Cleanroom

CONTAMINATION CONTROLLED ENVIRONMENTS

CLEANROOM | PHARMA PROCESSING | SEMICONDUCTOR

Tiger-Vac®
...The name to vacuum with

LEADING MANUFACTURER
of LEGALLY CERTIFIED VACUUM CLEANERS
for CONTAMINATION CONTROLLED ENVIRONMENTS
and HAZARDOUS LOCATIONS / AREAS

Contamination Controlled Environments

The impact of particles on a production process is not always predicated by volume, but instead by specific sizes of problematic particles based on the application. The increased specificity of ISO 14644 cleanroom standards provides a more accurate and translatable picture of cleanliness, because it defines allowable particle counts in stages of 0.1 micron – 5 micron. The 0.5 micron standard of the FS 209E systems is continually growing outdated; as the rush for smaller components and more sensitive devices grows and cleanrooms become cleaner, particle thresholds require increased sensitivity. Likewise, particle counting technology has improved the ability to detect and differentiate aerosol (airborne) particles with impressive accuracy.

Some of the most common cleanroom contamination include solid dust, liquid, bacteria, fungus, human skin cells and hair, trace moisture, spills and leaks, cosmetics, perfumes, lint, fibers, and more. The vast majority of cleanroom contamination comes from those that work within it

Portable cleanroom vacuums cleaners can also be used to clean the inside of the processing machines or in conjunction with processing equipment to remove internal dust or fumes generated during the manufacturing process. Centralized vacuum systems are not recommended for these applications because the tendency to have different productions and intermittent batches creates problems of dangerous mixtures in pipes and filters of centralized systems.

The basic requirements for portable cleanroom vacuums have focussed on the filtration system and state that the vacuum cleaner must meet the cleanroom standards for particle emissions. A 4 or 5 stage filtration system is the norm. The first stage of filtration is typically a disposable filter bag made of paper media or synthetic media. The intermediate filters are typically fabricated from cloth or fabric and possibly have PTFE lamination to increase the filtration efficiency. The final stage of filtration is an ULPA filter cartridge which is installed at the exhaust of the vacuum. The exhaust ULPA filter captures the ultra-fine dust which has escaped the primary filters and it also captures the carbon residue from the vacuum cleaner's motor which is also a contaminant.

Tiger-Vac® manufactures a variety of professional grade portable cleanroom vacuums specifically designed to recover waste liquid generated during the pharmaceutical manufacturing process. The company also offers systems for the recovery of broken ampoules, glass ampoules, or broken glass containers containing residues. There are also portable vacuum systems specifically designed to recover solvents and acids.

Tiger-Vac® has introduced several new models which feature an autoclavable recovery tank, autoclavable wheel base assembly, autoclavable suction hose and autoclavable accessories. Autoclaving is an effective method to remove dirt and grime from the various components of the vacuum cleaner. Proper autoclave treatment will inactivate all bacteria, viruses and bacterial spores.

ISO Class 5 Cleanroom

Formerly Class 100, is an atmospheric environment that contains less than 3,520 particles 0.5 micron in diameter per cubic meter of air (formerly stated as 100 particles 0.5 micron in diameter per cubic foot of air).

ISO Class 7 Cleanroom

Formerly Class 10,000, is an atmospheric environment that contains less than 352,000 particles 0.5 micron in diameter per cubic meter of air (formerly stated as 10,000 particles 0.5 micron in diameter per cubic foot of air).

ISO Class 8 Cleanroom

Formerly Class 100,000, is an atmospheric environment that contains less than 3,520,000 particles 0.5 micron in diameter per cubic meter of air (formerly stated as 100,000 particles 0.5 micron in diameter per cubic foot of air).

Cleanroom Buffer Area

Buffer or Core Room, Buffer or Clean Room Areas, Buffer Room Area, Buffer or Clean Area, or Buffer Zone–An ISO Class 7 area where the primary engineering control area is physically located. Activities that occur in this area include the preparation and staging of components and supplies used when compounding sterile preparations.

