

Vindex Ultra Application Instructions

Personal Safety and PPE concerns:

Vindex Ultra is a derivative of a medical-grade polymer used extensively as a medical device to cure many medical conditions. Casual contact with the product will not produce harmful side effects. **Vindex Ultra is a professional use product only.** Standard PPE consisting of gloves, safety goggles and a basic filtering facemask (dust mask) as described in OSHA §1910.134(b). The dust mask is required to eliminate the possibility of inhaling the polymer vapors.

Additional Precautions:

Prolonged exposure to high concentrations of acetone vapors may require additional PPE considerations. Consult OSHA 29 CFR 1910 or OSHA 29 CFR 1926 for additional PPE requirements. The normal intermittent application of **Vindex Ultra** in well ventilated environments would not normally require additional precautions.

Cure Time:

Vindex Ultra cures rapidly as the Acetone base evaporates leaving the base product on the surfaces to be protected. The Acetone rapidly vaporizes and fire concerns diminish quickly. Once a film is evident, usually 2 to 4 minutes after application, the product presents a very low fire hazard. Do not stop ventilating the area for at least 15 minutes after application.

Total cure time is a function of temperature and specific humidity of the air surrounding the surfaces treated. As drybulb temperatures go up curing time is increased. Water vapor in the air has a significant impact on cure time. If ambient conditions are above 75°F drybulb and 65°F wetbulb cure time could be 30-minutes or longer. Direct the ventilation air across the heat transfer surfaces treated to reduce cure time.

Fire Safety:

Vindex Ultra is a highly effective product for killing and encapsulating bacteria, viruses, mold spores and other contaminants due to its special formulation of compounds. Acetone is the vehicle that delivers **Vindex Ultra** to coil surfaces and helps clean and sanitize the surfaces that it comes in contact with. Acetone also dries rapidly helping produce a finished product that cures quickly and allows the equipment to be put in operation within minutes of the application.

Ventilation is required for the area that **Vindex Ultra** is being applied since acetone vapors are flammable. Follow the application instructions carefully. **Vindex Ultra is a Class III Flammable Liquid and it is intended for application by HVAC Industry Professionals only.** Do not re-sell this product to home owners or un-trained individuals that are unaware of the risks associated with HVAC system maintenance and service, or the application specific safety procedures of **Vindex Ultra** application.

- Do not smoke while applying **Vindex Ultra**
- Do not use near any ignition sources
- Do not spray on energized equipment – disconnect power before applying
- Do not use in confined spaces
- Do not use in unventilated spaces

- Do not expose yourself or others to sustained or prolonged exposure to **Vindex Ultra** vapors.
- Do not ingest the product
- Do not get the product in your eyes
- Do not allow unqualified employees or members of general public access to **Vindex Ultra**

Attic Application Instructions:

1. Prior to spraying the coil, a ventilation fan must be used to keep air moving across the area where surfaces are to be coated and to dissipate the product vapors until the product cures, which is usually less than 15-minutes. **An adequate ventilation fan would be equal to Global Industrial, stock # WY246430 available online at www.globalindustrial.com.**
2. Once the fan is in place and operational, the coil surface must be prepared. The coil should be clean and dry prior to application of **Vindex Ultra** . **Clean the coil** using standard industry practices keeping in mind any dirt left on the coil will be encapsulated and remain indefinitely on the coil surface. **Effective coil cleaning is imperative** to maintaining operating efficiency once **Vindex Ultra** is applied.
3. Once the coil is clean **the coil must be dry** prior to the application of **Vindex Ultra** so the product can cure rapidly and maintain its polymer qualities. If the coil is a heat pump, run the unit in the vapor compression heating mode for 3 to 5 minutes to quickly dry the coil. If the coil is an AC only coil run the fan only for about 5 minutes to dry the coil.
4. When the coil is dry the product can be applied with the sprayer supplied in the shipping bag with this instruction sheet. **Turn all power off to the air handler or furnace. Any other equipment located in the attic space that can create an arc must also be turned off during the application and drying process.** Remove the shipping cap and carefully insert the sprayer. Once the sprayer is inserted and tightened to the bottle, make a sample spray to insure the product is delivering properly. Keep the ventilation fan running during spraying to keep the vapor concentration diluted. Do not allow the ventilation blower to blow directly at the coil surface as this will affect coil coverage and the spray pattern.
5. In order for the product to serve it intended purpose, **it must coat 100% of the indoor coil** and seal the coil metals from exposure to the air. The sprayer should be adjusted to deliver a spray forceful enough to push the product into the coil fins and cover the inner tubes. A light mist will only coat the outer surfaces and **Dirty Sock Syndrome** will reoccur. Coat the coil completely and allow product to flow freely onto the drain pan and out the drain line. **Small cracks in the drain pan will be sealed by Vindex Ultra** as long as the drain pan is dry before application.
6. Once the coil is totally coated and sealed with **Vindex Ultra**, and excess product has drained from the drain pan, **replace the condensate trap to insure long-term proper drainage.** If high-value condensate traps are installed, remove them before the application of **Vindex Ultra** and catch the runoff with a separate container. Reinstall the trap properly when complete with the coil treatment. Be sure and fill the trap with water for proper drainage.
7. Once the product is dry to the touch, the covers can be reinstalled and the unit placed back into operation. **Vindex Ultra cures in 15 to 30 minutes under normal conditions.** Dry time can be longer under extreme specific humidity conditions. If the wetbulb temperature is above 65°F allow at least 15-minutes extra to cure before placing back into operation. Be sure and fill condensate traps and test coil drainage and drain line operation before leaving the job. **Be sure the attic space is properly ventilated**

