

DESCRIPTION

CP Waterstop are high grade Polyvinyl Chloride waterbars used to seal construction and expansion joints in concrete structures and are available in different size and section.

USED & ADVANTAGE

CP Waterstop are used to prevent the passage of water through expansion and construction joints in concrete. The selection of the waterbars is dependent on the type and size of joint.

ADVANTAGE

- Chemically inert.
- Highly resistant to acids & alkalis and waterborne chemicals.
- Does not fatigue as a result of repeated flexure.
- Retains elasticity through a temperature range of -1C to + 80C
- Easy to weld & join.
- Multirib section provides excellent water check.

INSTALLATION

CP Waterstop must be installed so that they are securely held in their correct position while the concrete is being poured. The concrete must be fully compacted around the CP Waterstop to ensure that no air holes or porous areas remain. Where reinforcement is present, an adequate clearance must be left to permit correct compaction. Welding and installation of CP Waterstop shall always be coordinated with mould setting and laying of reinforcing bars for the best results.

PAKAGING

25 metre rolls. Dumbell center bulb type 6, 8, 9, 10, 12 inch

MTEC No. 3129/52

Report of Analysis

Issued Date : 13 August 2009
Customers :
Serviced by : Mechanical Properties Testing Laboratory,
Analytical and Testing Research Unit Division,
National Metal and Materials Technology Center
Date received : 28 July 2009
Date analyzed : 5-6 and 13 August 2009
Sample : PVC Waterstop
Identification no. : No data from the customer
Instruments used : - Universal Testing Machine (Instron 55R4502, S/N H3342)
- XL Extensometer (Instron # 2603-070, S/N 656)
- Vernier Caliper (Mitutoyo, S/N 05 37 7357)
Test method : Tensile (Based on ASTM D638)
Specimens conditioning : Temperature 23 ± 2 °C, Duration 48 hrs.
Test conditions : Gauge length = 25 mm.
Grip distance = 65 mm.
Crosshead speed = 500 mm./min.
Temperature 22 °C, Humidity 52 % R.H.
Specimen preparation : The pellets were compression moulded into ~ 1.9 mm. thick sheet
with conditions as following :
Press temperature 200 °C
Preheat time 10 minutes
Press time 3 minutes
Pressure 1900 psi
Sample sheet was cut into tensile shaped specimens
(Type IV ; Thickness ~ 1.9 mm.).

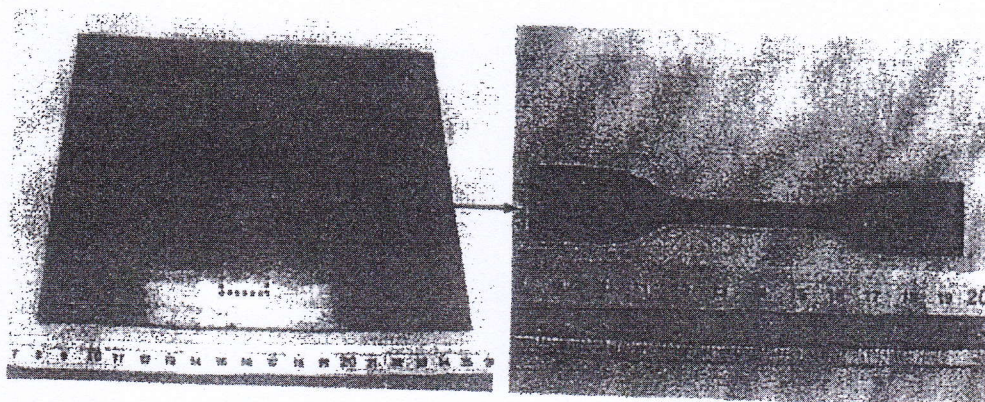


Figure 1 : Sample and specimen.

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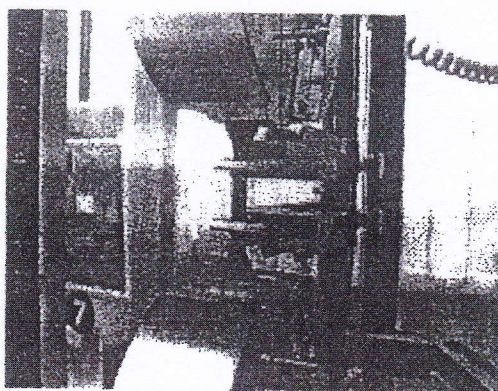


Figure 2 : Test configuration.