Cleanroom Anteroom

An ISO Class 8 or better area where personnel may perform hand hygiene and garbing procedures, staging of components, order entry, labeling, and other high particulate generating activities. It is also a transition area that reduces heat and ventilation needs while maintaining positive pressure flow from clean to dirty work areas.

Cleanroom Contamination

A process, act, or energy that causes materials to be soiled or coated with substances is called contamination. Contamination is distinguished within two categories: film layers and particulates. Electrostatic discharge (ESD) could also be considered as a contaminant, although ESD prevention differs incomparably in regards to cleanroom protocol and practices.

Controlled environments

Feature a building, cell, or room in which the supply, exhaust, and filtration of room air and surface cleanliness are tightly controlled.

FOR THE RECOVERY OF
TOXIC · NUISANCE MATERIAL

FOR THE RECOVERY OF
NUCLEAR WASTE

FOR THE RECOVERY OF
BIOHAZARD SUBSTANCES

CWR-15 (4W) POLY
WET & DRY RECOVERY

POWERHEAD	ELECTRIC
VOLTAGE	240 V
HERTZ	50 Hz
PHASE	Single
WATTAGE	1050 W
AMPERAGE	5 amps.
AIR FLOW	189 m^3/h
VAC. PRESSURE	2180 mm H_2O
PLUG TYPE	Chinese
SOUND LEVEL	75 dB(A)
SUCTION INLET	38 mm
RECOVERY TANK	Dry (47.3L)
DISPOSABLE BAG	Dry (19L)
CORD LENGTH	10.6 m

ISO Class 4
Choosing the right Vacuum Cleaner.

Understanding the importance for cleanroom compatibility is beneficial to the achievement of mature cleanroom environmental control.

Avoiding Contamination

- ULPA Filter Efficiency of 99.999% on 0.12 micron. Filtration Efficiency of 99.9995% on 0.18 micron. Tested: IEST-RP-CC001, U15 by MPPS method as per EN 1822.
  All ULPA Vacuum Cleaners are Aerosol Leak Tested before leaving our facility.
- Cleanroom compatible with ISO Class 4.
- EMI/RFI Shielded.
- 5-stage Filtration System with Dual ULPA Filters. (one for the working air and one for the cooling air).
- Double Cloth filter and Disposable Filter Bags.
- Available with Middle Ring with Activated Carbon (MRAC) for the adsorption of toxic/noxious fumes and vapors.
- Designed for use in Contamination Controlled Environments.
- Bypass Heavy Duty motor.
- Polyethylene recovery tank with polished metal powerhead.
- Includes a complete toolkit.

In addition to using HEPA and ULPA filters that are individually tested, Tiger-Vac® performs an aerosol leak test on each and every cleanroom vacuum that leaves thefactory. This ensures the integrity of the filter and the integrity of the seals and gaskets around the filter to guarantee cleanroom compatibility.

Particle Counts in
Cleanroom cleanliness

Minimize the introduction, generation, and retention of particles inside the room.
ISO 14644 Cleanroom Standards and US Fed Standard 209D Cleanroom Standards.

The higher the level of cleanliness, the lower the likeliness of particles or microbes damaging or corrupting production processes by tainting sterile and non-sterile products.

STAINLESS STEEL • WHITE POWDER COATED • STAINLESS STEEL & WHITE POWDER COATED

H HEPA FILTER
EFFICIENCY OF 99,995% ON 0,3 MICRON
TESTED: IEST RP-CC001, H14 BY MPPS METHOD
AS PER EN 1822 AND OSHA COMPLIANT.
ALL OF OUR HEPA VACUUM CLEANERS ARE
AEROSOL LEAK TESTED BEFORE LEAVING OUR FACILITY.

U ULPA FILTER
EFFICIENCY OF 99,9995% ON 0,12 MICRON
TESTED: IEST RP-CC001, U15 BY MPPS METHOD
AS PER EN 1822 AND OSHA COMPLIANT.
ALL OF OUR ULPA VACUUM CLEANERS ARE
AEROSOL LEAK TESTED BEFORE LEAVING OUR FACILITY.

