

ISO 24221:2024-03 (E)

Railway applications - Braking system - General requirements

Contents		Page
Foreword		iv
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Design requirements	2
4.1	General requirements of the brake systems	2
4.2	General safety requirements	3
4.3	Requirements for the main brake system	3
4.3.1	General requirements	3
4.3.2	General functions on train level	5
4.3.3	Additional requirements at the vehicle level	7
4.4	Brake management / brake blending	8
4.5	Additional brake systems	9
4.5.1	General	9
4.5.2	Independent dynamic braking	9
4.5.3	Independent direct brake for locomotives and traction units	9
4.6	Wheel slide protection	11
4.7	Enhancement of wheel/rail adhesion	13
4.8	Compatibility for rescue purposes	13
5	Calculation requirements	14
5.1	General aspects	14
5.2	Performance calculation	14
5.2.1	General	14
5.2.2	Calculations for degraded mode	14
5.3	Relevant load conditions	14
5.4	Service braking	15
5.5	Thermal capacity	15
5.5.1	General	15
5.5.2	Conditions	15
5.5.3	Structural integrity of the brake components	16
5.5.4	Stopping distance extension	16
5.5.5	Duty cycle	16
5.6	Wheel/rail adhesion	17
5.7	Parking brake	17
Annex A (informative)	Automatic air brake system	18
Annex B (informative)	Wheel/rail adhesion demand levels applied in Europe	20
Annex C (informative)	Relationship between this document and local regulations in Japan	22
Bibliography		23