

VACUUM CLEANER, BLOWER CLEANER



Alberto Stradi

28.03.2017 / Milano

VACUUM CLEANERS – COMMON TYPES



Dust Collector



Canister



Backpack



Blower Cleaner



Shop Type – Wet/Dry Pickup



Upright



VACUUM CLEANERS – NON COMMON TYPES



Central Vac & Wall Valves

APPLICABLE CODES/STANDARDS



Harmonized UL and CSA Group Standard

UL 1017 – 9th Edition

CSA-C22.2 NO. 243 – 5th Edition



HAZARDS INVESTIGATION

•Risk of Fire

- Material (Flammability)
- Over-heating (e.g. Normal Temperature, Extreme Voltage)
- Overload (e.g. Extreme Voltage, Locked Rotor)
- Reduced Ventilation (e.g Blocked Inlet)



•Risk of Electric Shock

- Insulation reliability (e.g Leakage Current, Dielectric Strength)
- Material (e.g. CTI, HAI)
- Spacing
- Accessibility of live parts



•Risk of Personal Injuries

- Accessibility of moving parts
- Enclosure/Guard reliability (Impact, Mold Stress)
- Actuation of moving parts (e.g. Unexpected Switch Actuation, Limitation on Auto Reset Protector)



HOUSEHOLD VAC VS COMMERCIAL VAC

	Household	Commercial
Construction		
Enclosure of Uninsulated Live parts	Min HB	Min V-2
Power Supply Cord	Normally min 1.82m	May provide pig-tail power supply cord + detachable cord set
Cord type	SV, SVT	SJ, SJT
Grounding	Not a must (based on vac type)	Must
Test		
Power Supply Cord Flexing	10000 or 20000 oscillation	20000 oscillation
Wire Flexing Test	9000+1000 cycles	45000+5000 cycles



COMPONENT REQUIREMENTS – GENERAL

Allows for some components to be evaluated to the end-product standard, including:

- **Switches**



- **Motors**

Allows for three Certification Options

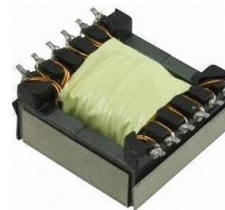
- ✓ UL Recognized Component (PRGY2/8)
- ✓ Unlisted Component (PRGY3/9)
- ✓ Evaluated to motor standards with end-product guidance
- ✓ Embedded Component



Evaluated to the UL 1017

- **Transformers**

- **Cord Reels**

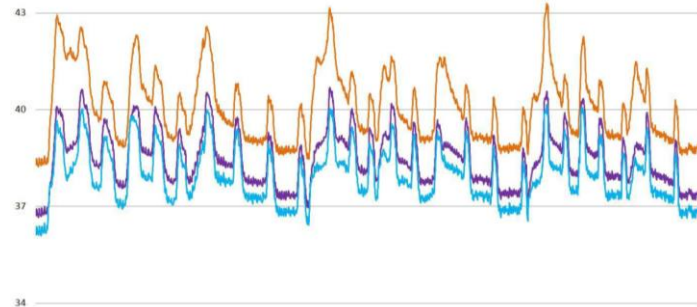


PERFORMANCE REQUIREMENTS

- Leakage current
- Starting current
- Rating
- Temperature
- Abnormal operation
- Dielectric voltage-withstand test
- Resistance to moisture



- Stability
- Strain relief
- Cord and internal wiring flexing
- Physical abuse
- Strength of handles



PERFORMANCE REQUIREMENTS

Rechargeable Battery-Powered Appliances – UL 2595

Lithium ion cells shall comply with the Standard for Secondary Cells and Batteries Containing Alkaline or Other Non-acid Electrolytes - Safety Requirements for Portable Sealed Secondary Cells, and for Batteries Made from Them, for Use in Portable Applications, UL 62133 or CAN/CSA E62133.



Main testing:

Abnormal Operation - Motor and Electronic Circuit Evaluation

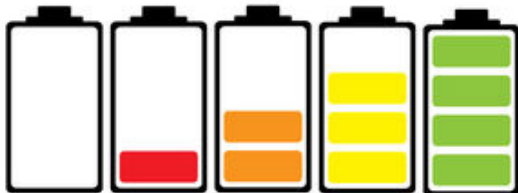
Lithium-Ion Charging System – Abnormal Operation

Lithium-Ion Battery Short Circuit

Mechanical Strength

Charging Input Test

Determination of a Low-Power Circuit





GRAZIE 😊



FIND US ON...



CONTACT US...

<http://ITALY.UL.COM/>
[e-mail: CUSTOMERSERVICE.IT@UL.COM](mailto:CUSTOMERSERVICE.IT@UL.COM)