ESD SAFE
- VACUUM CLEANERS FOR HAZARDOUS LOCATIONS DESIGNED TO PREVENT IGNITION HAZARDS.
- METAL PARTS OR STATIC DISSIPATIVE POWDER COATING TO PREVENT ELECTROSTATIC DISCHARGE.

Maintaining High Standards

Good Housekeeping

The basic requirements for portable cleanroom vacuums have focussed on the filtration system and state that the vacuum cleaner must meet the cleanroom standards for particle emissions.

ULPA Filter Efficiency of 99.999% on 0.12 micron

CD-1501 CR (STD)

PHARMA · DRY RECOVERY

POWERHEAD	ELECTRIC
TEFC MOTOR	YES
VOLTAGE	230 V
HERTZ	50 Hz
PHASE	Single
WATTAGE	1750 W
AMPERAGE	9 amps.
AIR FLOW	238 m³/h
VAC. PRESSURE	2820 + mm H20
VRV SETTING	2795 mm H20
SOUND LEVEL	64 dB(A)
SUCTION INLET	50 mm
RECOVERY TANK	Dry (28.4L)
RECOVERY BAG	15L
CORD LENGTH	10 m

U15

Dual ULPA Filters (U15) : (one for the working air, and one for the cooling air), Double Cloth filter and Disposable Filter Bags.

Keep it Safe

- HEPA Filter Efficiency of 99.995% on 0.3 micron. Tested: IEST-RP-CC001, H14 by MPPS method as per EN 1822 and OSHA compliant. All HEPA Vacuum Cleaners are Aerosol Leak Tested before leaving our facility.
- ULPA Filter Efficiency of 99.999% on 0.12 micron. Tested: IEST-RP-CC001 Filtration Efficiency of 99.9995% on 0.18 micron. Tested: IEST-RP-CC001, U15 by MPPS method as per EN 1822. All ULPA Vacuum Cleaners are Aerosol Leak Tested before leaving our facility.
- Designed to be attached to process machines.

Continuous Duty 24-7

- Can also be used for the recovery of Tablets in the Pharmaceutical Industry.
- Continuous Duty · Single Phase or 3-Phase Motor · Mounted Vertically.
- Available in a fixed, or mobile unit.
- Vertical Mounting for areas with space constraints.
- Equipped with 4 wheels for easy maneuverability.
- Dry Recovery only.

Manage Contamination by Controlling the environment

Regular maintenance procedures (daily, weekly, monthly, and quarterly) help ensure cleanroom compliance, no matter what the cleanroom class.

In the most basic sense, Clean Manufacturing follows current good manufacturing practices. Essentially, it's good housekeeping.

CONTAMINATION PREVENTION · STATIC FREE ENVIRONMENTS · MANAGING CONTAMINATION

(H) HEPA FILTER
EFFICIENCY OF 99,995% ON 0,3 MICRON
TESTED: IEST RP-CC001, H14 BY MPPS METHOD
AS PER EN 1822 AND OSHA COMPLIANT.
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AEROSOL LEAK TESTED BEFORE LEAVING OUR FACILITY.

(U) ULPA FILTER
EFFICIENCY OF 99,9995% ON 0,12 MICRON
TESTED: IEST RP-CC001, U15 BY MPPS METHOD
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EMI/RFI
Shielding

Protection from disturbance generated by an external source (vacuum cleaner) that affects an electrical circuit by electromagnetic induction, electrostatic coupling, or conduction.

Shielding is typically applied to enclosures to isolate electrical devices from their surroundings and to cables, to isolate wires from the environment through which the cables run. Electromagnetic shielding that blocks radio frequency electromagnetic radiation is also known as RF shielding.

