SLOVENSKI STANDARD
SIST ISO 3547-1:2002

01-marec-2002

Drsni ležaji - Zvite puše - 1. del: Mere

Plain bearings -- Wrapped bushes -- Part 1: Dimensions

Paliers lisses -- Bagues roulées -- Partie 1: Dimensions

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **ISO 3547-1:1999**

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

ICS:

21.100.10 Drsni ležaji Plain bearings

SIST ISO 3547-1:2002 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

INTERNATIONAL STANDARD

ISO 3547-1

First edition
1999-12-01

Corrected and reprinted
2000-04-01

Plain bearings — Wrapped bushes —

Part 1: Dimensions

Paliers lisses — Bagues roulées —

Partie 1: Dimensions

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

Reference number
ISO 3547-1:1999(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3547-1 was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 3, *Dimensions, tolerances and construction details*.

This first edition of ISO 3547-1, together with ISO 3547-2, ISO 3547-3 and ISO 3547-4, cancels and replaces ISO 3547:1976 the technical content of which has been revised and augmented.

ISO 3547 consists of the following parts, under the general title *Plain bearings — Wrapped bushes*:

iTeh STANDARD PREVIEW
(standards.iteh.ai)

— *Part 1: Dimensions*

— *Part 2: Test data for outside and inside diameter*

— *Part 3: Lubrication holes, lubrication grooves and lubrication indentations*

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

— *Part 4: Materials*

© ISO 1999

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

Plain bearings — Wrapped bushes —

Part 1:
Dimensions

1 Scope

This part of ISO 3547 specifies the dimensions and designations of wrapped bushes made of solid and multilayer bearing material for application as plain bearings.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 3547. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 3547 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 3547-2:1999, *Plain bearings — Wrapped bushes — Part 2: Test data for outside and inside diameter.*

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

ISO 3547-3, *Plain bearings — Wrapped bushes — Part 3: Lubrication holes, lubrication grooves and lubrication indentations.*

ISO 3547-4:1999, *Plain bearings — Wrapped bushes — Part 4: Materials.*

ISO 4288, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture.*

ISO 4378-1, *Plain bearings — Terms, definitions and classification — Part 1: Design, bearing materials and their properties.*

ISO 12301, *Plain bearings — Quality control techniques and inspection of geometrical and material quality characteristics.*

ISO 12307-2, *Plain bearings — Checking of wrapped bushes — Part 2: Checking the inside diameter.*

ISO 13715, *Technical drawings — Edges of undefined shape — Vocabulary and indication on drawings.*

3 Terms and definitions

For the purposes of this part of ISO 3547 the terms and definitions in ISO 4378-1 apply.

4 Dimensions

See Figure 1 and Tables 1 to 3.

NOTE All dimensions and tolerances are given in millimetres.

The largest dimension of the inside diameter of the bush when it is in its pressed-in condition is obtained from the largest dimension of the bore in the housing minus twice the smallest dimension of the wall thickness s_3. The smallest dimension of the inside diameter of the bush in its pressed-in condition can be obtained from the smallest dimension of the bore in the housing minus twice the greatest dimension of the wall thickness s_3. This assumes that there is no expansion of the bore in the housing caused by pressing in the bush. In reality the expansion depends on several factors, such as, for example, the stiffness of the housing and the bush. An example of the calculation is given in clause 6.

Instead of the wall thickness the inside diameter $D_{i,ch}$ of the bush can be specified. $D_{i,ch}$ is the inside diameter of the bush, when this is pressed into a ring gauge (Test C – gauging – in accordance with ISO 3547-2:1999, see also ISO 12307-2).

In no case shall wall thickness and inside diameter be given at the same time as the dimensions that should be checked.

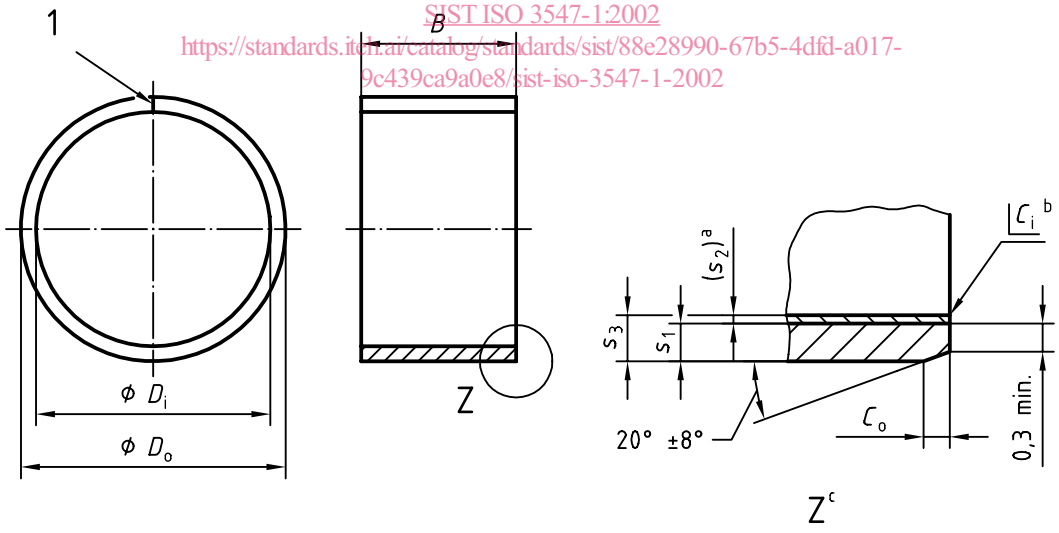
Table 4 gives the tolerance for the inside diameter $D_{i,ch}$ of the bush and Table 5 gives the inside diameter of the ring gauge $d_{ch,1}$. The tolerance of the inside diameter of a bush pressed into a housing is found from the sum of the tolerance for $D_{i,ch}$ and the tolerance of the housing bore. As in the case of the calculation of the inside diameter from the wall thickness it is assumed that there is no expansion of the housing bore.