7. **(cont'd) at all times during the application and drying process.**
8. Once the unit is placed back in operation the ventilation fan is no longer required for vapor dilution and can be turned off and stowed for transport.

Crawl Space Application Instructions:

1. Prior to spraying the coil, A ventilation fan must be used to keep air moving across the area where surfaces are to be coated and to dissipate the product vapors until the product cures, which is usually less than 5-minutes. **An adequate ventilation fan would be equal to Global Industrial, stock # WY246430 available online at www.globalindustrial.com.**
2. Once the fan is in place and operational, the coil surface must be prepared. The coil should be clean and dry prior to application of **Vindex Ultra**. **Clean the coil** using standard industry practices keeping in mind any dirt left on the coil will be encapsulated and remain indefinitely on the coil surface. **Effective coil cleaning is imperative** to maintaining operating efficiency once **Vindex Ultra** is applied.
3. Once the coil is clean **the coil must be dry** prior to the application of **Vindex Ultra** so the product can cure rapidly and maintain its polymer qualities. If the coil is a heat pump, run the unit in the vapor compression heating mode for 3 to 5 minutes to quickly dry the coil. If the coil is an AC only coil run the fan only for about 5 minutes to dry the coil.
4. When the coil is dry the product can be applied with the sprayer supplied in the shipping bag with this instruction sheet. **Turn all power off to the air handler or furnace. Any other equipment located in the crawl space that can create an arc must also be turned off during the application and drying process.** Remove the shipping cap and carefully insert the sprayer. Once the sprayer is inserted and tightened to the bottle, make a sample spray to insure the product is delivering properly.
5. Keep the ventilation fan running during spraying to keep the vapor concentration diluted. Do not allow the ventilation blower to blow directly at the coil surface as this will affect coil coverage and the spray pattern.
6. In order for the product to serve its intended purpose, **it must coat 100% of the indoor coil** and seal the coil metals from exposure to the air. The sprayer should be adjusted to deliver a spray forceful enough to push the product into the coil fins and cover the inner tubes. A light mist will only coat the outer surfaces and **Dirty Sock Syndrome** will reoccur.
7. Coat the coil completely and allow product to flow freely onto the drain pan and out the drain line. **Small cracks in the drain pan will be sealed by Vindex Ultra** as long as the drain pan is dry before application. Once the coil is totally coated and sealed with **Vindex Ultra**, and excess product has drained from the drain pan, **replace the condensate trap to insure long-term proper drainage.** If high-value condensate traps are installed, remove them before the application of **Vindex Ultra** and catch the runoff with a separate container. Reinstall the trap properly when complete with the coil treatment. Be sure and fill the trap with water for proper drainage.
8. Once the product is dry to the touch, the covers can be reinstalled and the unit placed back into operation. **Vindex Ultra cures in 15 to 30 minutes under normal conditions.** Dry time can be longer under extreme specific humidity conditions. If the wetbulb temperature is above 65°F allow at least 15 minutes extra to cure before placing back into operation. Be sure and fill condensate traps and test coil drainage and drain line operation before leaving the job. **Be sure the crawl space is properly ventilated at all times during the application and drying process.**

