

# ISO 7146-1:2019 (E)

## Plain bearings — Appearance and characterization of damage to metallic hydrodynamic bearings — Part 1: General

---

### Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Descriptions, causes and features of damage
4.1	Damage
4.1.1	General
4.1.2	Indicators of damage
4.2	Damage causes
4.3	Damage appearances
4.4	Damage characterization
4.4.1	General
4.4.2	Static overload
4.4.3	Dynamic overload
4.4.4	Wear by friction
4.4.5	Overheating
4.4.6	Insufficient lubrication (starvation)
4.4.7	Contamination
4.4.8	Cavitation erosion
4.4.9	Electroerosion
4.4.10	Hydrogen diffusion
4.4.11	Bond failure
4.5	Relationship between damage appearance and damage characterizations
5	Guidelines for damage analysis
5.1	General
5.2	Step 1
5.3	Step 2
5.4	Step 3
5.5	Step 4
5.6	Step 5
6	Damage to the bearing surface — Damage characteristics, typical damage appearances and possible damage causes
6.1	General
6.2	Static overload
6.2.1	Typical damage appearances
6.2.2	Possible damage causes
6.2.3	Typical examples
6.3	Dynamic overload
6.3.1	Typical damage appearances
6.3.2	Possible damage causes
6.3.3	Typical examples
6.4	Wear by friction
6.4.1	Typical damage appearances
6.4.2	Possible damage causes
6.4.3	Typical examples

- 6.5 Overheating
    - 6.5.1 Typical damage appearances
    - 6.5.2 Possible damage causes
    - 6.5.3 Typical examples
  - 6.6 Insufficient lubrication (starvation)
    - 6.6.1 Typical damage appearances
    - 6.6.2 Possible damage causes
    - 6.6.3 Typical examples
  - 6.7 Contamination
    - 6.7.1 Contamination with particles
      - 6.7.1.1 Typical damage appearances
      - 6.7.1.2 Possible damage causes
      - 6.7.1.3 Typical examples
    - 6.7.2 Contamination with chemicals
      - 6.7.2.1 Typical damage appearance
      - 6.7.2.2 Possible damage causes
      - 6.7.2.3 Typical examples
  - 6.8 Cavitation erosion
    - 6.8.1 General
    - 6.8.2 Typical damage appearances
    - 6.8.3 Possible damage causes
    - 6.8.4 Typical examples
  - 6.9 Electro-erosion
    - 6.9.1 Typical damage appearance
    - 6.9.2 Possible damage causes
    - 6.9.3 Typical examples
  - 6.10 Hydrogen diffusion
    - 6.10.1 Typical damage appearances
    - 6.10.2 Possible damage cause
    - 6.10.3 Typical examples
  - 6.11 Bond failure
    - 6.11.1 Typical damage appearances
    - 6.11.2 Possible damage causes
    - 6.11.3 Typical example
- 7 Damage to the bearing back
- 7.1 General
  - 7.2 Dynamic overload on the bearing back
    - 7.2.1 Typical damage appearance
    - 7.2.2 Possible damage causes
    - 7.2.3 Typical examples
  - 7.3 Wear by friction on the bearing back
    - 7.3.1 Typical damage appearances
    - 7.3.2 Possible damage causes
    - 7.3.3 Typical examples
  - 7.4 Contamination with particles on the bearing back
    - 7.4.1 Typical damage appearances
    - 7.4.2 Possible damage cause
    - 7.4.3 Typical examples
- 8 Special position of damage appearances

Annex A (informative) Example of use of Table 1