iTeh STANDARD PREVIEW

Dimensions for the outside diameter D_0 of the bush are given in Table 6.

(standards.iteh.ai)

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002



Key

1 Split

a Thickness of the bearing material layer: only valid as a basis for calculation in accordance with ISO 3547-2.

b C_i can be a radius or a chamfer, in accordance with ISO 13715.

c Shown on a bush made out of a multilayer material.

Figure 1

Table 1 — Prefered nominal dimensions for inside diameter D_i, outside diameter D_o, wall thickness s_3 and bush width B

D_i	D_o	s_3	B[a]														
			4	6	8	10	12	15	20	25	30	40	50	60	70	80	100
4	5,5	0,75	a	a													
6	8	1		a		a											
8	10	1			a	a	a										
10	12	1				a	a	b									
12	14	1				a		b	b								
13	15	1				a		b	b								
14	16	1						b	b	b							
15	17	1						b	b	b							
16	18	1						b	b	b							
18	20	1						b	b	b							
18	21	1,5						a	b	b							
20	23	1,5						a	b	b	b						
22	25	1,5						a	b	b	b						
24	27	1,5						a	b	b							
25	28	1,5						a			b						
28	31	1,5							b	b	b						
28	32	2							a	a	b						
30	34	2							a		b	b					
32	36	2							a		b	b					
35	39	2							a		b	b					
38	42	2							a		b	b					
40	44	2							a		b	b					
45	50	2,5							a		b	b	b				
50	55	2,5								a		b	b	b			
55	60	2,5									a	b		b			
60	65	2,5									a	b	b		c		
65	70	2,5									a		b		c		
70	75	2,5									a		b		c		
75	80	2,5										b		b		c	
80	85	2,5										b		b		c	c
85	90	2,5										b		b		c	c
90	95	2,5										b		b			c
95	100	2,5												b			c
100	105	2,5											b	b			c
105	110	2,5												b			c
110	115	2,5												b			c
115	120	2,5												b			c
120	125	2,5												b			c
125	130	2,5												b			c
130	135	2,5												b			c
135	140	2,5												b			c
140	145	2,5												b			c
150	155	2,5												b			c
160	165	2,5												b			c
170	175	2,5															c
180	185	2,5															c
200	205	2,5															c
220	225	2,5															c
250	255	2,5															c
300	305	2,5															c

NOTE Bush widths B outside the tolerance ranges a, b or c should be agreed with the manufacturer and given after the nominal sizes in the standard designation.
If it is necessary to use non-standard widths B then these should be arranged to have an end figure of 2, 5 and 8 up to D_i = 50 mm, over D_i = 50 mm to have an end figure of 5. Checking of the bush width B in accordance with ISO 12301.

[a] Tolerance values for width B: a: ± 0,25, b: ± 0,5, c: ± 0,75.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

Table 2 — Outside C_o and inside C_i chamfers

Wall thickness s_3	Chamfer		
	C_o [a]		C_i
	machined	rolled	
0,75	0,5 ± 0,3	0,5 ± 0,3	− 0,4 − 0,1
1	0,6 ± 0,4	0,6 ± 0,4	− 0,5 − 0,1
1,5	0,6 ± 0,4	0,6 ± 0,4	− 0,7 − 0,1
2	1,2 ± 0,4	1 ± 0,4	− 0,7 − 0,1
2,5	1,8 ± 0,6	1,2 ± 0,4	− 1 − 0,2
NOTE For bushes which have to be machined to size in the bearing bore (Series C) C_i should be made correspondingly bigger.			
[a] Chamfer C_o machined or rolled at the option of the manufacturer.			