Results :

Sample	Specimen Number	Tensile Strength at Yield (MPa)	Elongation at Break (%)
PVC Waterstop	1	16.46	375.65
	2	15.83	349.39
	3	16.93	382.68
	4	16.52	359.64
	5	15.70	347.19
Average		16.29	362.91
SD.		0.51	15.76

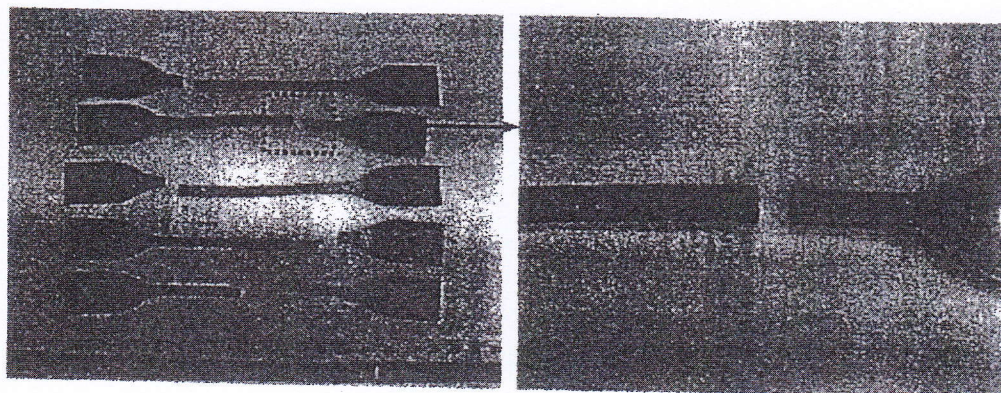


Figure 3 : Specimens after test.

Instruments used	:	- Universal Testing Machine (Instron 55R4502, S/N H3342) - Vernier Caliper (Mitutoyo, S/N 05 37 7357)
Test method	:	Tear (Based on ASTM D624)
Specimens conditioning	:	Temperature 23 ± 2 °C, Duration 48 hrs.
Test conditions	:	Grip separation = 50 mm. Crosshead speed = 500 mm./min. Temperature 22 °C, Humidity 52 % R.H.
Specimen preparation	:	Compression moulded as above. Sample sheet was cut into tear shaped specimens (Die C ; Thickness ~ 1.9 mm.).

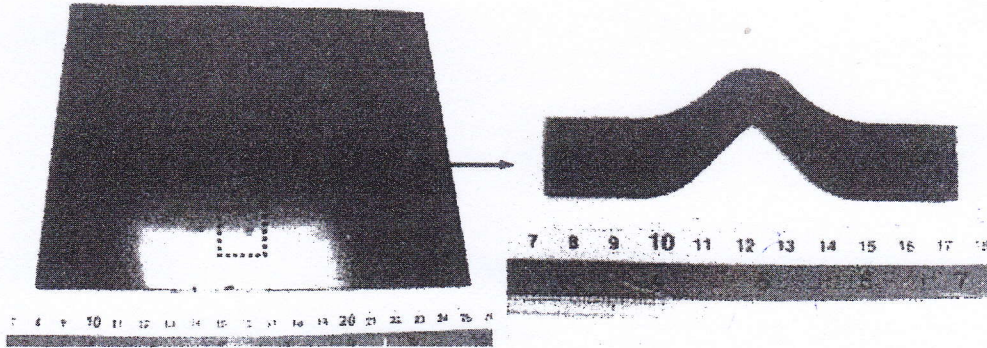


Figure 4 : Sample and specimen.

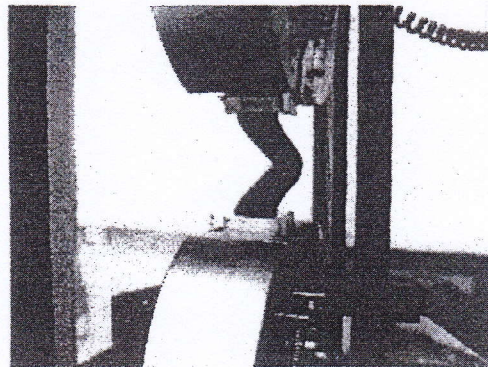


Figure 5 : Test configuration.

