

VACUUM MARKET SEGMENTATION

Rough Vacuum	Process Vacuum	Industrial Vacuum	Semiconductor Process Vacuum	Thin-Film Deposition (non-Semiconductor)	Instrumentation Manufacturers	R & D
<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>
Packaging (except Food)	Chemical	Vacuum Metallurgy	Silicon Semiconductor	Glass/Web/Optical Coating	Mass Spectrometers	Universities
Central Vacuum	Petrochemical	Vacuum Heat Treatment	Compound Semiconductor	Data storage (CD, DVD, ..)	Electron Microscopes	Government Labs
Printing and Paper handling	Pharmaceutical	Laser Technology	TFT-LCD Displays	Thin Film Heads	Leak Detectors	Scientific Research Laboratories
Pick-up and Conveying	Plastics	Electron Tubes	MEMS	Surface Coating (wear protection, decorative, ..)	Surface Analysis	Space Simulation
Medical	Food	TV Tubes	Process Equipment	Display Coatings (OLED, FED, PDP..)	Gas Analysis	
	Beverage	Lamps and Bulbs	Manufacturers and End Users for PVD, CVD, Etching, Ion Implantation, MBE, Crystal Pulling, etc	Solar (Photovoltaics, Thermal)	Metrology/ Inspection/ Defect Review systems for Semiconductor	
	Textile	Industrial leak detection			Focused Ion Beam systems	
	Paper	Refrigeration and Air Conditioning			Electron Beam systems	
	Ceramics	Automotive (Dehydration Charging and Test)			X-Ray Analysis	
	Freeze drying				MRI and NMR	
	Power					
Typical Operating Pressure (mbar)						
> 1	$> 10^{-2}$	$10^{-2} - 10^{-6}$	$1 - 10^{-8}$	$10^{-3} - 10^{-8}$	$10^{-6} - 10^{-10}$	$10^{-2} - 10^{-11}$

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|-------|----------------------------------|----------|---|
| CD: | Compact Disk | MRI: | Magnetic Resonance Imaging |
| CVD: | Chemical Vapour Deposition | NMR: | Nuclear Magnetic Resonance |
| DVD: | Digital Video Disk | OLED: | Organic Light Emitting Diode(or OLED: Organic Electro Luminescent Display) |
| FED: | Field Emission Display | PDP: | Plasma Display Panel |
| MBE: | Molecular Beam Epitaxy | PVD: | Physical Vapour Deposition |
| MEMS: | Micro Electro Mechanical Systems | TFT-LCD: | Thin-Film Transistor Liquid Crystal Display |

This Vacuum Market Segmentation Chart was developed by the Working Group of the International Statistics on Vacuum Technology Program, and is published with their permission. Organisations that participate in the program are the Association of Vacuum Equipment Manufacturers International (AVEM), the Japan Vacuum Industry Association (JVIA), the European Vacuum Technology Association (EVTA), and the Semiconductor Equipment and Materials International (SEMI).