



Pharmaceutical Inorganic Chemistry Unit I

- Impurities- It's sources, Types and Test of Purity.
- Limit Test for Chlorides, Sulphates and Iron
- Limit test for Heavy Metals

1. Impurities in pharmaceutical substances can arise from:

- a) Raw materials
- b) Manufacturing process
- c) Storage conditions
- d) All of the above

2. Which of the following is NOT a type of impurity?

- a) Organic volatile impurities
- b) Inorganic impurities
- c) Residual solvents
- d) Therapeutic impurities

3. Limit tests are designed to:

- a) Quantify the exact amount of impurities
- b) Determine the presence of impurities above a specified limit
- c) Identify the specific type of impurity
- d) Remove impurities from the substance

4. The limit test for chlorides is based on the formation of:

- a) A white precipitate of silver chloride
- b) A blue color with starch-iodine solution
- c) A red color with potassium thiocyanate
- d) A yellow precipitate with lead acetate

5. The limit test for sulfates is based on the formation of:





- a) A white precipitate of barium sulfate
- b) A black precipitate of lead sulfide
- c) A brown color with ferric chloride
- d) A yellow color with sodium nitroprusside

6. The limit test for iron is based on the formation of:

- a) A blue color with potassium ferrocyanide
- b) A red color with potassium thiocyanate
- c) A brown color with ferric chloride
- d) A yellow color with sodium nitroprusside

7. The limit test for heavy metals is based on the formation of:

- a) A black precipitate with hydrogen sulfide
- b) A white precipitate with silver nitrate
- c) A yellow precipitate with lead acetate
- d) A brown color with iodine solution

8. Which of the following is NOT a common source of heavy metal impurities?

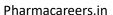
- a) Raw materials
- b) Manufacturing equipment
- c) Storage containers
- d) Air pollution

9. The presence of impurities in a pharmaceutical substance can:

- a) Affect its therapeutic efficacy
- b) Increase its toxicity
- c) Alter its physical and chemical properties
- d) All of the above

10. Which of the following techniques can be used to detect and quantify impurities?

a) Chromatography





- b) Spectroscopy
- c) Titration
- d) All of the above

11. The purity of a substance can be assessed by:

- a) Melting point determination
- b) Boiling point determination
- c) Specific rotation measurement
- d) All of the above

12. Which of the following is a common impurity in organic compounds?

- a) Water
- b) Inorganic salts
- c) Residual solvents
- d) All of the above

13. The presence of water in a pharmaceutical substance can:

- a) Promote microbial growth
- b) Accelerate degradation
- c) Affect the physical properties of the substance
- d) All of the above

14. Which of the following methods can be used to determine the water content of a substance?

- a) Karl Fischer titration
- b) Gravimetric analysis
- c) Gas chromatography
- d) All of the above

15. Residual solvents in pharmaceutical substances can arise from:

- a) Manufacturing process
- b) Purification steps



- c) Storage conditions
- d) All of the above

16. Which of the following techniques can be used to detect and quantify residual solvents?

- a) Gas chromatography
- b) Headspace gas chromatography
- c) Liquid chromatography
- d) All of the above

17. Organic volatile impurities (OVIs) can include:

- a) Solvents
- b) Reagents
- c) Byproducts
- d) All of the above

18. Which of the following techniques can be used to detect and quantify OVIs?

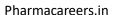
- a) Gas chromatography
- b) Headspace gas chromatography
- c) Mass spectrometry
- d) All of the above

19. Inorganic impurities can include:

- a) Metals
- b) Salts
- c) Oxides
- d) All of the above

20. Which of the following techniques can be used to detect and quantify inorganic impurities?

- a) Atomic absorption spectroscopy
- b) Inductively coupled plasma mass spectrometry
- c) Ion chromatography





d) All of the above

21. The limit test for chlorides is typically performed on:

- a) Solid dosage forms
- b) Liquid dosage forms
- c) Both solid and liquid dosage forms
- d) None of the above

22. The limit test for sulfates is typically performed on:

- a) Solid dosage forms
- b) Liquid dosage forms
- c) Both solid and liquid dosage forms
- d) None of the above

23. The limit test for iron is typically performed on:

- a) Solid dosage forms
- b) Liquid dosage forms
- c) Both solid and liquid dosage forms
- d) None of the above

24. The limit test for heavy metals is typically performed on:

- a) Solid dosage forms
- b) Liquid dosage forms
- c) Both solid and liquid dosage forms
- d) None of the above

