

PTL Dust Test Chamber

for checking the protection against solid foreign objects to verify the degrees of protection IP5X "Dust-protected" and IP6X "Dust-tight"

according to **IEC 60529** / 1989-11 § 13.1 Table VII Fig. 2,

Sense and purpose

Enclosures with the degree of protection IP5X "Dust-protected" do not have to prevent ingress of dust totally. However dust should not penetrate in an amount sufficient to interfere with the satisfactory operation of the equipment enclosed or to impair safety.

In the case of enclosures with degree of protection IP6X "Dust-tight", it is necessary to prove that no dust can penetrate into the inside of the enclosure.

Test equipment

The tests are carried out by means of a dust chamber with a sealed test cabinet, in which talcum powder is kept in suspension by means of an air stream. The talcum powder must be prepared in such a manner that it will pass through a sieve with a mesh size 0,075 mm.



The quantity of talcum given in the regulation is 2 kg per cubic metre test cabinet volume.

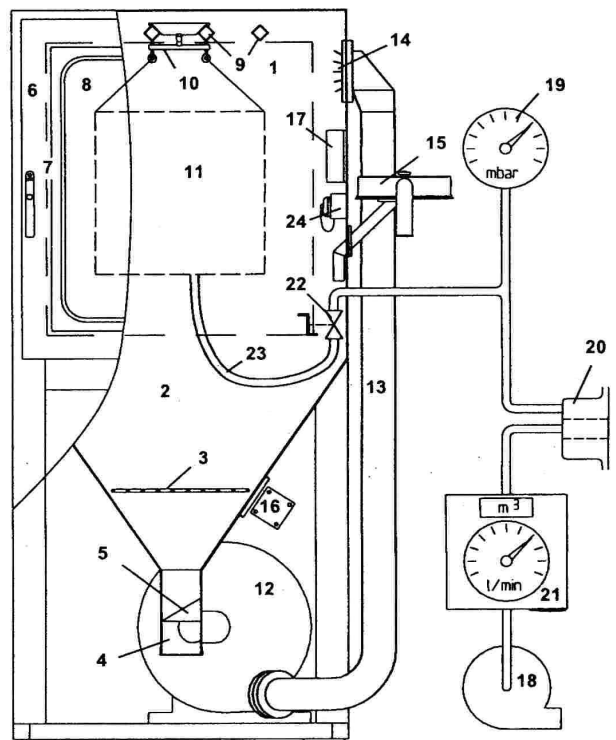
Test procedure

The enclosure under test is suspended in the test cabinet and connected to a vacuum pump. This produces inside the specimen a depression of maximum 2 kPa = 20 mbar (= approx. 200 mm water column) below atmospheric pressure.

The test is completed after 2 hours, if within 2 hours 80 to 120 times the air volume of the specimen has been drawn through.

Standard outfit:

- 1 test cabinet (1) with inner dimensions: width = 800 mm, height = 900 mm, depth depending on size, doorway: width = 660 mm, height = 760 mm, with solid door threshold suitable for supporting heavy specimens, dust catch channel outside beneath the door threshold,
- 1 to 3 funnel shaped bottoms (2), coarse mesh protective grids (3) to protect the dust circulation pumps from large parts, square shaped funnel drains (4) with removable bottom caps, with repellent sheets (5) above the intake openings to protect the dust circulation pumps from small solids,
- 1 front door (6), with lock and key, with adjustable rubber seal, with hinges and handle (7), surface of the window pane behind the door threshold, thereby scarcely any trickling of dust when the door is opened, window (8) of safety glass with hand-operated window wiper,
- 4 square slide rails (9) with 1 or 2 slides (10) beneath the ceiling, to suspend the specimen (11),
- 1 to 3 dust circulation pumps (12) with transfer pipes (13) and dust distribution outlets (14),
- 1 pressure compensation device (15) with exchangeable filter element,
- 1 to 3 electric vibrators (16) at the funnels, to remove dust deposition from the walls,
- 1 to 3 electric heating elements (17) inside of the test cabinet to keep the talcum powder dry to avoid agglomeration,
- 1 depression indicator (19), scale to -40 mbar,
- 1 vacuum pump (18), to cause a depression inside of the specimen,
- 1 dust filter (20) with exchangeable filter element, to collect the dust, which has been exhausted out of the specimen,
- 1 air volume meter (21) with pointer and counter,
- 1 vacuum connecting fitting with shut-off valve (22), with hose (23) to connect the specimen,
- 1 socket-outlet (24) inside of the test cabinet for energizing the specimen, two-pole with side earthing contacts according to CEE 7 Standard Sheet III, connectable to a separate voltage source, too.