Results :

Sample	Specimen Number	Tear Strength (N/mm)
PVC Waterstop	1	61.08
	2	65.35
	3	64.99
	4	61.79
	5	60.40
Average		62.72
SD.		2.29

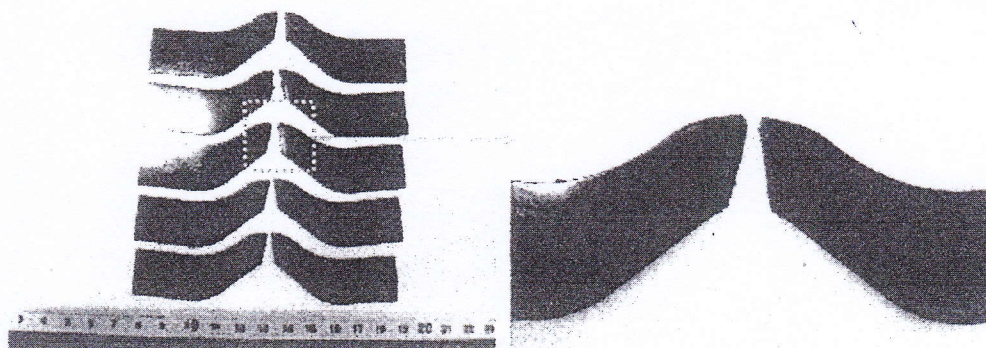


Figure 6 : Specimens after test.

Instruments used : - Shore Hardness Tester
 (Shore Instruments-Instron, S/N 108816)
 - Vernier Caliper (Mitutoyo, S/N 05 37 7357)
Test method : Shore A (Based on ASTM D2240)
Specimens conditioning : Temperature 23 ± 2 °C, Duration 48 hrs.
Test conditions : Reading was taken within 1 second.
 Temperature 22 °C, Humidity 51 % R.H.
Specimen preparation : Supplied by client.
 Sample was cut into rectangular shaped specimen
 ($\sim 50 \times 50 \times 5.6$ mm³).

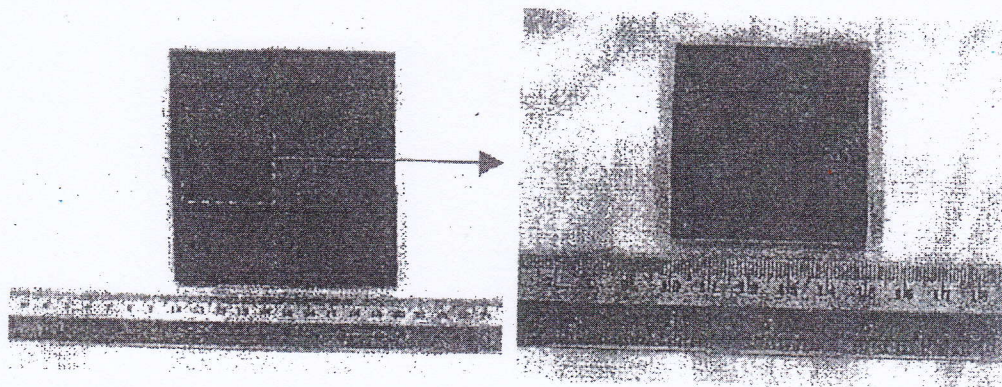


Figure 7 : Sample and specimen.

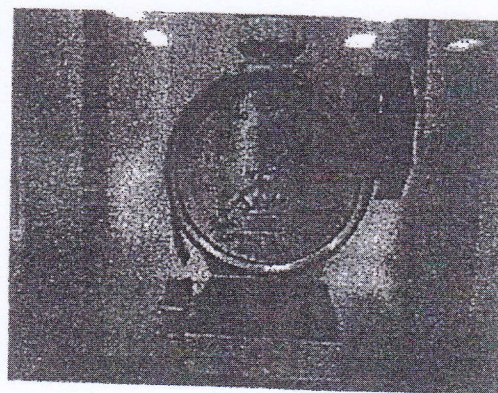


Figure 8 : Test configuration.

