

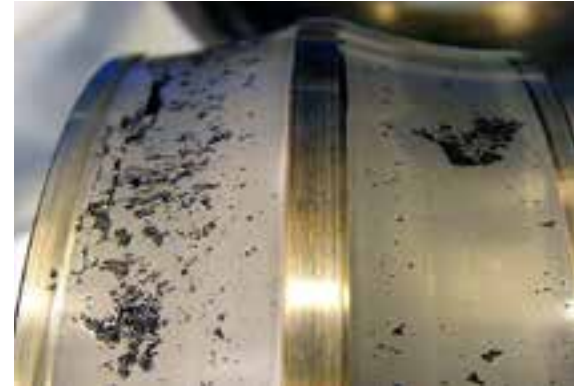
Common types of bearing damage

Fatigue

A change in the material structure caused by the repeated stresses developed in the contacts between the rolling elements and raceways.



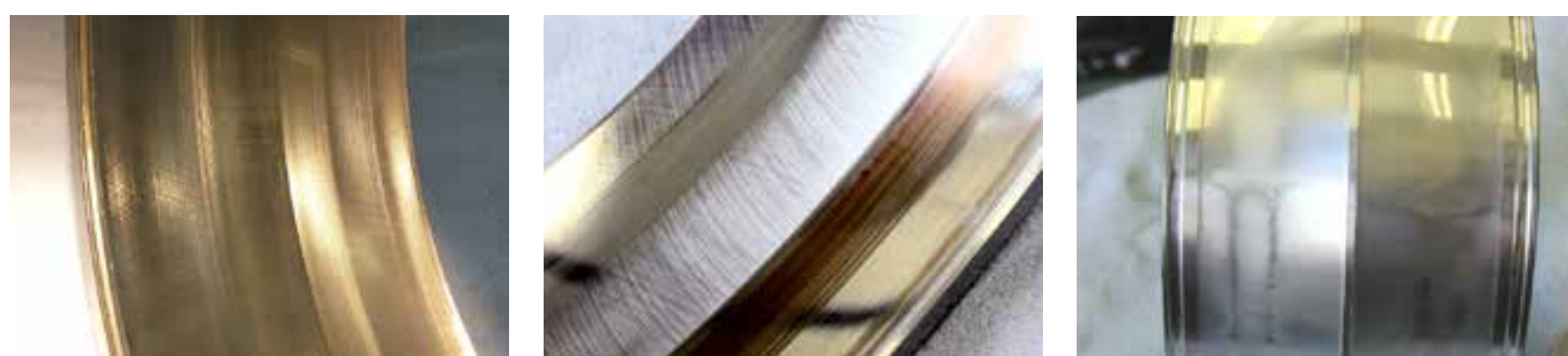
Subsurface initiated fatigue
The initiation of micro-cracks at a certain depth under the surface.



Surface initiated fatigue
Flaking that originates at the rolling surfaces as opposed to subsurface.

Wear

The progressive removal of material resulting from the interaction of the asperities of two sliding or rolling contacting surfaces during service.



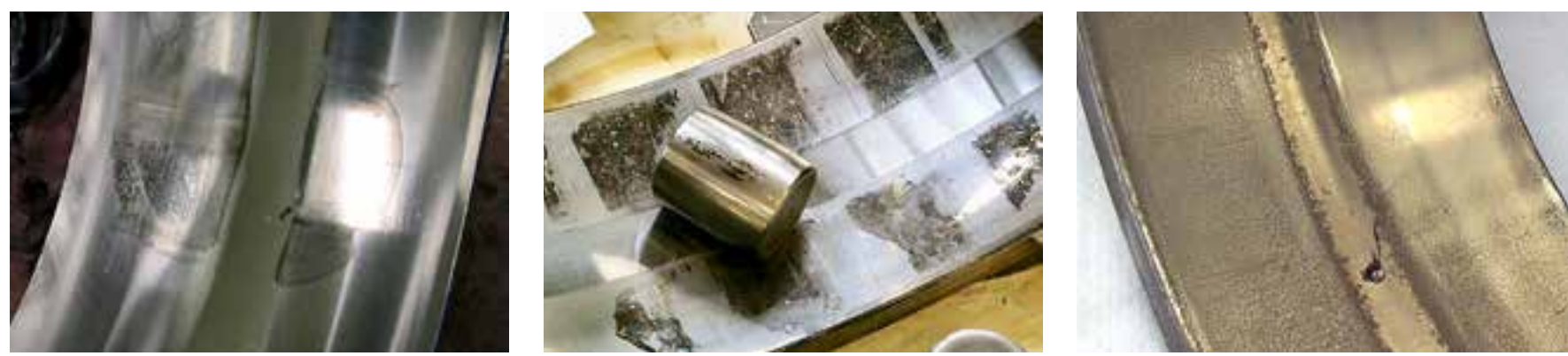
Abrasive wear
Wear that occurs as a result of inadequate lubrication or contamination ingress.



Adhesive wear
A transfer of material from one surface to another.

Corrosion

A chemical reaction on a metal surface.



Moisture corrosion
Formation of corrosion pits as a result of oxidation of the surfaces in the presence of moisture.



Frictional corrosion – Fretting corrosion
The oxidation and wear of surface asperities under oscillating micro-movements.



Frictional corrosion – False brinelling
A formation of shallow depressions resulting from micro-movements under cyclic vibrations.

Electric erosion

The removal of material from the contact surfaces caused by the passage of electric current.



Excessive voltage
Sparking and localized heating from current passage in the contact area because of ineffective insulation.



Current leakage
The generation of shallow craters that develop into flutes that are equally spaced.

Plastic deformation

Permanent deformation that occurs when the yield strength of the material is exceeded.



Overload
The formation of shallow depressions or flutes in the raceways.



Indentation from debris
When particles are over-rolled.



Indentation by handling
When bearing surfaces are dented or gouged by hard, sharp objects.

Fracture

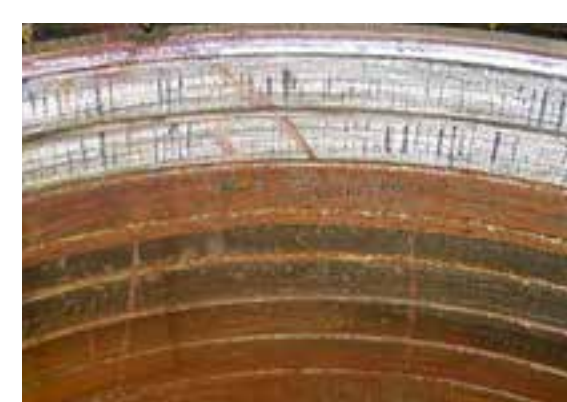
When the ultimate tensile strength of the material is exceeded and complete separation of a part of the component occurs.



Forced fracture
A fracture resulting from a stress concentration in excess of the material's tensile strength.



Fatigue fracture
A fracture resulting from frequently exceeding the fatigue strength limit of the material.



Thermal cracking
Cracks that are generated by high frictional heating and usually occur perpendicular to the direction of the sliding motion.

Discoloration



Overheating



Chemical

Seals



Heat aging
Material fracture and hardening from exposure to temperature beyond material limits.



Contamination
Paint overspray (blue) introducing contamination and cut lip due to sharp keyway.



Seal damage
Seal outside diameter damage due to poor lead-in chamfer and/or incorrect installation methods.