In the control cabinet: main switch, key switch, switches for the functions each, programmable timer as Unit Timer for the complete installation, as Interval Timer for the socket-outlet and to control the vibration.

Selling sizes and outfit variants:

Test cabinet internal depth:	Dust circulations:	Rear door:	Article No.:
1.000 mm	1	no	P 14.41
1.000 mm	1	yes	P 14.41-2
1.200 mm	1	yes	P 14.42
2.000 mm	2	yes	P 14.44
2.400 mm	2	yes	P 14.45
3.000 mm	3	yes	P 14.46

Design:

Manufactured from rectangular stainless steel tubes and stainless sheet steel, outside sprayed with primer and with papyrus-white structure-varnish with stone-grey highlights, inside pickled,

control cabinet with control and monitoring elements located on the right-hand side, instrument board, control panel and base door of control cabinet made of anodized aluminium,

for connection to three-phase 3 x 400 V 50 Hz, mains connection cable 3 m with 5pole plug CEE 17, Standard Sheet II, 16 A 3 P + N + PE.

Rear door designed and equipped exactly like the front door, however mounted axially symmetrical to the front door in the rear wall.

Programmable timer, Type Siemens LOGO! as Unit Timer for the complete installation, as Interval Timer for the socket-outlet and to control the vibration.

Accessories:

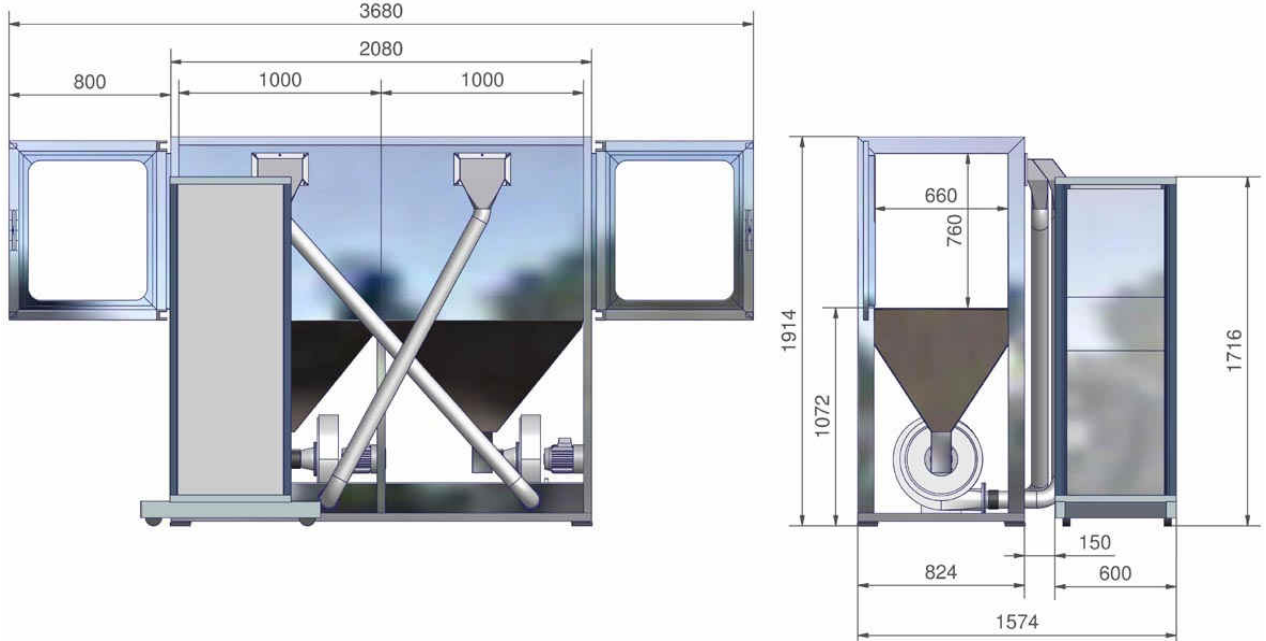
Talcum powder, additional, for refill, 1 bucket with 10 kg,

Article No.: P 14.82

Testing sieve, to check the talcum powder,
nominal width of mesh 0,075 mm,

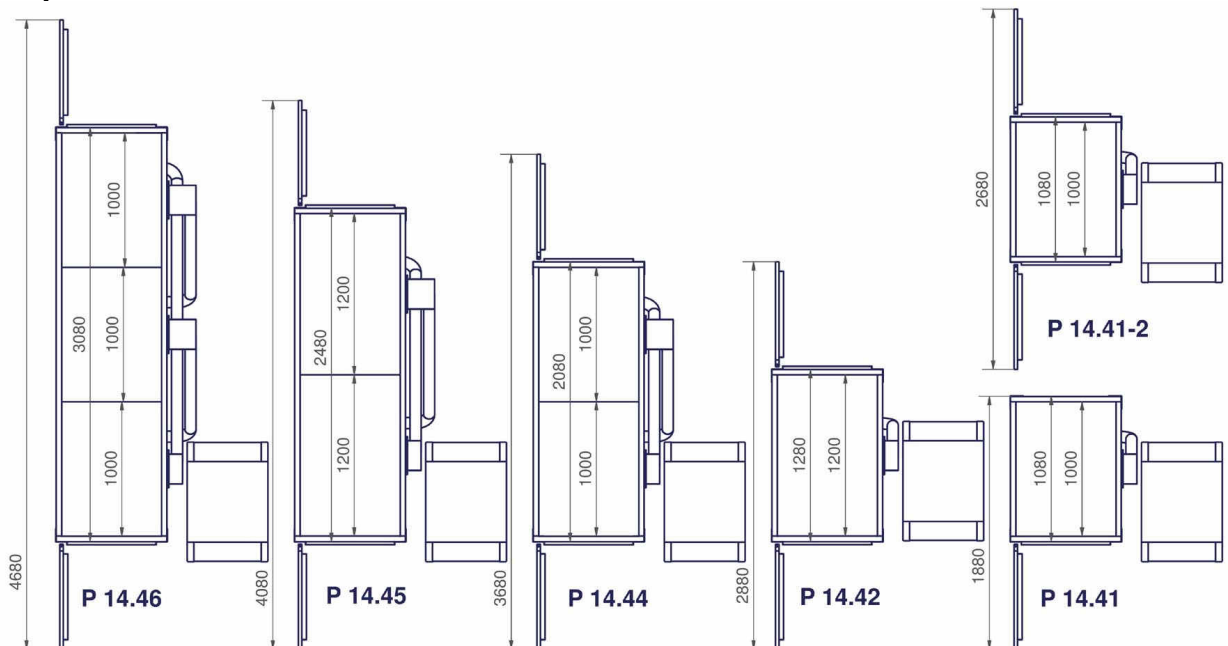
Article No.: P 14.83

Dimensions of PTL Dust Test Chamber, example P 14.44



Internal depth: 2.000 mm, 2 sections at 1.000 mm each
 Overall depth: with closed doors: 2.360 mm, with opened doors: 3.680 mm
 Overall width: 1.574 mm
 Overall height: 1.900 mm + 14 mm for Insulation plates as vibration dampers
 Tolerance of all dimensions: +/- 10 mm

Depths of PTL Dust Test Chamber





Referenzen: PTL-Staubtest-Kammern (Auszug)

REFERENCES: PTL DUST TEST CHAMBERS (EXTRACT)

3 Brothers Lighting Units	EG	Cairo	Mazda Compagnie des Lampes S.A.	FR	Puteaux
3F Filippi s.r.l.	IT	Pian di Macina-Pian.	Menekes Elektrotechnik GmbH & Co KG	DE	Lennestadt
ADVANTECH AE	EL	Ilioupolis-Athens	Metrawatt GmbH	DE	Nürnberg
AEG Aktiengesellschaft	DE	Hamel	Mettler Instrumente AG	CH	Greifensee
Al-Babtain Lighting Company	SA	Riyadh	Metzenauer & Jung GmbH	DE	Wuppertal
AMP	NL	Den Bosch	Motorola GmbH	DE	Taunusstein
APAVE	FR	Paris	Neckermann Versand AG	DE	Frankfurt am Main
Arabian Fiberglass Product Company	SA	Riyadh	NEMKO Norges Elektriske Materielkontrol	NO	Blindern/Oslo
ASRAS Co., Ltd.	TH	Bangkok	Nepal Bureau of Standards	NP	Kathmandu
Austria Antriebstechnik, G. Bauknecht AG	AT	Zeltweg	Nova-Lux Ges. Brandenburg & Co.	DE	Köln-Braunsfeld
B.A.G. Bronzwarenfabrik	CH	Turgi	Novelektrik A.G.	CH	Buchs-Dällikon
Bauer Elektromotorenfabrik GmbH, Eberhard	DE	Esslingen	OBO Bettermann GmbH + Co	DE	Menden
Bauknecht Hausgeräte GmbH	DE	Stuttgart	Philips Eclairage Compagnie (Projelux)	FR	Miribel
BEGA Gantenbrink-Verwaltungs-GmbH	DE	Menden	Philips Gloeilampenfabriken	NL	Oss
CEAG Concordia Elektrizitäts AG	DE	Bochum	Philips Lighting	GB	Hamilton
Centro Espanol de Meterologia	ES	Tres Cantos - Madrid	Philips Lighting	PL	Ketrzyn
China Electric Manufacturing Corporation	TW	Taoyuan	PIC Precision International Corporation	TW	Taipei
Claude Societe Anonyme	FR	Boulogne-Billancourt	Public Procurement Service	KR	Seogu, Taejon
CSA Group	CA	Edmonton	Quatest Quality Assurance & Testing Center 3	VN	Hochiminh City
DEMKO Danmarks Elektriske Materielkontrol	DK	Herlev	Reiss International GmbH (ITT)	DE	Tettngang
EAO Elektro-Apparatebau Olten AG	CH	Olten	ROSE Systemtechnik GmbH	DE	Porta Westfalica
ECI Telecom LTD	IL	PETAH-TIKVA	Sarel Appareillage Electrique S.A.	FR	Sarre Union
ED & D Educated Design & Development Inc.	US	Morrisville NC	Saudi Arabian Standards Organization	SA	Riyadh
Elda Szczecinek	PL	Szczecinek	Saudi Fiberglass Products Factory	SA	Sihat
Electrical Inspectorate	FI	Helsinki	Schaer-Lüderitz GmbH, Dipl.-Ing.	DE	Lübbecke
Elektrotechnicky Zkusebni Ustav	CZ	Praha	Schmersal GmbH & Co., K. A.	DE	Wuppertal
Endress + Hauser GmbH + Co.	DE	Maulburg	SEV Schweizerischer Elektrotechnischer Verein	CH	Zürich
Epsilon S.A.	FR	Orleans	Siemens AG	DE	Amberg
Evano Instruments	NL	Wezep	Siemens AG	DE	Bad Neustadt
EXCEL Inc.	JP	Tokyo	Siemens AG	DE	Berlin
Fein, C.+E.	DE	Stuttgart	Siemens AG	DE	Regensburg
FER Fahrzeugelektronik GmbH	DE	Eisenach	Siemens AG	DE	Traunreut
HANEL	VN	Hanoi	SIPE Sociedade Industr. de Produtos Eléctricos S.A.	PT	Parede-Carcavelos
Harting KGaA	DE	Espelkamp	Sirena S.p.A.	IT	Rosta
Heidenhain GmbH, Dr. Johannes	DE	Traunreut	SISIR Singapore Inst. of Standards & Ind. Research	SG	Singapore
HELLA Autotechnik, s.r.o.	CZ	Mohelnice	Spelsberg GmbH & Co. KG, Elektrot. Spezialfabrik	DE	Schalksmühle
Hella Leuchten Systeme GmbH;	DE	Paderborn	Teko GmbH	DE	Krefeld
Hensel KG, Gustav	DE	Lennestadt	TERTEC Taiwan Electric Research & Testing Center	TW	Taipei
Heraeus Industrietechnik GmbH	DE	Balingen	Tulux AG	CH	Tuggen
Hess Form + Licht GmbH	DE	Villingen-Schwenn.	TÜV Essen	DE	Essen
Hummel Metall- und Kunststofftechnik GmbH	DE	Waldkirch	TÜV Product Service GmbH	DE	Hannover
IIS The Standards Institution of Israel	IL	Tel Aviv	TÜV Product Service GmbH	DE	München
IMQ Istituto Italiano del Marchio de Qualità	IT	Milano	TÜV Rheinland e. V.	DE	Köln
Interflex S.A.	ES	Montcada I Reixac	TÜV Wien	AT	Wien
Japan Electrical Testing	JP		UBEA - PUCRS - IPCT	BR	Porto Alegre
JUMO Juchheim GmbH & Co., M. K.	DE	Fulda	UL Underwriters Laboratories Inc.	US	Northbrook
KEMA N. V. tot Keuring van Elektrot. Materialien	NL	Arnhem	VALEO Deutschland GmbH & Co.	DE	Erdweg
Korea Electrical Safety Corporation	KR	Seoul	Vadentempel BV	NL	Wezep
Körting & Mathiesen GmbH, KANDEM	DE	Limburg	VDE Prüf- und Zertifizierungsinstitut	DE	Offenbach
KRONE GmbH	DE	Berlin-Zehlendorf	Vossloh-Schwabe GmbH	DE	Lüdenscheid
Martin et Lunel s.a.	FR	Noisy le sec	Zumtobel Aktiengesellschaft	AT	Dornbirn

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