Results :

Sample	Positions					Average	SD
	1	2	3	4	5		
PVC Waterstop	85	85	86	86	85	85.4	0.5

Instruments used : - Balance (Precisa XT 220A, S/N 0006-45)
 - Vernier Caliper (Mitutoyo, S/N 05 37 7357)
Test method : Water absorption
Test conditions : Specimen was weighed and recorded. It was then submerged in clean water for 24 hours. When the time was reached, the specimen was removed from water, wiped with tissue paper. The weight was recorded again. Water absorption was calculated from the equation as following :

$$\text{Water absorption (\% (ASTM D570))} = \left(\frac{\text{Wet weight} - \text{Dry weight}}{\text{Dry weight}} \times 100 \right)$$

Specimen preparation : Supplied by client.
 Sample was cut into rectangular shaped specimen (~ 25x75x5.6 mm³).

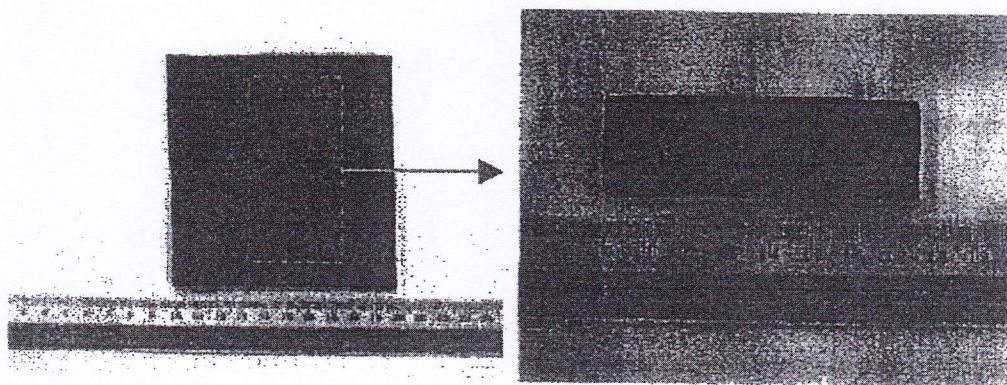


Figure 9 : Sample.

Results :

Sample	Specimen Number	Water Absorption at 24 Hours Immersion (%)
PVC Waterstop	1	0.026
	2	0.028
	3	0.027
	4	0.026
	5	0.025
Average		0.026
SD.		0.001

Instruments used : - Balance with density kit
(Mettler Toledo AG204, S/N M1-1 0509-38)
- Vernier Caliper (Mitutoyo, S/N 05 37 7357)

Test method : Specific Gravity

Test conditions : Specimen was weighed in air and recorded. It was then submerged in water and the weight was recorded again. Specific gravity was calculated from the equation as following

$$\text{Specific Gravity (ASTMD792)} = \left(\frac{\text{Weight in air}}{\text{Weight in air} - \text{Weight in water}} \right)$$

Specimen preparation : Supplied by client.
Sample was cut into rectangular shaped specimens (~11x11x5.6 mm³).

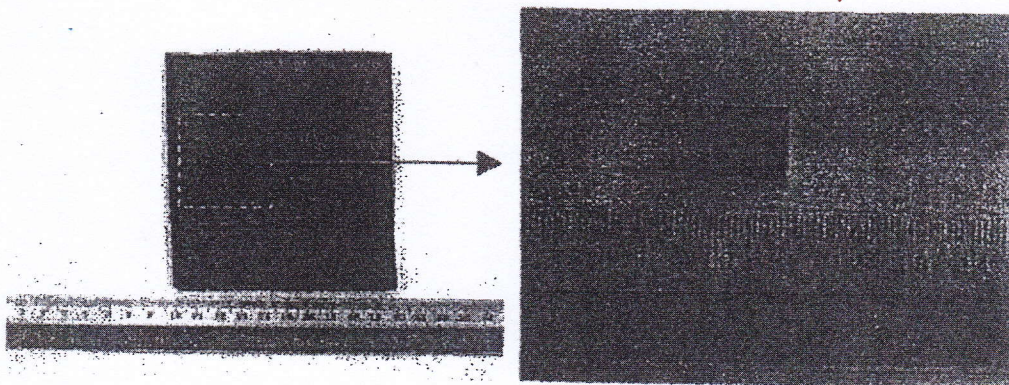


Figure 10 : Sample and specimen.