CWR MRAC SERIES
WET & DRY RECOVERY

POWERHEAD	ELECTRIC
VOLTAGE	240 V
HERTZ	50 Hz
PHASE	Single
WATTAGE	1050 W
AMPERAGE	5 amps.
AIR FLOW	189 m^3/h
VAC. PRESSURE	2180 mm H_2O
PLUG TYPE	on demand
SOUND LEVEL	75 dB(A)
SUCTION INLET	50 mm
RECOVERY TANK	Dry (28.4L)
RECOVERY BAG	19L
CORD LENGTH	10.6 m

SINGLE PHASE

HD MOTOR BYPASS HEAVY DUTY

SS SAE STAINLESS STEEL CONSTRUCTION

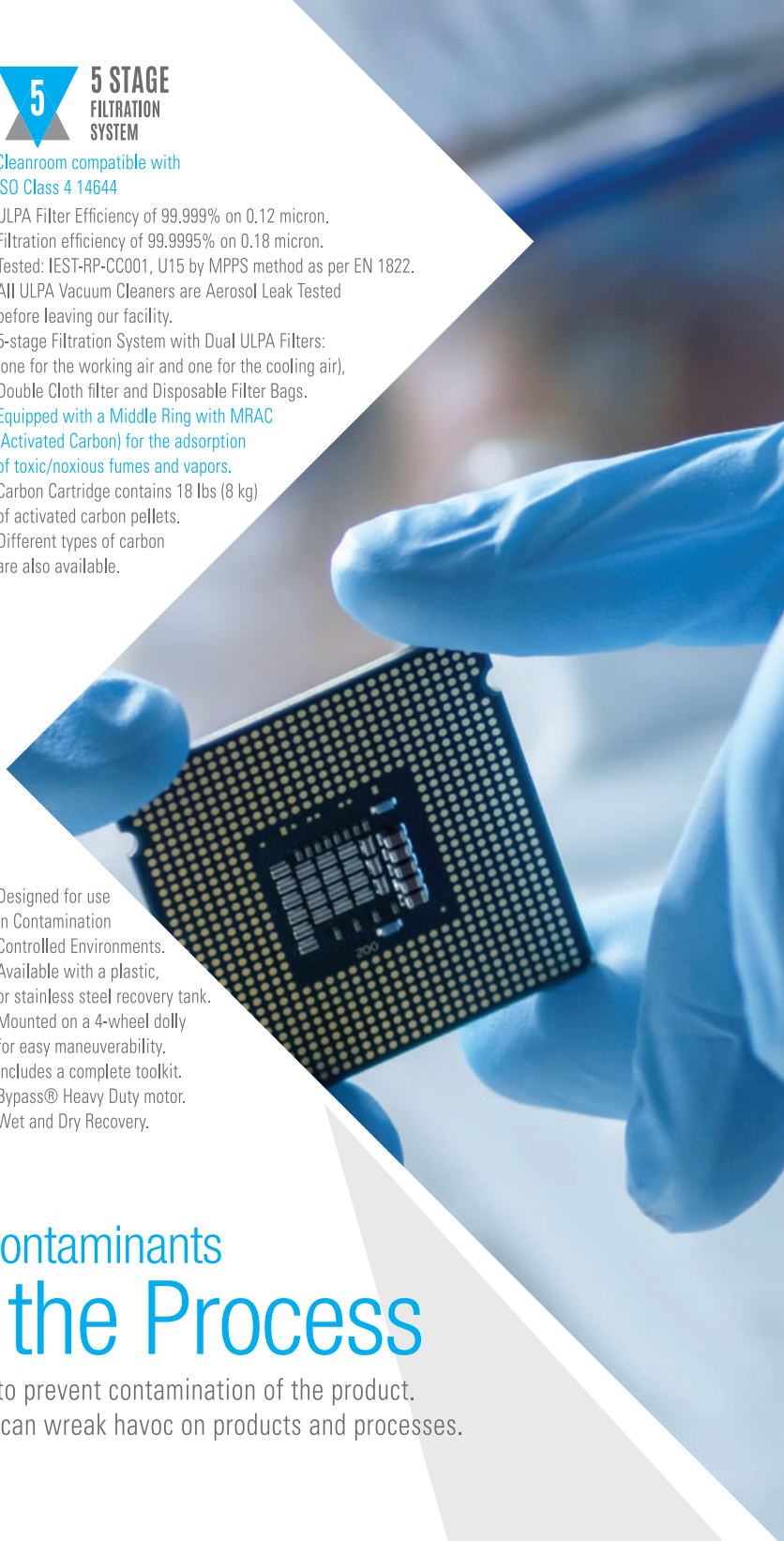
ESD SAFE

EMI SHIELDING ELECTROMAGNETIC INTERFERENCE

5 STAGE FILTRATION SYSTEM

Cleanroom compatible with ISO Class 4 14644

- ULPA Filter Efficiency of 99.999% on 0.12 micron. Filtration efficiency of 99.9995% on 0.18 micron. Tested: IEST-RP-CC001, U15 by MPPS method as per EN 1822. All ULPA Vacuum Cleaners are Aerosol Leak Tested before leaving our facility.
- 5-stage Filtration System with Dual ULPA Filters: (one for the working air and one for the cooling air), Double Cloth filter and Disposable Filter Bags.
- Equipped with a Middle Ring with MRAC (Activated Carbon) for the adsorption of toxic/noxious fumes and vapors.
- Carbon Cartridge contains 18 lbs (8 kg) of activated carbon pellets.
- Different types of carbon are also available.



- Designed for use in Contamination Controlled Environments.
- Available with a plastic, or stainless steel recovery tank.
- Mounted on a 4-wheel dolly for easy maneuverability.
- Includes a complete toolkit.
- Bypass® Heavy Duty motor.
- Wet and Dry Recovery.

Keeping Contaminants away from the Process

Strict rules and procedures are followed to prevent contamination of the product. Without effective control, contamination can wreak havoc on products and processes.

Strict rules, policies, and procedures are followed to prevent contamination of the product and processes. Tiger-Vac® has the Solution.

PREVENTING CONTAMINATION

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(U) ULPA FILTER
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EMI-1000 SS
DRY RECOVERY

POWERHEAD	ELECTRIC
VOLTAGE	240 V
HERTZ	50 Hz
