

Overview

"This standard describes the manufacture, using manual or digital techniques, of removable orthodontic appliances. To design and manufacture removable orthodontic appliances, you need to understand, and be able to apply, the theoretical principles of the required orthodontic treatment and the role of the appliance within that treatment plan. The standard covers the processes of manufacturing components, assembling components, blocking out, surveying and undercut relief; application of appropriate baseplate material, processing of polymeric and the final finishing processes.

The term 'client' has been used to mean the clinician who has prescribed and specified the orthodontic appliance. Clients may be external to the organisation (such as other laboratories, dental practitioners, training schools) or internal (within a dental hospital). The individual is the one for whom the appliance is being made.

Users of this standard will need to ensure that practice reflects up to date information and policies."

Performance criteria

You must be able to:

1. access and accurately interpret all relevant work instructions and information
2. work safely at all times and in accordance with all relevant legislation, guidelines, policies, procedures and protocols
3. deal promptly and effectively with any problems within your control and report those which cannot be solved
4. communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
5. identify and minimise hazards and risk in the workplace
6. collate all specification information required for the design and manufacture of the removable orthodontic appliances
7. confirm accuracy of the specification with relevant others
8. select the necessary components, materials and equipment and confirm that they are fit for purpose
9. set up the manufacturing equipment in accordance with the specification
10. manufacture the removable orthodontic appliances using appropriate methods and techniques
11. monitor the manufacturing process and adjust as required
12. deinvest or retrieve the manufactured product using an appropriate method which releases the item without causing damage
13. check that the manufactured product matches the specification and make any necessary adjustments
14. dispose of waste in accordance with organisational procedures
15. complete and store all relevant documentation in accordance with organisational requirements"

Knowledge and understanding

You need to know and understand:

1. the current legislation, guidelines, policies, procedures and protocols which are relevant to your work practice and to which you must adhere
2. the scope and limitations of your own competence, responsibilities and accountability as it applies to your job role
3. how to access and interpret all relevant work instructions and information
4. specific procedures for reporting issues which are beyond your competence, responsibilities and accountability
5. how to communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
6. the duty to report any acts or omissions that could be unsafe/detrimental to you or others
7. the hazards and risks which may arise during the execution of your work role and how you can minimise these
8. the correct use of any equipment and PPE to protect the health and safety of you and others
9. the principles and use of digital design and manufacturing
10. relevant digital manufacturing equipment, methods and techniques
11. skeletal anatomy, physiology and tooth morphology necessary for removable orthodontic appliance manufacture
12. the function and movement of the oral musculature and temporomandibular joint
13. principles of occlusion and its effect on function of removable orthodontic appliances
14. disorders and diseases affecting the oral cavity
15. the aetiology and classifications of malocclusions
16. growth and eruption patterns of both deciduous and permanent teeth
17. the physiological changes related to tooth movement
18. the broader factors (sociological, behavioural, environmental and economic) that contribute to oral health and illness
19. the aims and objectives of orthodontic treatment
20. key factors in the success of orthodontic treatment specifically anchorage, fixation, retention, common problems and the common causes of failure of treatment
21. the stages in, and types of, orthodontic treatment and how they relate to each other
22. the principles of removable orthodontic appliance design and manufacture

23. the scope of orthodontic treatment using removable orthodontic appliances
24. the different types of removable orthodontic appliances and the components that are required
25. the different components used in removable orthodontic appliances, the purposes and uses of each
26. the use of casts in the design, manufacture and positioning of components for appliances
27. the principles of current best practice in relation to model trimming, how to apply them and evaluate the outcomes
28. principles of baseplate and biteplane design and manufacture
29. the nature and purpose of study casts
30. application and magnitude of the forces used in the movement of teeth
31. methods of activation and reactivation of components and removable appliances
32. how appliances are fitted, adjusted and activated
33. methods of modification and maintenance of removable appliances
34. the records (paper and material) that are required
35. how the curing process affects the choice of materials and manufacturing processes
36. how to identify the size and type of components that will be required
37. the range of pre-formed components that are available and methods to assess their suitability for use in constructing an appliance
38. the different gauges of wire that are used for different types of components and methods for identifying which is required and suitable
39. methods of straightening and bending wire and the tools that are used
40. handling tolerances of wires, the effects of over-handling and how to identify when this has happened
41. methods of assessing the suitability of manufactured components
42. the purpose and use of the different types of biteplanes and how these are constructed
43. methods for the application of polymeric material, why different techniques are used
44. uses of spot welding and soldering
45. how the duration and level of current affects the strength and viability of the joint produced
46. how to judge when metals have been heated sufficiently to melt solder, but not interfere with the metal's mechanical structure

47. the consequences of over-heating metals and solder during soldering including weakening and softening metals and causing solder to spatter rather than flow smoothly, the effect of these on the strength and integrity of the join and the remedial action that can be taken
48. how to identify reasons for soldered joint failure
49. the different curing methods, how each works, their effect and the situations in which each is best used
50. how the curing process affects the materials and components that can be used
51. physical characteristics of materials used in appliances and how the curing processes affect them
52. the different separating media, when and why these are used
53. methods of deflasking
54. techniques for finishing and polishing appliances
55. the different types of abrasive and polish and their purpose
56. methods for the safe and effective cleaning of appliances
57. methods of assessing and checking the safety, aesthetic, functional and clinical acceptability of completed appliances
58. the selection of a suitable articulator for the type of appliance being designed and manufactured
59. centric occlusion records
60. the importance of aesthetics in the manufacture of orthodontic appliances and the necessity to include artificial teeth if required
61. lateral and protrusive movement records and their uses
62. methods of developing, maintaining and improving communication and information relating to the provision of custom-made dental devices
63. methods of protection against contamination and infection control when handling received impressions and other items which may have been in the mouth, or which are intended to be placed in the mouth; why it is important to do so
64. principles of quality assurance including effective recording and sampling; processes and procedures for quality assurance in your workplace
65. methods of setting and calibrating equipment and of testing that this is correct
66. the effects of modifying manufacturers' products to meet laboratory requirements on the physical properties of products and on quality assured products, and the legal implications of poor manufacturing
67. the range of equipment used in the design and manufacture of dental devices
68. methods of using equipment and materials safely including the use of chemicals

and other hazardous substances

69. methods of storing different equipment and materials safely and securely

70. methods of cleaning and maintaining different types of equipment

71. how to dispose of waste in accordance with organisational procedures

72. how to complete and safely store all relevant documentation in accordance with organisational requirements"

SFH0H30

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Developed by	Skills for Health
Version Number	3
Date Approved	30 Mar 2022
Indicative Review Date	30 Mar 2027
Validity	Current
Status	Original
Original URN	SFH0H30
Relevant Occupations	Associate Professionals and Technical Occupations
Suite	Dental Technology
Keywords	Removable, orthodontic, appliances, digital