Results :

Sample	Specimen Number	Specific Gravity
PVC Waterstop	1	1.34
	2	1.34
	3	1.34
	4	1.34
	5	1.34
Average		1.34
SD.		0.00

Interpretation/Opinions :
None

Attached pages :

Attached page 1 : Stress-strain curves of tensile tested sample (Bond PVC Waterstop).
Attached page 2 : Load-displacement curves of tear tested sample (Bond PVC Waterstop).

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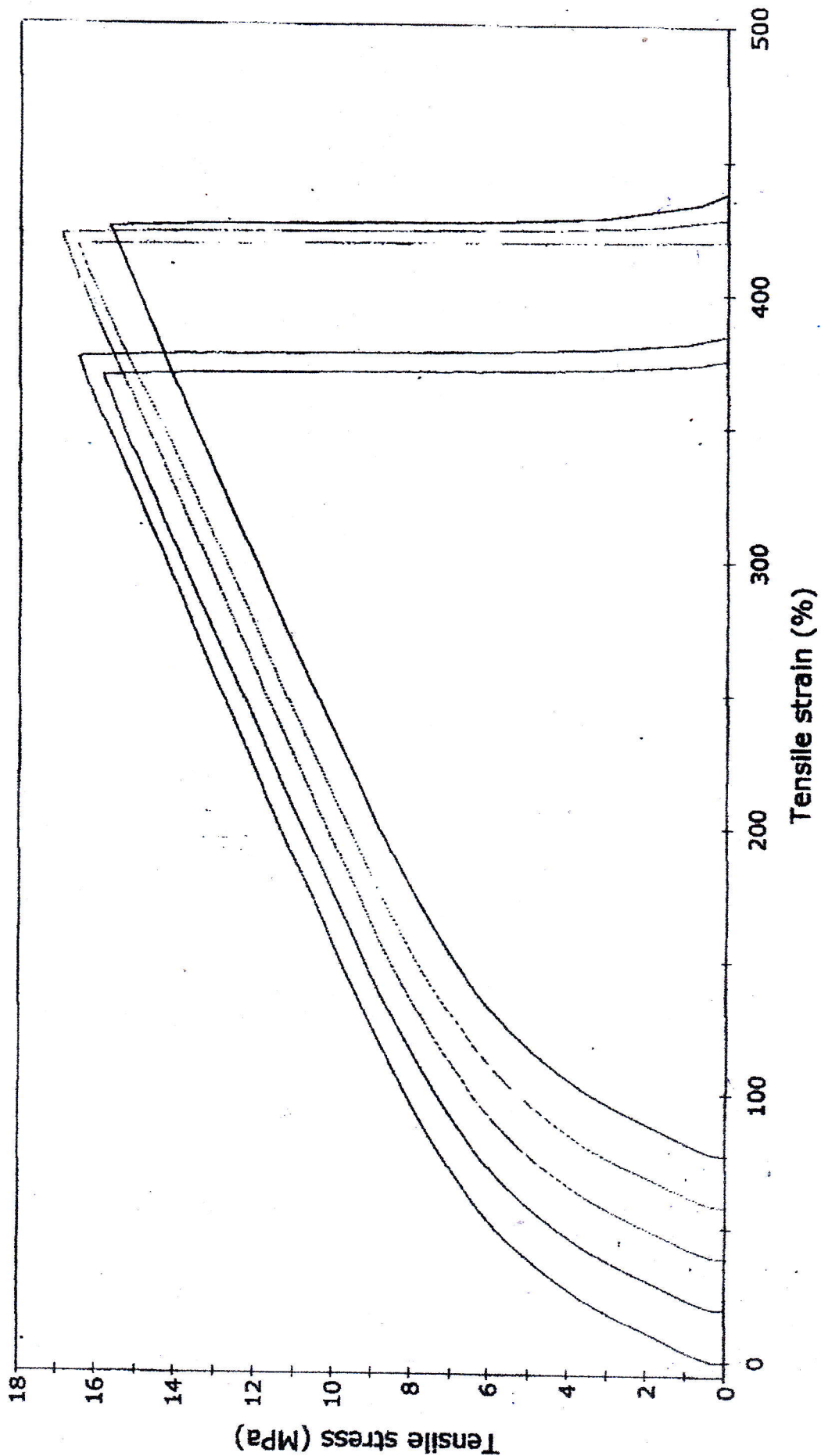
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