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S-PHM52Q

Improved processability and chemical durability

S-PHM52Q is an optical glass with the same refractive index as S-PHM52 and nearly the same abbe number. Optical materials in the PHM region are generally characterized by a large, negative dn/dT value. However the dn/dT value of S-PHM52Q is actually close to 0, enabling an optical design that suppresses the effects of temperature drift. In addition, while S-PHM52 has the lowest dispersion and largest number of relative partial dispersion deviation of ⊿θg, F in nd ≒ 1.62, it is also soft, relatively fragile, and easily scratched. S-PHM52Q has improved workability and chemical durability while maintaining the same basic optical properties. (maximum THK is 35mm)

Advantages

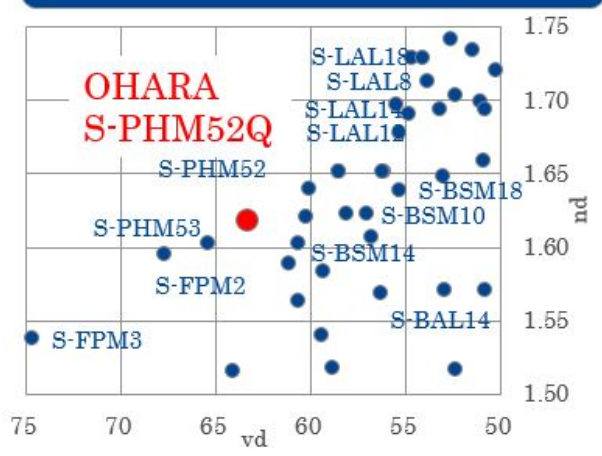
- Improved chemical durability:
  Water Resistance [RW(p)]: Class 1, Acid Resistance[RA(p)]: Class 3
- Improved mechanical durability Abrasion (Aa): 313
- The dn/dT value is close to 0 dn/dT
  (Dline 40°C～60°C): -0.7×10-6/°C
- Low specific gravity (conventional ratio): 3.51

Comparison

Type	Code	n_c	n_d	n_F	n_g	v_d	s.g.	Coloring
S-PHM52Q	618633	1.61550	1.61800	1.62479	1.63008	63.32	3.51	365/325

Characteristics

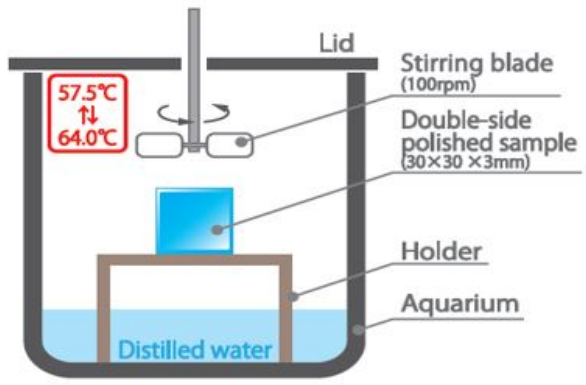
1. Acid resistance / RA(P): Class 4 → 3
   Abrasion / Aa: 468→313
2. dn/dT: Close to zero
3. Low specific gravity



		S-PHM52Q	S-PHM52
Refractive index: nd		1.61800	1.61800
Abbe number: vd		63.32	63.33
Partial dispersion ratio θg, F		0.5426	0.5441
Deviation of Partial dispersion Δ θg, F		0.0036	0.0051
dn/dT(Dline 40~60°C)		-0.7	-3.6
Expansion coefficients α(10⁻⁷/°C)	-30~70°C	88	101
	+100~300°C	103	120
Transformation Temp Tg(°C)		577	587
Yield point At(°C)		614	617
Coloring	λ80(λ70)	365	370
	λ5	325	325
Water resistance: RW(P)		1	1
Acid resistance: RA(P)		3	4
Wheathring resistance: W(S)		1	2
Acid SR		51.0	5.0
Phosphate resistance		4.0	4.0
Specific gravity		3.51	3.67
Knoop hardness: Hk		420[4]	390[4]
Abrasion: Aa		313	468

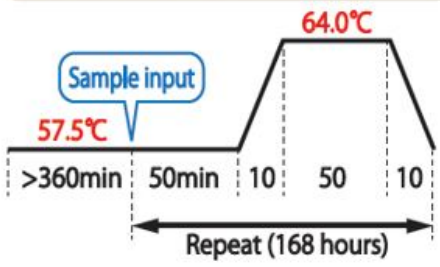
S-PHM52Q "Weather resistance test"

