DIN EN ISO 9241-394:2023-08 (E)

Ergonomics of human-system interaction - Pa rt 394: Ergonomic requirements for reducing undesirable biomedical effects of visually induced motion sickness during watching electronic images (ISO 9241-394:2 020)

Contents

Page

European foreword ... **3**

Foreword ... **4**

Introduction ... **5**

1 Scope ... **6**

2 Normative references ... **6**

3 Terms and definitions ... **6**

4 Guiding concepts ... 7
- 4.1 Contexts of image viewing ... 7
- 4.2 Basis of guiding concepts ... 8
- 4.3 Major factors of VIMS ... 8

5 Ergonomic requirements and recommendations ... **9**
- 5.1 General ... 9
- 5.2 Images presented in passive viewing environments ... 10
  - 5.2.1 Potentially unwanted conditions of visual rotation ... 10
  - 5.2.2 Potentially unfavourable conditions of visual rotation ... 10
  - 5.2.3 Basis of the requirements and recommendations ... 10
  - 5.2.4 Reference information on effects of visual motion combination ... 11
- 5.3 Images presented in active viewing environments ... 11
  - 5.3.1 General ... 11
  - 5.3.2 Potentially unfavourable conditions of visual rotation ... 11
  - 5.3.3 Reference information on effects of visual motion combinations ... 12
  - 5.3.4 Potentially unfavourable conditions of large visual field images or VR-type HMDs ... 12

6 Conformance and usages of ergonomic recommendations ... **12**
- 6.1 General ... 12
- 6.2 Measurement methods ... 13
- 6.3 Procedure of conformance and report ... 13

Annex A (informative) **Overview of the ISO 9241 series** ... **14**

Annex B (informative) **Viewing conditions** ... **15**

Annex C (informative) **Effects of visual motion combination** ... **16**

Annex D (informative) **General methods of alleviating VIMS** ... **20**

Annex E (informative) **Measurement method of visual global motion** ... **22**

Annex F (informative) **Measurement method of time delay of head tracking** ... **25**

Annex G (informative) **Sample procedure for assessing applicability and conformance** ... **26**

Annex H (informative) **Individual viewer factors** ... **28**

Bibliography ... **29**