25. The limit test for chlorides involves the addition of:

- a) Silver nitrate solution
- b) Barium chloride solution
- c) Potassium ferrocyanide solution
- d) Hydrogen sulfide gas



Telegram: Join us



26. The limit test for sulfates involves the addition of:

- a) Silver nitrate solution
- b) Barium chloride solution
- c) Potassium ferrocyanide solution
- d) Hydrogen sulfide gas

27. The limit test for iron involves the addition of:

- a) Silver nitrate solution
- b) Barium chloride solution
- c) Potassium ferrocyanide solution
- d) Hydrogen sulfide gas

28. The limit test for heavy metals involves the addition of:

- a) Silver nitrate solution
- b) Barium chloride solution
- c) Potassium ferrocyanide solution
- d) Hydrogen sulfide gas

29. The limit test for chlorides is based on the formation of a:

- a) White precipitate
- b) Black precipitate
- c) Red precipitate
- d) Yellow precipitate

30. The limit test for sulfates is based on the formation of a:

- a) White precipitate
- b) Black precipitate
- c) Red precipitate
- d) Yellow precipitate



Pharmacareers.in

31. The limit test for iron is based on the formation of a:

- a) Blue color
- b) Red color
- c) Green color
- d) Yellow color

32. The limit test for heavy metals is based on the formation of a:

- a) Black precipitate
- b) White precipitate
- c) Red precipitate
- d) Yellow precipitate

33. The limit test for chlorides is a:

- a) Qualitative test
- b) Quantitative test
- c) Semi-quantitative test
- d) None of the above

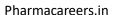
34. The limit test for sulfates is a:

- a) Qualitative test
- b) Quantitative test
- c) Semi-quantitative test
- d) None of the above

35. The limit test for iron is a:

- a) Qualitative test
- b) Quantitative test
- c) Semi-quantitative test
- d) None of the above

36. The limit test for heavy metals is a:





- a) Qualitative test
- b) Quantitative test
- c) Semi-quantitative test
- d) None of the above

37. The limit test for chlorides is compared to a:

- a) Standard solution of known chloride concentration
- b) Blank solution
- c) Positive control
- d) None of the above

38. The limit test for sulfates is compared to a:

- a) Standard solution of known sulfate concentration
- b) Blank solution
- c) Positive control
- d) None of the above

39. The limit test for iron is compared to a:

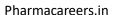
- a) Standard solution of known iron concentration
- b) Blank solution
- c) Positive control
- d) None of the above

40. The limit test for heavy metals is compared to a:

- a) Standard solution of known heavy metal concentration
- b) Blank solution
- c) Positive control
- d) None of the above

41. The limit test for chlorides is performed in a:

a) Nessler cylinder





- b) Volumetric flask
- c) Conical flask
- d) Beaker

42. The limit test for sulfates is performed in a:

- a) Nessler cylinder
- b) Volumetric flask
- c) Conical flask
- d) Beaker

43. The limit test for iron is performed in a:

- a) Nessler cylinder
- b) Volumetric flask
- c) Conical flask
- d) Beaker

44. The limit test for heavy metals is performed in a:

- a) Nessler cylinder
- b) Volumetric flask
- c) Conical flask
- d) Beaker

45. Which of the following is a common limit for chlorides in pharmaceutical substances?

- a) Not more than 0.01% w/w
- b) Not more than 0.05% w/w
- c) Not more than 0.1% w/w
- d) Not more than 0.5% w/w

46. Which of the following is a common limit for sulfates in pharmaceutical substances?

- a) Not more than 0.01% w/w
- b) Not more than 0.05% w/w





- c) Not more than 0.1% w/w
- d) Not more than 0.5% w/w

47. Which of the following is a common limit for iron in pharmaceutical substances?

- a) Not more than 10 ppm
- b) Not more than 20 ppm
- c) Not more than 50 ppm
- d) Not more than 100 ppm

48. Which of the following is a common limit for heavy metals in pharmaceutical substances?

- a) Not more than 10 ppm
- b) Not more than 20 ppm
- c) Not more than 50 ppm
- d) Not more than 100 ppm

49. The limit tests are described in which pharmacopoeia?

- a) United States Pharmacopeia (USP)
- b) European Pharmacopoeia (Ph. Eur.)
- c) British Pharmacopoeia (BP)
- d) All of the above

50. Compliance with limit tests is:

- a) Mandatory for all pharmaceutical substances
- b) Optional for all pharmaceutical substances
- c) Dependent on the specific monograph
- d) Not required for any pharmaceutical substance

Answers

- 1. Impurities in pharmaceutical substances can arise from raw materials, the manufacturing process, and storage conditions.
- 2. Therapeutic impurities are not a recognized type of impurity in pharmaceutical substances.