Table 3 — Nominal dimensions and tolerances for wall thickness s_3 and steel layer s_1 of the series A, B, C and D (in accordance with test A of ISO 3547-2:1999)

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c43...sist-iso-3547-1-2002

Nominal dimensions		Wall thickness s_3 tolerance				Thickness of the steel backing in bushes made from multilayer materials s_1 [a]	
		No machining allowance in the bearing bore			With machining allowance in the bearing bore		
		Series A	Series B	Series D	Series C	Range	Tolerance
0,75		0 −0,015	0 −0,020	–	+0,25 +0,15	$0,38 \leqslant s_1 \leqslant 0,53$	± 0,08
1		0 −0,015	+0,005 −0,020	−0,020 −0,045	+0,25 +0,15	$0,45 \leqslant s_1 \leqslant 0,68$	± 0,13
1,5		0 −0,015	+0,005 −0,025	−0,025 −0,055	+0,25 +0,15	$0,85 \leqslant s_1 \leqslant 1,1$	± 0,15
2		0 −0,015	+0,005 −0,030	−0,030 −0,065	+0,25 +0,15	$1,3 \leqslant s_1 \leqslant 1,55$	± 0,2
2,5	$D_o \leqslant 80$	0 −0,020	+0,005 −0,040	−0,040 −0,085	+0,30 +0,15	$1,8 \leqslant s_1 \leqslant 2,05$	± 0,2
	$80 < D_o \leqslant 120$	0 −0,025	−0,010 −0,060				
	$D_o > 120$	0 −0,030	−0,035 −0,085				
NOTE 1 Bushes made from material P1 in accordance with ISO 3547-4:1999 can only be supplied to Series B. For bushes made from material P2 in accordance with ISO 3547-4:1999, series D should preferably be used. NOTE 2 Depending on the manufacturing process used the back of the bushes may show isolated slight depressions. The thickness of the walls should, therefore, be measured at places away from these depressions, thus on "load carrying places".							
[a] The mean steel thickness will depend on the type of lining material.							

Table 4 — Tolerances for the inside diameter $D_{i,ch}$ of the bush in the ring gauge of series W
(in accordance with test C of ISO 3547-2:1999)

D_i nominal	>	–	10	18	30	50	80	120
	⩽	10	18	30	50	80	120	175
Tolerances for $D_{i,ch}$		+ 0,036 0	+ 0,043 0	+ 0,052 0	+ 0,062 0	+ 0,074 0	+ 0,087 0	+ 0,100 0
NOTE The concentricity of the inside and outside diameter of the bush shall, unless otherwise agreed, be 0,05 mm.								

Table 5 — Ring gauge inside diameter $d_{ch,1}$ for checking of bush inside diameter $D_{i,ch}$
(in accordance with test C of ISO 3547-2:1999)

D_o nominal	>	–	10	18	30	50	80	120
	⩽	10	18	30	50	80	120	180
$d_{ch,1}$ [a]		D_o + 0,008	D_o + 0,009	D_o + 0,011	D_o + 0,013	D_o + 0,015	D_o + 0,018	D_o + 0,020

[a] The size of the ring gauge inside diameter $d_{ch,1}$ is made up of D_o and the rounded average value of the tolerance field H7.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Table 6 — Dimensions for outside diameter D_o (in accordance with tests A and D of ISO 3547-2:1999)

SIST ISO 3547-1:2002
https://standards.iteh.ai/catalog/standards/sist/88e28990-67b5-4dfd-a017-9c439ca9a0e8/sist-iso-3547-1-2002

Test		A								D
D_o nominal	>	–	10	18	30	40	50	80	120	140 [a]
	⩽	10	18	30	40	50	80	120	140	–
Tolerance for bushes of	steel, steel/bearing material	+0,055 +0,025	+0,065 +0,030	+0,075 +0,035	+0,085 +0,045	+0,085 +0,045	+0,100 +0,055	+0,120 +0,070	+0,170 +0,100	+0,225 +0,125
	copper alloy	+0,075 +0,045	+0,080 +0,050	+0,095 +0,055	+0,110 +0,065	+0,110 +0,065	+0,125 +0,075	+0,140 +0,090	+0,190 +0,120	+0,245 +0,145

[a] For bushes with D_o > 140 mm the outside diameter may be controlled by comparative measurement of the circumference by precision measuring tape in accordance with test D of ISO 3547-2:1999.

Test B of ISO 3547-2:1999. does not stipulate any figure for the outside diameter D_o. In order to obtain a sufficiently tight fit of the bush in the housing bore when using test B experimentally determined gauge inside diameters are used. These depend on the method of manufacture and cannot therefore apply in every single case. Specification of a maximum and minimum pressing in force increases the safety of this test method. The details of test should be agreed for each individual case.

H7 is recommended as the tolerance for the housing bore of wrapped bushes. The thermal expansion coefficient or the stiffness of the housing bore can mean that a different housing bore size is necessary.

The shaft diameter depends on the clearance required in the bearing.