



DESLAURIERS

Concrete Forming and Testing Accessories

Re: compression pads

To clarify “what constitutes an usable pad”.

First refer to ASTM C1231:

Item 7.2 states: “Examine the pads for excessive wear or damage (**Note 6**). Replace pads which have cracks or splits exceeding 3/8 in. [10 mm] in length regardless of depth. Insert the pads in the retainers before they are placed on the cylinder (Note 3).”

NOTE 6 states: “Pad life depends on the hardness and type of pad material, the strength of the concrete, the difference between the outside diameter of the cylinder and the inside diameter of the retaining ring, the unevenness and roughness of the ends of the cylinder, and other factors. Based on available information, scuffing or abrasion of the perimeter of the pad is normal, provided it does not reduce the thickness of the pad around the perimeter. Cracks or splits in the pad are reported to materially reduce cylinder strength. Replace pads which have cracks exceeding 3/8in. [10 mm] in length, regardless of depth (see 7.2).”

Question: What if the pad face has a small split about 1/4 “ long, can it be used?

If the face of the pad has a crack or split greater than 3/8” (10 mm) , ASTM 7.2 mandates the pad must be replaced. Cracks or splits of less than 3/8” (10 mm) are permissible at the discretion of the user.

Question: What if the pad has scuffing or abrasion around the perimeter? Can the pads be used?

This is the most subjective issue. According to Note 6, if the material thickness has not been reduced, then the pad is usable.

Members of ASTM Committee C1231 performed comparison tests on pads in various stages of wear. Refer to the test results and pictorial shown below. The pads were graded from 1 to 5 with 1 being practically new and 5 being hopelessly used up. Subsequent tests suggested no correlation between pad wear and pad performance. However, the consensus would be to remove from service any pads that resembled the 4.5 condition or worse.

Question: “Why am I getting fewer breaks on a set of pads”

The neoprene pads are molded from a consistent material utilizing a consistent process-which is one of the only constants when testing concrete cylinders. Differences in pad usage are almost always due to changes in the actual testing procedure. You need to review your procedures in an effort to determine what has changed.

What is the actual cylinder strength being tested? *Design strengths compared to actual strengths are considerably different. When testing 5,000 psi design mixes, actual strengths will be 7,000 psi or higher at 28 days age. Higher strength cylinders reduce pad life – see note 6.*

Who is making the specimens? *Often, different technicians make better or worse specimens which affect pad life. Take a look at the top (or finished) end of the test samples and inspect for an undue amount of roughness.*

How old are the pads? *Neoprene has a shelf life and is affected by UV, humidity, etc. We recommend pads be used within 6 months from date of purchase, and care should be taken to store them in a dark, dry environment.*



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ASTM C099.61 TG on C1231

11/30/05

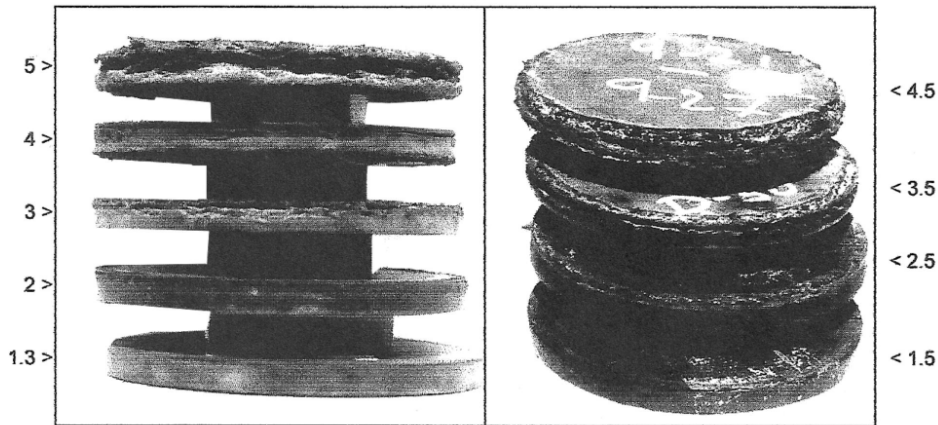
Table 3. Effect of Pad Wear on Compressive Strength -Series D325.