9. Once the unit is placed back in operation and the space has been properly ventilated, the ventilation fan is no longer required for vapor dilution and can be turned off and stowed for transport.
10. Once the coil is totally coated and sealed with **Vindex Ultra**, and excess product has drained from the drain pan, **replace the condensate trap to insure long-term proper drainage**. If high-value condensate traps are installed, remove them before the application of **Vindex Ultra** and catch the runoff with a separate container. Reinstall the trap properly when complete with the coil treatment. Be sure and fill the trap with water for proper drainage.
11. When product is dry to the touch, the covers can be reinstalled and the unit placed back into operation. **Vindex Ultra cures in 15 to 30 minutes under normal conditions**. Dry time can be longer under extreme specific humidity conditions. If the wetbulb temperature is above 65°F allow at least 15-minutes extra to cure before placing back into operation. **Be sure the crawl space is properly ventilated at all times during the application and drying process**. Be sure and fill condensate traps and test coil drainage and drain line operation before leaving the job.
12. Once the unit is placed back in operation and the space has been properly ventilated, the ventilation fan is no longer required for vapor dilution and can be turned off and stowed for transport.

Indoor Application Instructions:

1. Prior to spraying the coil, windows to the exterior of the structure must be opened to allow proper ventilation. A ventilation fan must be used to keep air moving across the area where surfaces are to be coated and to dissipate the product vapors until the product cures, which is usually less than 5-minutes. **An adequate ventilation fan would be equal to Global Industrial, stock # WY246430 available online at www.globalindustrial.com.**
2. Once the fan is in place and operational, the coil surface must be prepared. The coil should be clean and dry prior to application of **Vindex Ultra**. **Clean the coil** using standard industry practices keeping in mind any dirt left on the coil will be encapsulated and remain indefinitely on the coil surface. **Effective coil cleaning is imperative** to maintaining operating efficiency once **Vindex Ultra** is applied.
3. Once the coil is clean **the coil must be dry** prior to the application of **Vindex Ultra** so the product can cure rapidly and maintain its polymer qualities. If the coil is a heat pump, run the unit in the vapor compression heating mode for 3 to 5 minutes to quickly dry the coil. If the coil is an AC only coil run the fan only for about 5 minutes to dry the coil.
4. When the coil is dry the product can be applied with the sprayer supplied in the shipping bag with this instruction sheet. **Turn all power off to the air handler or furnace. Any other equipment located in the crawl space that can create an arc must also be turned off during the application and drying process.**
5. Remove the shipping cap and carefully insert the sprayer. Once the sprayer is inserted and tightened to the bottle, make a sample spray to insure the product is delivering properly. Keep the ventilation fan running during spraying to keep the vapor concentration diluted. Do not allow the ventilation blower to blow directly at the coil surface as this will affect coil coverage and the spray pattern.
6. In order for the product to serve its intended purpose, it must coat 100% of the indoor coil and seal the coil metals from exposure to the air. The sprayer should be adjusted to deliver a spray forceful enough to push the product into the coil fins and cover the inner tubes. A light mist will only coat the outer surfaces and **Dirty Sock Syndrome** will re-occur.
7. Protect indoor surfaces such as carpets, hardwood floor and tile from over spray of the product. Coat the coil completely and allow product to flow freely onto the drain pan and out the drain line. **Small**

7. (cont'd) cracks in the drain pan will be sealed by **Vindex Ultra** as long as the drain pan is dry before application. Once the coil is totally coated and sealed with **Vindex Ultra**, and excess product has drained from the drain pan, **replace the condensate trap to insure long-term proper drainage.** If high-value condensate traps are installed, remove them before the application of **Vindex Ultra** and catch the runoff with a separate container.
8. Reinstall the trap properly when complete with the coil treatment. Be sure and fill the trap with water for proper drainage.
9. Once the product is dry to the touch, the covers can be reinstalled and the unit placed back into operation. **Vindex Ultra** cures in 15 to 30 minutes under normal conditions. Dry time can be longer under extreme specific humidity conditions. If the wetbulb temperature is above 65°F allow at least 15- minutes extra to cure before placing back into operation. **Be sure the crawl space is properly ventilated at all times during the application and drying process.** Be sure and fill condensate traps and test coil drainage and drain line operation before leaving the job.
10. Once the unit is placed back in operation and the space has been properly ventilated, the ventilation fan is no longer required for vapor dilution and can be turned off and stowed for transport.

