

CS Series
THERMOLAST® K

The CS Series is your material solution for sealing applications, providing an excellent compression set. The compounds are available in natural and black colors.

Typical applications

- Fastenings
- Grommets
- Membranes
- Seals

Material advantages

- Adhesion to PP
- Easy coloring (compounds in natural colors)
- Excellent compression set
- Excellent heat stability
- UL 94 HB listed

Processing Method: Extrusion, Injection Molding

	Color / RAL DESIGN	Hardness DIN ISO 7619-1 ShoreA	Density DIN EN ISO 1183-1 g/cm ³	Tensile Strength ¹ DIN 53504/ISO 37 MPa	Elongation at Break ¹ DIN 53504/ISO 37 %	Tear Resistance ISO 34-1 Methode B (b)(Graves) N/mm	CS 72 h/23 °C DIN ISO 815-1 Method A %	CS 24 h/70 °C DIN ISO 815-1 Method A %	CS 24 h/100 °C DIN ISO 815-1 Method A %	CS 24 h/120 °C DIN ISO 815-1 Method A %
TC3CSN	natural	27	1.100	4.0	550	12.0	14	18	33	58
TC3CSZ	black	30	1.100	3.5	550	8.0	16	20	33	55
TC4CSN	natural	38	1.100	5.0	550	10.0	13	19	35	58
TC4CSZ	black	37	1.100	4.0	550	12.5	15	19	35	58
TC5CSN	natural	46	1.100	7.0	550	12.0	19	20	35	57
TC5CSZ	black	50	1.100	6.0	500	12.0	19	21	35	56
TC6CSN	natural	56	1.100	8.0	600	17.0	20	22	40	60
TC6CSZ	black	58	1.100	7.0	500	15.0	20	22	37	60
TC7CSN	natural	68	1.100	8.0	500	21.0	23	33	46	72
TC7CSZ	black	69	1.100	8.0	500	20.0	23	30	46	72



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TC8CSN	natural	79	1.100	9.0	500	26.5	30	42	55	75
TC8CSZ	black	78	1.100	9.0	500	25.0	30	33	54	75
TC9CSN	natural	86	1.100	10.0	500	31.0	36	45	63	82
TC9CSZ	black	87	1.100	10.0	500	34.0	36	45	63	82

¹ Deviating from ISO 37 standard test piece S2 is tested with a traverse speed of 200 mm/min.

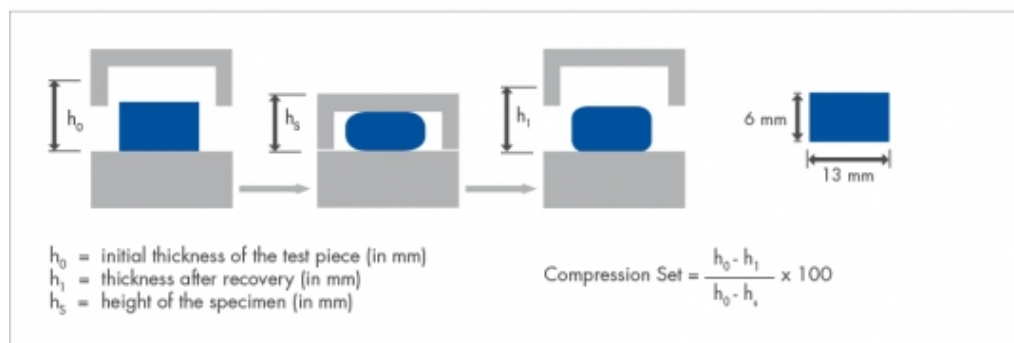
All values published in this data sheet are rounded average values.



Compression Set

Compression Set (acc. DIN ISO 815)

For the compression set testing the following specimen is used:
The specimen is a cylindrical disk shaped 6 mm thick and 13 mm in diameter.



The specimen is compressed by 25%. The compressed specimen is heated to the test temperature. DIN ISO 815 describes two methods.

Method A: The specimen is allowed to recover immediately after its aging in the oven and then cooled down to room temperature. After 30 minutes the thickness of the specimen is measured and the compression set calculated.

Method B: The specimen is cooled down to room temperature after its aging in the oven and then allowed to recover.

Test results gained from method B are in general higher than from method A.



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Processing Guideline Injection Molding

Cylinder temperature	180 - 200 - 220 °C, max. 250 °C (360 - 390 - 430 °F, max. 480 °F)
Hotrunner	Hot runner temperatures: 200 -250 °C (390 - 480 °F). The runner should be empty after a maximum of 2 - 3 shots.
Injection pressure	200 - 1000 bar (2900 - 14504 psi) (depending on the size and weight of the part).
Injection rate	In general, the fill time should not be more than 1–2 seconds.
Hold pressure	We recommend to derive the optimum hold pressure from determining the solidification point, starting with 40 % - 60 % of the required injection pressure.
Back pressure	20 - 100 bar; if color batches are used, higher back pressure is necessary.
Screw retraction	If an open nozzle is used processing with screw retraction is advisable.
Mold temperature	25 - 40 °C (77 - 104 °F)
Predrying	Pre drying of the material is not necessary; if surface moisture forms as a result of changes in temperature, the material should be dried for 2 - 4 hours at 60 - 80 °C (140 - 175 °F).
Needle valve	With materials < 50 Shore A the use of a needle valve is advisable.
Screw geometry	Standard 3-zone polyolefine screw.
Residence time	The residence time is to be set as short as possible with a maximum of 10 minutes.
Cleaning recommendation	For cleaning and purging of the machine it is appropriate to use polypropylene or polyethylene. Machine must be PVC-free.



CS Series
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Processing Guideline Extrusion

Cylinder temperature	160 - 180 - 200 °C, max. 250 °C (320 - 360 - 390 °F; max. 480 °F)
Screw geometry	Standard three-zone screw (e.g. polyolefin screw). The screw must be able to provide sufficient shearing.
L/D ratio	At least 25
Compression ratio	At least 3.5 : 1
Screens / breaker plate	A breaker plate and a screen pack are generally recommended in the extruder configuration in order to increase pressure.
Die land	<= 3 mm (<= 0,12 in.)
Extruder Head	Ca. 200 °C (390 °F)
Die temperature	Ca. 200 - 230 °C (390 - 450 °F)
Predrying	Pre drying of the material is not necessary; if surface moisture forms as a result of changes in temperature, the material should be dried for 2 - 4 hours at 60 - 80 °C (140 - 175 °F).
Calibration	Generally not necessary; support elements may be required when extruding THERMOLAST® compounds with high hardness or when coextruding with standard thermoplastics.
Cleaning recommendation	For cleaning and purging of the machine it is appropriate to use polypropylene or polyethylene. Machine must be PVC-free.