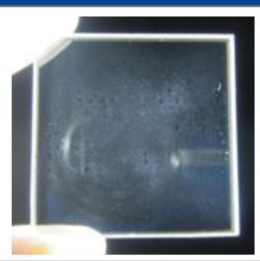
Test method



Temperature profile

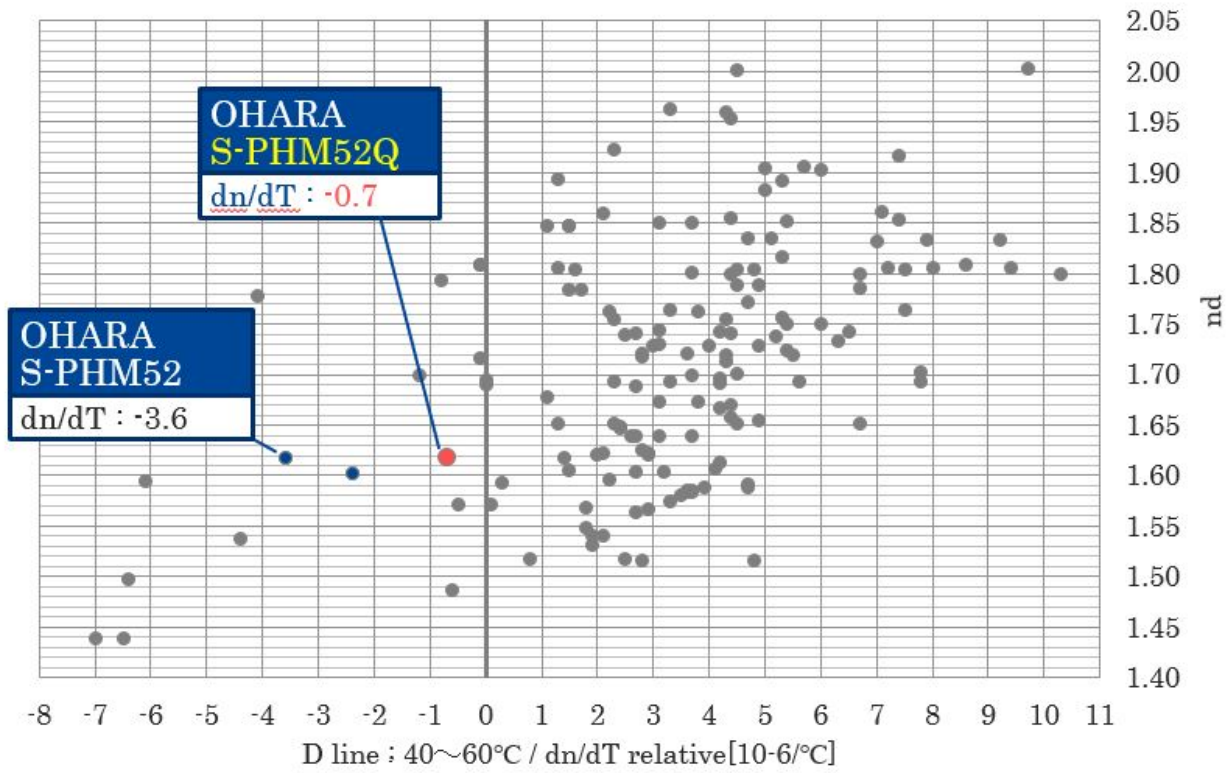
In order to accelerate the progress of the burn, it is carried out under harsh conditions.



S-PHM52	S-PHM52Q
	
Strong burn	Weak burn

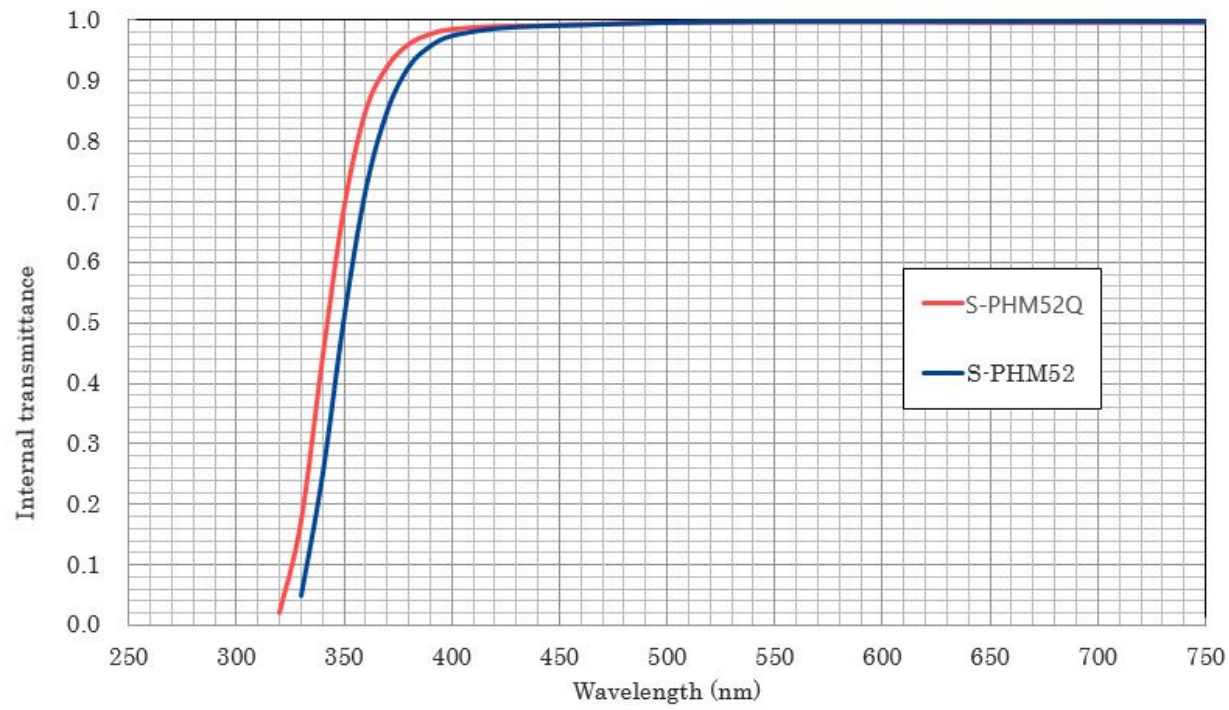
Provided this test to check the burn on the polished surface
↓
Confirmed weak burn on S-PHM52Q

S-PHM52Q “dn/dT of PHM region”



The dn/dT value of S-PHM52Q is close to 0

S-PHM52Q “Internal transmittance”



Internal transmittance of S-PHM52Q has been improved comparing with S-PHM52