

DIN EN 12080:2026-02 (E)

Railway applications - Axleboxes - Rolling bearings

Contents		Page
European foreword		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	7
4	Technical specification	9
4.1	General requirements	9
4.2	Technical specification content	9
4.2.1	Customer requirements specification	9
4.2.2	Manufacturer technical specification	10
4.2.3	Bearing manufacturer quality management system	10
5	Quality systems	11
6	Manufacture	11
6.1	Steel manufacturing	11
6.2	Heat treatment	11
6.3	Traceability	11
6.4	Coatings	13
6.4.1	General	13
6.4.2	Permanent coating	13
6.4.3	Non-permanent coating	13
7	Material properties	13
7.1	General	13
7.2	Steel for rings and rolling elements	13
7.2.1	Grades	13
7.2.2	Inclusion content	14
7.3	Materials of other components (cages, spacers, seals etc.)	14
8	Geometry and dimensions	14
8.1	Dimensions and tolerances	14
8.2	Rolling bearing internal clearance	14
8.2.1	Rolling bearing clearance before mounting	14
8.2.2	Rolling bearing clearance after mounting	14
9	Mechanical properties -- inner ring expanding ability	15
10	Physical properties	15
10.1	Visual aspect	15
10.1.1	Rings and rolling elements	15
10.1.2	Cages	15
10.2	Soundness of rings and rolling elements	15
10.2.1	General rules	15
10.2.2	Internal soundness of rings	16
10.2.3	Soundness of ring surfaces	16
10.2.4	Soundness of roller raceway surfaces	16
10.2.5	Grinding burns	16
10.3	Case depth	16

10.4	Surface hardness	16
11	Marking	17
11.1	General	17
11.2	Marking of rings for cylindrical roller bearings (Cylindrical Roller Bearing)	18
11.3	Marking of cartridge bearings for axleboxes	19
11.4	Marking of Spherical Roller Bearings	21
11.5	Prefix and postfix	22
12	Inspection	22
12.1	Inspection plan	22
12.2	Sampling	24
13	Quality records	24
14	Deployment	24
15	Delivery and packing	24
15.1	Greasing of rolling bearings	24
15.2	Corrosion protection	24
15.3	Packaging	25
Annex A (normative) Ultrasonic inspection of rolling bearing rings		26
A.1	Purpose	26
A.2	Principle	26
A.3	Equipment	26
A.4	Operating procedure	26
A.4.1	General rules	26
A.4.2	Preparation of rings	26
A.4.3	Examination	27
A.4.4	Calibration	27
Annex B (normative) Magnetic particle inspection of ring surfaces		31
B.1	Purpose	31
B.2	Principle	31
B.3	Equipment	31
B.4	Operation procedure	32
B.4.1	Preparation of rings	32
B.4.2	Examination	32
B.4.3	Demagnetisation	32
Annex C (normative) Eddy current inspection of the raceways of the rollers		33
C.1	Purpose	33
C.2	Principle	33
C.3	Equipment	33
C.4	Operating procedure	33
C.4.1	Preparation of rollers	33
C.4.2	Examination	33
C.4.3	Calibration	34
Annex D (normative) Cages of polymeric material		35
D.1	Purpose	35
D.2	Material	35
D.2.1	General	35
D.2.2	Base material	35
D.2.3	Additives	35
D.3	Cage requirements	35
D.3.1	Inspection plan	35

D.3.2	Moisture content	37
D.3.3	Fibre glass diameter and length measurement procedure	38
D.3.4	Surface quality	38
D.3.5	Surface defects	38
D.3.6	Burrs	38
D.3.7	Sub-surface quality	39
D.4	Mechanical tests	41
D.4.1	Test conditions	41
D.4.2	Bending test procedures	42
D.4.3	Tension test procedures	43
D.5	Thermal ageing in grease or oil bath	45
Annex E (informative) Eddy current testing of ring surfaces		47
E.1	Purpose	47
E.2	Principle	47
E.3	Equipment	47
E.4	Operating procedure	47
E.4.1	Preparation of the rings	47
E.4.2	Examination	47
E.4.3	Calibration	48
Bibliography		51