Additional Application Recommendations

Indoor Coil “Dirty-Sock”

- With the high probability of aluminum coils to develop “**Dirty Sock Syndrome**” and the high cost of warranty calls, Pratl Technologies recommends application of **Vindex Ultra** prior to installation of the cased coil or air handler. The product application is quicker and far simpler when performed at the contractors shop. When applied to new and unused equipment, the coil cleaning and drying process is not be required. This saves time and eliminates some of the set-up time due to ventilation requirements in spaces like attics and crawl spaces.
- Another benefit to shop application of **Vindex Ultra** prior to installation in the intended structure is the ability to insure total coil coverage. Heat pump air handlers are easier to coat in the field than cased coils on furnaces. All aluminum cased coils used for dual-fuel applications should have the initial coating of **Vindex Ultra** in the contractors shop. Unrestricted access to both sides of the A-coil or other coil configurations is available prior to attachment to the furnace. With some coils, access is easier to provide when the coil is removed from the case.

Outdoor Coil Corrosion

- **Vindex Ultra** is a highly effective corrosion inhibitor when applied to mono-metal and bi-metal condenser coils used in refrigeration, air conditioning and heat pumps. Coils should be coated before their first day of operation to insure that corrosion has not begun to be most effective. However tests by the US Military have proven that **Vindex Ultra** will stop existing corrosion in its tracks without the need to remove existing rust or the effects of electrolysis.
- **Vindex Ultra** is recommended for use on the coil surfaces and internal piping on all vapor compression outdoor units. Tests have shown the product will discolor slightly from exposure to UV rays from the sun. Pratl Technologies recommends **Vindex Ultra** be used only on the coil surfaces and not the painted surfaces that make up the cabinet parts. Discoloration is likely to occur and may seem unsightly to equipment.





MSDS-01

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VindEX Ultra MATERIAL SAFETY DATA SHEET

PRODUCT AND COMPANY DETAILS

Manufactured for: Pratl Technologies, LLC

Address: 5540 Centerview Drive, Raleigh NC, USA

Contact: Phone 800-317-7095; Fax 919-834-7127

Emergency: 911 for fire or ambulance; Poison Control Center: 800-222-1222

CHEMICAL IDENTIFICATION

Chemical Name: Poly(urea-urethane)

Chemical Classification: Solvent based Polyurethane Copolymer

Chemical *	CAS	Percent [w/w]	Exposure Limits
Polyurethane Copolymer	9009-54-5	16	Not Established
Acetone	67-64-1	75	NIOSH REL: TWA 250 ppm (590 mg/m ³); OSHA PEL: TWA 1000 ppm (2400 mg/m ³); IDLH 2500 ppm [10 % LEL]
Methyl Ethyl Ketone	78-93-3	9	NIOSH REL: TWA 200 ppm (590 mg/m ³); NIOSH STEL 300 ppm (885 mg/m ³); OSHA PEL: TWA 200 ppm (590 mg/m ³); IDLH 3000 ppm

* All other components are below 1% in the formulation

HAZARD IDENTIFICATION & HEALTH HAZZARD

Eye: Direct contact with liquid may cause mild irritation and discomfort.

Inhalation: Avoid breathing vapors. Prolonged exposure may cause headaches, dizziness, drowsiness, and nausea leading to unconsciousness.

Ingestion: May be harmful if swallowed. May lead to nausea, weakness, and central nervous system effects.

Mode of Entry: Skin, inhalation, ingestion.

FIRST AID MEASURES

Eye Contact: Wash eyes for at least 15 minutes with water. Seek medical attention if irritation develops.

Inhalation: Remove to fresh air immediately. If not breathing give artificial respiration. Seek immediate medical attention.

Ingestion: Do not induce vomiting unless directed by medical professional. Do not give anything to an unconscious person. Seek immediate medical attention.

FIRE FIGHTING MEASURES

Flash Point: Highly flammable liquid and vapor. Boiling point (B.P.) and flash point (F.I.P.) of pure individual components: Acetone (B.P. 57 °C / F.I.P. -20 °C); MEK (B.P. 80 °C / F.I.P. -9 °C).

