



# Fraunhofer

## TESTED<sup>®</sup> DEVICE

Atlas Copco IT AB  
ITB-P31-12-i06

**Report No. AT 2309-1455**

DUPLICATE

Statement of  
Qualification

Single product  
Particle Emission

Customer	Atlas Copco Industrial Technique AB Sickla Industriväg 19, Nacka 105 23 Stockholm Sweden
Component tested	
Category:	Working Place and Operator
Subcategory:	Work Equipment
Product name:	Battery-powered Nutrunner ITB-P31-12-i06 (manufacturing date: week 40/2023; color: black with yellow and silver elements; article number: 8436013014; serial number: A5721201) in combination with: <ul style="list-style-type: none"><li>Power Supply Unit 950 (manufacturing date: week 20/2023; color: black; article number: 8432084006; serial number: A4540191)</li><li>Battery 36V (manufacturing date: week 16/2023; color: black with yellow elements; article number: 4211613014; serial number: A5510405/A5510396)</li></ul>

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines:	ISO 14644-1, -14 The norms stated generally refer to the version valid at the time of the tests.
Test devices:	Optical particle counter: LasAir II 110 and LasAir III 110 with measuring ranges $\geq 0.1\text{ }\mu\text{m}$ , $\geq 0.2\text{ }\mu\text{m}$ , $\geq 0.3\text{ }\mu\text{m}$ , $\geq 0.5\text{ }\mu\text{m}$ , $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none"><li>Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1</li><li>Airflow velocity:.....0.45 m/s</li><li>Airflow pattern:..... vertical laminar flow</li><li>Temperature: .....22 °C <math>\pm</math> 0.5 °C</li><li>Relative humidity: ..... 45 % <math>\pm</math> 5 %</li></ul>
Test procedure parameters:	<ul style="list-style-type: none"><li>Installation position: ..... horizontal</li></ul> Step 1: <ul style="list-style-type: none"><li>Velocity: .....<math>v_1 = 200\text{ rpm}</math></li><li>Target angle: .....<math>w_1 = 1800\text{ deg}</math></li></ul> Step 2: <ul style="list-style-type: none"><li>Break:..... <math>t = 0.1\text{ s}</math></li></ul> Step 3: <ul style="list-style-type: none"><li>Velocity: .....<math>v_2 = 50\text{ rpm}</math></li><li>Target angle: .....<math>w_2 = 100\text{ deg}</math></li></ul>

Test result / Classification	When operated under the specified test conditions, the battery-powered Nutrunner ITB-P31-12-i06 in combination with Power Supply Unit 950 and Battery 36V is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:
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Test parameter(s)	Air Cleanlines Class
Screwdriver (with Power supply) Installation position: horizontal $v_1 = 200\text{ rpm}$ ; $v_2 = 50\text{ rpm}$	8
Screwdriver (with battery) Installation position: horizontal $v_1 = 200\text{ rpm}$ ; $v_2 = 50\text{ rpm}$	8
Power supply	1
Overall result	8

Please note: Transport damages, incorrect installation, oil leakage, aging behavior, corrosion etc. can influence the test result.

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA	AT 2309-1455 Report No. first document	Stuttgart, June 28, 2024 Place, date of first document issued
Department of Ultraclean Technology and Micromanufacturing	-- Report No. current document	-- Place, current date
Nobelstrasse 12 70569 Stuttgart Germany	on behalf of Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA	