



UL 1203

STANDARD FOR SAFETY

ExplosionProof and Dust-IgnitionProof
Electrical Equipment for Use in
Hazardous (Classified) Locations

UL Standard for Safety for ExplosionProof and Dust-IgnitionProof Electrical Equipment for Use in Hazardous (Classified) Locations, UL 1203

Fifth Edition, Dated November 22, 2013

Summary of Topics

This revision to ANSI/UL 1203 dated March 31, 2021 includes the following changes in requirements:

- Revisions to add number of ignitions column to [Table 21.3A](#) and [Table SB1.6](#).***
- Editorial Revision to include the Clause 60.17 reference to the Exception of Clause [21.17](#) as Clause 60.17 references Exception to 21.17; however, 21.17 Exception does not provide a reference to Clause 60.17.***

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated October 23, 2020 and February 5, 2021.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

No Text on This Page

NOVEMBER 22, 2013
(Title Page Reprinted: March 31, 2021)



ANSI/UL 1203-2021

1

UL 1203

Standard for ExplosionProof and Dust-IgnitionProof Electrical Equipment for Use in Hazardous (Classified) Locations

First Edition – January, 1987
Second Edition – July, 1994
Third Edition – September, 2000
Fourth Edition – September, 2006

Fifth Edition

November 22, 2013

This ANSI/UL Standard for Safety consists of the Fifth edition including revisions through March 31, 2021.

The most recent designation of ANSI/UL 1203 as an American National Standard (ANSI) occurred on March 31, 2021. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

UL's Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

COPYRIGHT © 2021 UNDERWRITERS LABORATORIES INC.

No Text on This Page

CONTENTS

INTRODUCTION

1	Scope	11
2	Components	11
3	Units of Measurement	11
4	Undated References	12
5	Enclosure Types	12
6	Class I, Zone and Group Equivalency	12
6.1	Class I, Zone 1, Group IIA	12
6.2	Class I, Zone 1, Group IIB	12
6.3	Class I, Zone 1, Group IIC	12
6.4	Zone 20 and Zone 21	12
7	Glossary	12

PART I – EXPLOSIONPROOF EQUIPMENT

CONSTRUCTION

8	Enclosure Material	13
9	Enclosure Thickness	14
10	Joints in Enclosures	15
10.1	General	15
10.2	Cemented joints	15
10.3	Joints with flamepaths Class I, Groups A, B, C, and D	16
10.4	Class I, Groups C and D locations	17
10.5	Class I, Group B locations	22
10.6	Threaded Joints	23
11	Shaft Openings	25
11.1	General	25
11.2	Non-rotating shafts and shafts rotating at a speed of less than 100 rpm	25
11.3	Shafts rotating at a speed of 100 rpm or more	26
12	Holes in Enclosures	28
13	Drain and Breather Fittings in Enclosures	29
14	Supply Connections	29
14.1	Fixed equipment conduit and cable entries	29
14.2	Cord-connected portable equipment	34
15	Protection Against Corrosion	37
16	Materials Applied to Joint Surfaces	38
17	Devices Having Coated Threaded Joint Surfaces	39
18	Porosity in Enclosure Materials	39
19	Polymeric Enclosures	39

PERFORMANCE

20	Temperature Test	40
21	Explosion Tests	40
22	Hydrostatic Pressure Test	46
22A	Dynamic Pressure Test	47
23	Leakage Test on Factory-Installed Conduit Seals	47
24	Rust-Resistance Test	48
25	Tests for Glass Parts	48

25.1	Thermal-shock test	48
25.2	Impact test	48
26	Secureness Test on Supply Connection Hubs	48
27	Tests on Joint Gaskets	48
28	Electrical-Resistance Test	49
28.1	Grounding-continuity of cord-connected equipment.....	49
28.2	Equipment having coated threaded joint surfaces or conduit openings	49
29	Accelerated Aging Test on Bushings	49
30	Strain-Relief Test	49
31	Rough-Usage Test	50
32	Drop Test.....	50
33	Non-Metallic Enclosure Materials Tests	50
33.1	General.....	50
33.2	Chemical compatibility by material samples	51
33.3	Chemical compatibility by complete end product tests	52
33.4	Test for accumulation of static electricity	53
34	Chemical Resistance Tests on Sealing and Cementing Compounds	54

PART II – DUST-IGNITIONPROOF EQUIPMENT

CONSTRUCTION

35	Enclosure	56
35.1	General.....	56
35.2	Material.....	56
35.3	Thickness	57
36	Joints in Enclosures.....	57
37	Shaft Openings	58
38	Holes in Enclosures.....	59
39	Drain and Breather Fittings in Enclosures.....	60
40	Supply Connections	60
40.1	Fixed equipment.....	60
40.2	Cord-connected portable equipment	62
41	Protection Against Corrosion.....	62
41.1	General.....	62
41.2	Physical properties	63
41.3	Accelerated air-oven aging test.....	63
41.4	Compression set.....	64
41.5	Identification.....	65
42	Materials Applied to Joint Surfaces	66