Extinguishing media: Extinguish with alcohol resistant foam or water spray in case of a large fire. In case of a small fire, use dry chemical powder to extinguish.

Fire fighting procedures: As in any fire fighting procedure, wear complete fire service protective equipment, including full-face, self-contained breathing apparatus and protective butyl rubber clothing. Avoid unnecessary run-off of extinguishing media. Vapor may accumulate in low lying areas and travel considerable distance to source of ignition and flashback. Sudden reaction and fire may result if product is mixed with a strong oxidizing agent. Closed containers may explode when exposed to extreme heat (fire). Toxic and irritating fumes are possible under fire conditions.

ACCIDENTAL RELEASE MEASURES

General information: Full protection gear, full alert to fire hazard possibility. Spilled polyurethane may impede movement, take due care

Spills / Leaks: Stop leaks, contain spillage by any means available, use low sparking hand tools and intrinsically safe equipment, dyke large spill area and collect material into containers. For small spills, absorb substance in sand or earth or any other suitable material, or cover with alcohol resistant foam. Wash area thoroughly as it will become sticky later. If substance has entered a water course of sewer, inform the responsible authority. Ventilate sewers and basements where there is no risk to personnel or public.

HANDLING AND STORAGE

Handling: Provide mechanical exhaust to keep airborne levels within limits. Eliminate sources of ignition. Use non-sparking tools and flame-proof equipment. Avoid contact with eyes and keep out of reach of children.

Storage: Store in a well ventilated cool place. Keep away from source of ignition.

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure controls: Use in well ventilated area.

Personal Protective Equipment: Eye protection – chemical safety glasses / splash proof eye goggles.

Skin Protection – Chemical resistant gloves, long sleeved shirts and long pants are recommended.

Respiratory Protection – None required under anticipated conditions.

PHYSICOCHEMICAL PROPERTIES

Appearance: Yellow, Clear to Moderately Opaque

Solubility in Water: Insoluble

Boiling Point: Not Determined

Boiling Point: Not Determined

Flash Point: <-10°C

Odor: Mild, Ketonic Solvents

STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: Avoid contact with heat, sparks, flames or other sources of ignition

Incompatibilities: Oxidizing materials

Hazardous Decomposition Products: None

Hazardous Polymerization: None

Flammability: Final cured product has low flammability

TOXICOLOGICAL INFORMATION

Acute Effects: Vapor may cause drowsiness, dizziness, vomiting, and nausea. Vapors may be irritating to the eyes.

Toxicity:

	CAS	RTECS	LD ₅₀ Oral	LD ₅₀ Skin	Inhalation
Polyurethane	9009-54-5	N/A	Not Availab	Not Available	Not Available
Acetone	67-64-1	AL3150000	Rat 5,800 mg/kg	Guinea pig >9400 µL/kg	Rat LD _{Lo} 30,000 mg/m ³ /2 hour; Behavioral
MEK	78-93-3	EL6475000	Rat 2,737 mg/kg	Rabbit 6,480 mg/kg	Rat LD ₅₀ 23,500 mg/m ³ /8 hour

Carcinogenicity and Mutagenicity: No component in this mixture is classified as carcinogenic by ACGIH, NTP (US), or OSHA.

ECOLOGICAL INFORMATION

The ecological profile of this mixture is not available. Do not dispose of this chemical directly into the environment.

DISPOSAL CONSIDERATION

This chemical mixture must be disposed as per local and federal laws.

TRANSPORT INFORMATION

Proper Shipping Name: Polyurethane Copolymer

Hazard Label: Flammable liquid

UN Number: UN 1139

Hazard Class: Class 3

Packing Group: Group 2

REGULATORY INFORMATION

	Polyurethane		Acetone		MEK	
	Status	Threshold	Status	Threshold	Status	Threshold
CAA Section 112 (r)	N		N		N	
CERCLA	N		Y	5000 lbs	Y	5000 lbs
EPCRA I Section 302 TPQ	N		N	N	N	
EPCRA Section 313	N		N		Y	
RCRA Chemical Code			U002		U159	
Hazardous Air Pollutant	N		N		Y	

OTHER INFORMATION

Information contained in this MSDS is believed to be correct but no representation, guarantee, or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. This MSDS shall be used as a guide only. Pratl Technologies makes no warranties expressed or implied of the adequacy of this document for any particular purpose.