty pursuant to section 113(c) of the Clean Air Act and 18 U.S.C.§1001.

A printed copy of this signature page, with original signature, must be submitted with CD or paper submission.

Signature of Authorized Official (Original Signature Required):	Date
Print Name and Title of Authorized Official:	Date
Signature of Agent (Where Applicable):	Date
Print Name and Title of Authorized Official:	Date