Pharmacareers.in

- 3. Limit tests are designed to determine the presence of impurities above a specified limit.
- 4. The limit test for chlorides is based on the formation of a white precipitate of silver chloride.
- 5. The limit test for sulfates is based on the formation of a white precipitate of barium sulfate.
- 6. The limit test for iron is based on the formation of a blue color with potassium ferrocyanide.
- 7. The limit test for heavy metals is based on the formation of a black precipitate with hydrogen sulfide.
- 8. Air pollution is not considered a common source of heavy metal impurities in pharmaceutical substances.
- 9. The presence of impurities in a pharmaceutical substance can affect its therapeutic efficacy, increase its toxicity, and alter its physical and chemical properties.
- 10. Chromatography, spectroscopy, and titration are techniques that can be used to detect and quantify impurities.
- 11. The purity of a substance can be assessed by determining its melting point, boiling point, and specific rotation.
- 12. Water, inorganic salts, and residual solvents are common impurities in organic compounds.
- 13. The presence of water in a pharmaceutical substance can promote microbial growth, accelerate degradation, and affect the physical properties of the substance.
- 14. Karl Fischer titration, gravimetric analysis, and gas chromatography are methods that can be used to determine the water content of a substance.
- 15. Residual solvents in pharmaceutical substances can arise from the manufacturing process, purification steps, and storage conditions.
- 16. Gas chromatography, headspace gas chromatography, and liquid chromatography are techniques that can be used to detect and quantify residual solvents.
- 17. Organic volatile impurities (OVIs) can include solvents, reagents, and byproducts.
- 18. Gas chromatography, headspace gas chromatography, and mass spectrometry are techniques that can be used to detect and quantify OVIs.
- 19. Inorganic impurities can include metals, salts, and oxides.
- 20. Atomic absorption spectroscopy, inductively coupled plasma mass spectrometry, and ion chromatography are techniques that can be used to detect and quantify inorganic impurities.
- 21. The limit test for chlorides is typically performed on both solid and liquid dosage forms.
- 22. The limit test for sulfates is typically performed on both solid and liquid dosage forms.
- 23. The limit test for iron is typically performed on both solid and liquid dosage forms.

For more regular updates you can visit our social media accounts,

Instagram: Follow us Facebook: Follow us WhatsApp: Join us Telegram: Join us



Pharmacareers.in

- 24. The limit test for heavy metals is typically performed on both solid and liquid dosage forms.
- 25. The limit test for chlorides involves the addition of silver nitrate solution.
- 26. The limit test for sulfates involves the addition of barium chloride solution.
- 27. The limit test for iron involves the addition of potassium ferrocyanide solution.
- 28. The limit test for heavy metals involves the addition of hydrogen sulfide gas.
- 29. The limit test for chlorides is based on the formation of a white precipitate.
- 30. The limit test for sulfates is based on the formation of a white precipitate.
- 31. The limit test for iron is based on the formation of a blue color.
- 32. The limit test for heavy metals is based on the formation of a black precipitate.
- 33. The limit test for chlorides is a semi-quantitative test.
- 34. The limit test for sulfates is a semi-quantitative test.
- 35. The limit test for iron is a semi-quantitative test.
- 36. The limit test for heavy metals is a semi-quantitative test.
- 37. The limit test for chlorides is compared to a standard solution of known chloride concentration.
- 38. The limit test for sulfates is compared to a standard solution of known sulfate concentration.
- 39. The limit test for iron is compared to a standard solution of known iron concentration.
- 40. The limit test for heavy metals is compared to a standard solution of known heavy metal concentration.
- 41. The limit test for chlorides is performed in a Nessler cylinder.
- 42. The limit test for sulfates is performed in a Nessler cylinder.
- 43. The limit test for iron is performed in a conical flask.
- 44. The limit test for heavy metals is performed in a Nessler cylinder.
- 45. A common limit for chlorides in pharmaceutical substances is not more than 0.01% w/w.
- 46. A common limit for sulfates in pharmaceutical substances is not more than 0.1% w/w.
- 47. A common limit for iron in pharmaceutical substances is not more than 20 ppm.
- 48. A common limit for heavy metals in pharmaceutical substances is not more than 10 ppm.
- 49. The limit tests are described in the United States Pharmacopeia (USP), European Pharmacopoeia (Ph. Eur.), and British Pharmacopoeia (BP).
- 50. Compliance with limit tests is dependent on the specific monograph.