Shore	Pad Wear Rating	Average Strength		Standard Deviation		Within- condition CV, %	Strength, % new pads
		psi	M Pa	psi	M Pa		
5500 psi [38 MPa] Concrete.							
50	New =1.0	5645	38.9	73	0.51	1.3%	100.0%
	2.0	5634	38.8	86	0.59	1.5%	99.8%
	2.8	5563	38.4	115	0.80	2.1%	98.5%
	3.9	5646	38.9	57	0.39	1.0%	100.0%
70	New =1.0	5614	38.7	89	0.62	1.6%	100.0%
	1.8	5562	38.4	118	0.82	2.1%	99.1%
	2.6	5508	38.0	168	1.16	3.1%	98.1%
	3.9	5561	38.3	62	0.43	1.1%	99.0%
All tests	40 tests	5592	38.6	104	0.72	1.86%	
8000 psi [55 MPa] Concrete.							
50	New =1.0	7939	54.7	100	0.69	1.3%	100.0%
	2.8	7923	54.6	223	1.54	2.8%	99.8%
	3.9	7841	54.1	101	0.70	1.3%	98.8%
	4.6	8074	55.7	114	0.79	1.4%	101.7%
70	New =1.0	7930	54.7	70	0.48	0.9%	100.0%
	1.8	7983	55.0	149	1.03	1.9%	100.7%
	2.6	7958	54.9	183	1.26	2.3%	100.4%
	3.9	7875	54.3	65	0.45	0.8%	99.3%
All Tests	40 tests	7941	54.8	140	0.97	1.76%	

Note 1. Compressive strength of 6x12 in. cylinders are averages of tests of 5 cylinders.

C V is coefficient of variation or 1s,%

Figure 1. Wear Rating of Pads - Series D 325





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Other questions and suggestions

If testing 6,500 psi design strength specimens, and the actual strength is 7,500 psi; do we have to perform qualification tests?

Yes, it is your responsibility to anticipate actual test strengths above 7,000 psi, and perform the required pad system qualification tests. This requirement may be relaxed in the near future, eliminating the requirement for qualification tests for strengths between 7,000 – 12,000 psi, but continuing to limit the number of pad uses to 50. This change is not yet in effect.

Does adding talcum Powder or corn starch help extend pad life?

When applied to the pads, these materials provide some lubrication between the pad and the concrete specimen /retaining cup. We have no test data to prove their value, but it can't hurt.

How often should the pads be turned in the retaining cup?

To help extend pad life, it may be useful to rotate or "flip" the pads in the retaining rings after a predetermined number of uses so that the pad bearing surfaces wear evenly.

ASTM C1231 table 1 show 100 reuses, but we are only getting 80?

*Table 1 states the maximum reuses for a pad without performing qualification tests is 100 for strengths to 7,000 psi, **IT DOES NOT STATE YOU WILL GET 100 REUSES**, per note 6. pad life is subject to a number of variables- all of which are beyond the control of the manufacturer.*

As a manufacturer (or supplier) of neoprene pads, we are required to control the following variables only (see C1231 section 5):

- Shore A Durometer (hardness) ± 5 .
- Thickness and diameter dimensions (tightly controlled with molded pads).
- ASTM D2000 line call-outs (composition) for each hardness (50, 60 or 70 durometer).

We are required to mark each pad with the following (all of which is now molded into our 4MP and 6MP pads):

- Manufacturer's or suppliers name.
- The Shore A Durometer hardness of the pad. The cylinder strength range for which the pad is intended.

All other variables are the responsibility of the user.

We hope this provides some clarification on pad usage.