PERFORMANCE

43	Dust-Penetration Test	66
44	Temperature Test with Dust Blanket.....	67
45	Polymeric Enclosure Tests	68
46	Leakage Test on Factory-Installed Conduit Seals.....	69
47	Rust-Resistance Test.....	69
48	Tests for Glass Parts.....	69
49	Secureness Test on Conduit Hubs	69
50	Tests on Joint Gaskets.....	69
51	Electrical-Resistance Test	69
52	Accelerated-Aging Test on Bushings.....	69
53	Strain-Relief Test.....	69
54	Rough-Usage Test.....	69

55	Drop Test.....	69
56	Diaphragm Endurance Test.....	70
57	Test for Secureness of Conduit Hubs	70
	57.1 General.....	70
	57.2 Pullout	70
	57.3 Bending	70

PART III – MANUFACTURING AND PRODUCTION TESTS

58	Bonding Test on Cord-Connected Equipment	71
59	Hydrostatic Pressure Test	71

PART IV – MARKINGS AND INSTRUCTIONS

60	Details.....	72
60A	Installation Instructions	75
	60A.1 General	75
	60A.2 Electronic medium for required instructions	75

PART V – INDUSTRIAL CONTROL EQUIPMENT

61	General	76
----	---------------	----

CONSTRUCTION

62	Holes in Enclosures.....	77
----	--------------------------	----

PERFORMANCE

63	No-Load Endurance Test	78
----	------------------------------	----

MARKINGS

64	Details.....	78
----	--------------	----

PART VI – SWITCHES

65	General	79
----	---------------	----

CONSTRUCTION

66	Enclosure Thickness	79
67	Mounting of Switch Mechanism	79
68	Spacings	79
69	Insulating Barrier or Liner	80

RATINGS

70	General	80
----	---------------	----

MARKING

71	Details.....	81
----	--------------	----

PART VII – CIRCUIT BREAKERS

72	General	82
----	---------------	----

CONSTRUCTION

73	General	82
74	Wiring Space	82

MARKINGS

75	Details	88
----	---------------	----

PART VIII – OUTLET BOXES AND FITTINGS

76	General	90
	76.3 Blanking elements	90
77	Material Thickness	91
78	Supply Connections for Class I Locations	92
79	Supply Connections for Class II Locations	92
80	Fitting for Mineral Insulated Cable	92
81	Conduit Fittings for Sealing	92
82	Flexible Fittings	93
83	Mineral Insulated Cable Fittings	93
84	Cord Connectors for Mobile or Portable Equipment	93
	84.1 General	93
	84.2 Terminal enclosure	93
	84.3 Insulating bases	94
	84.4 Live parts	95
	84.5 Grounding	95
	84.6 Terminals	95
	84.7 Leads	97
	84.8 Spacings	97
	84.9 Insulating barrier or liner	97
	84.10 Seal	98
	84.11 Packing gland	98
	84.12 Cord clamp	99
	84.13 Securement of threaded engagements	99
	84.14 External metal parts	99

PERFORMANCE

85	Explosion Test	99
86	Hydrostatic Pressure Test	101
	86.6 Torque test for blanking elements	103
	86.7 Torque tests for thread adapters	104
87	Dust Penetration Test	104
88	Leakage of Sealing Fittings Test	104
89	High Humidity Tests	105
90	Leakage of Mineral Insulated Cable Fittings Test	105
91	Electrical Resistance Test	105
	91.1 Flexible fittings	105
	91.2 Boxes or fittings having coated threaded joint surfaces	105
92	Arcing Test	106
93	Bending Test	106

94	Vibration Test	107
95	Endurance Load at Elevated Temperature Test	107
96	Tension Test	108
97	Moist Ammonia-Air Stress Cracking Test	108
98	Accelerated Aging of Bushing Test	109
99	Cord Pull Test	109
100	Solvent and Water Condensate Exposure Test	109
101	Secureness of Conduit Hubs Test	110
102	Markings	110

PART IX – RECEPTACLE-PLUG COMBINATIONS

INTRODUCTION

103	General	113
-----	---------------	-----

CONSTRUCTION

104	General	113
105	Material	113
106	Live Parts	114
107	Grounding	114
108	Supply Connection	115
	108.1 Receptacle	115
	108.2 Plug	115
	108.3 Plug and receptacle	115
109	Receptacle Employing Interlocking Switch or Circuit Breaker	117
110	Contact and Blade Exposure	118
111	Spacings	120
112	Assembly	121

PLUG

113	General	121
114	Enclosure	121
115	Strain Relief	122
116	Bushings	122
117	Enclosure – Material	122
118	Seal Between Electrical Enclosure and Receptacle Contacts	122
119	Bonding	123

PLUG AND RECEPTACLE FOR FLAMMABLE ANESTHETIZING LOCATIONS

120	General	123
-----	---------------	-----

PERFORMANCE

121	General	125
122	Overload Test	126
123	Normal Temperature Test	127
124	Strain-Relief Test	129
125	No-Load Endurance Test	129
126	Full-Load Endurance Test	129
127	Test for Arc-Sustaining in the Presence of Explosive Atmospheres	130
128	Overload Test in the Presence of Explosive Atmospheres	131