

Appendix ii) Tolerance Chart Contact Lens (Z80.20 – 2004)

Table 2 – Tolerances for corneal and paralimbal contact lenses

WATER CONTENTS					
Non-Hydrogel			Hydrogels		
	< 10%			10 - 69%	70 + %
	PMMA	RGP	Flexible *		
CURVATURES					
Spherical curvatures (± mm)					
Base curve radius	0.025	0.05	0.10	0.20	0.25
Toric base curve radii (± mm)					
Δ 0-.20 mm	0.02	0.05	—	—	—
Δ .21-.40 mm	0.03	0.06	—	—	—
Δ .41-.60 mm	0.05	0.07	—	—	—
Δ over .6 mm	0.07	0.09	—	—	—
Aspheric curvatures (± mm)					
Apical radius	0.025	0.05	0.10	0.20	0.25
Eccentricity	0.05	0.10	0.20	0.40	0.50
Peripheral curvatures (± mm)					
Peripheral curves	0.10	0.10	—	—	—
Anterior peripheral curve	0.20	0.20	—	—	—
REFRACTIVE POWERS					
Spherical powers (± D)^(1,2)					
0.00 to 5 D	0.12	0.12	0.25	0.25	0.25
5.12 to 10 D	0.18	0.18	0.25	0.25	0.25
10.12 to 15 D	0.25	0.25	0.50	0.50	0.50
15.12 to 20 D	0.37	0.37	0.50	0.50	0.50
over 20 D	0.50	0.50	0.50	0.50	0.50
Cylinder powers (± DC)^(2,3)					
0.00 to 2 DC	0.25	0.25	0.25	0.25	0.25
2.12 to 4 DC	0.37	0.37	0.37	0.37	0.37
over 4 DC	0.50	0.50	0.50	0.50	0.50
Cylinder axis (± °)					
0.00 to 1.50 DC	5	5	8	8	8
over 1.50 DC	3	3	5	5	5
Bifocal add (± D)	0.25	0.25	0.25	0.25	0.25

* e.g., silicone elastomer

(continued)

Table 2 (continued)

WATER CONTENTS					
Non-Hydrogel				Hydrogels	
	< 10%			10 - 69%	70 + %
	PMMA	RGP	Flexible		
Prismatic power (± ⁴)					
0.00 - 10 ⁴	0.25	0.25	0.25	0.25	0.25
over 10 ⁴	0.50	0.50	0.50	0.50	0.50
LINEAR DIMENSIONS (± mm)					
overall diameter	0.05	0.05	0.20	0.20	0.25
optic zone diameters	0.10	0.10	—	—	—
peripheral zone widths	0.10	0.10	—	—	—
bifocal seg height	-0.10	-0.10	0.20	0.20	0.25
	+0.20	+0.20			
bifocal seg width	0.10	0.10	0.20	0.20	0.25
truncation height	0.10	0.10	0.10	0.10	0.15
Truncation axis (± mm)	5	5	5	5	5
Center thickness (± mm of t _c)					
≤ 0.10 mm	0.02	0.02	0.02	[0.010 mm + 10%]	
≥ 0.10 mm	0.02	0.02	0.02	[0.015 mm + 5%]	
OTHER PROPERTIES					
O ₂ Transmissibility ^{d)}	—	20%	20%	20%	20%

NOTES

¹⁾ The effects of base curve radius error and spherical refractive power are additive for rigid lenses. The effective error shall not exceed 0.25 D

²⁾ Diopter = D; diopter of cylinder = DC; prism diopter = Δ

³⁾ Spherocylindrical powers shall be transformed to meridional powers and the tolerance applied to each meridional power.

⁴⁾ $\pm$ percent of Dk/t units $\times 10^{-9}(\text{cm/sec})(\text{mlO}_2/(\text{ml} \times \text{mmHg}))$, or $\times 10^{-9}(\text{cm}^3[\text{O}_2])/(\text{cm}^2 \times \text{sec} \times \text{mmHg})$