PHASE	Single
WATTAGE	1000 W
AMPERAGE	4.6 amps.
AIR FLOW	204 m^3/h
VAC. PRESSURE	2410 mm H_2O
CART TYPE	4 Wheel Dolly
SOUND LEVEL	70 dB(A)
SUCTION INLET	38 mm
RECOVERY TANK	Dry (15.1L)
RECOVERY BAG	7.6L
CORD LENGTH	10.6 m

EMI/RFI
Shielding

Protection from disturbance generated by an external source (vacuum cleaner) that affects an electrical circuit by electromagnetic induction, electrostatic coupling, or conduction.

Cleanroom compatible with ISO Class 4 14644.

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- HEPA Filter Efficiency of 99.995% on 0.3 micron. Tested: IEST RP-CC001, H14 by MPPS method as per EN 1822 and OSHA compliant. All HEPA Vacuum Cleaners are Aerosol Leak Tested before leaving our facility.
- Static Free and ESD Safe.
- EMI/RFI Shielded.
- TELECOM package available.
- 5-stage filtration system includes an ULPA Filter (U15), HEPA Filter (H14), PTFE Laminated Main Cloth Filter, Safety Filter, and Disposable Filter Bag.
- Designed for use in Contamination Controlled Environments.
- Powerful Dual Speed Thruflow motor.
- For Dry Recovery only.
- Autoclavable / Stainless Steel Type 316 Filter Chamber and Recovery Tank.
- Available: Safe Containment Canister for the safe collection, containment and disposal of potent compounds.
- Mounted on a 4-wheel dolly for easy maneuverability.
- 3 optional Toolkits available: Standard, ESD Safe and Autoclavable.

Indispensable Cleaning Tool in Controlled Environments

Basic requirements for Portable Vacuum Systems focus on the Filtration System.
Meeting Cleanroom Standards for particle emissions. | 4 Stage or 5 Stage Filtration Systems.

CONTAMINATION CONTROL SPECIALISTS RECOMMEND THE USE OF A PORTABLE VACUUM CLEANER SYSTEM.

Safer transfer of bulk dry materials as well as delivering solutions for maintaining tight industry standards for sanitation and environmental safety.

CONTAMINATION LEVEL CONTROL • SAFE CONTAINMENT • COMPATIBLE WITH ISO CLASS 4

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