

HARDNESS SPECIFICATIONS FOR ROLLER COVERING

All elements referenced in this documentation, relate to the International Standard ISO 6123/1-1982 in which the requirements in regard to the hardness of covered rolls is defined.



At Hannecard, hardness measurements are always executed based upon the international standard ISO 6123/1 – 1982.

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THE COMMON HARDNESS SCALES

	Shore A	P&J (Pusey & Jones)	Shore D
	100	0-3	70-100
	99	3-5	50-70
harder ↑	97	5-10	50
	95	10-15	44
	93	15-20	40
	91	20-25	36
	89	25-30	33
	87	30-35	30
	85	35-40	28
	83	40-45	26
	81	45-50	25
	79	50-55	24
	77	55-60	-
	75	60-65	-
	73	65-70	-
	71	70-75	-
	69	75-80	-
	65	80-90	-
	61	90-100	-
↓ softer	57	100-110	-
	53	110-120	-
	50	120-130	-
	47	130-140	-
	44	140-150	-
	42	150-160	-
	40	160-170	-
	38	170-180	-
	35	180-200	-
	32	200-220	-
29	220-240	-	

Authorized standard deviation (ISO 6123/1) in relation the nominal hardness Pusey & Jones (P&J)

Hardness P&J	Tolerance
3-15	+/-3
16-49	+/-4
50-60	+/-5
61-70	+/-6
71-80	+/-7
81-90	+/-8
91-100	+/-9
101-150	+/-10
151-200	+/-25

CONDITIONS FOR MEASUREMENT

Thickness of the covering

The hardness of the elastomers is measured by means of a specially designed instrument, the "durometer". The thickness of the coating may, however, affect the values obtained. The rule therefore provides the following thicknesses:

- Up to 50 Shore A or between 40 and 100 P&J: not less than 9 mm
- Above 50 Shore A or upto 40 P&J: not less than 6 mm

Number of measurements

The hardness of rollers with a table length up to 2500 mm is measured at 5 points:

- 3 points, each time at a distance of 120° around the circumference in the middle of the roller;
- 1 point at each end and at a distance equal to 10% of the covered length, calculated from the end.

For rollers with a table length that is higher than 2500 mm the hardness is measured at 9 points:

- 3 points, each at a distance of 120° around the circumference in the middle of the roller;
- at the end at 3 points, each at a distance of 120° around the circumference of the roller;

Temperature

When testing, the temperature should preferably be the same as that in a laboratory at a normal ambient temperature, namely, 23 ± 2 °C. The cylinder must first be brought to test temperature in order to ensure an optimum temperature balance.

Since the hardness can be influenced by the temperature, it is necessary to define the value- prior to the measurement - so results can be compared.

Tolerances on nominal hardness

Hardness values need to be expressed as follows:

- Shore A:
 - below 90 Shore A : in multiples of 5
 - above 90 Shore A : in whole numbers
- P&J:
 - in multiples of 3 for values between 0 and 15 P&J
 - in multiples of 5 for values between 15 and 100 P&J
 - in multiples of 10 for values between 100 and 200 P&J
 - in multiples of 25 for values above 200 P&J

For hardnesses expressed in Shore A or Shore D the ISO 6123/1 standard foresees a deviation of ± 5 hardness degrees in relation to the nominal value.

RELATED DOCUMENTS

- Technical info - 'Geometrical & Dimensional tolerances'
- Technical info - 'Mechanical services'
- Technical info 'Roll covering process'
- Technical info 'Roll finishing'
- Technical info 'Selection guide'
- Technical info 'Surface characteristics'
- Technical info 'Transport & Packaging'

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