

Press-O-Film HT “Frequently Asked Questions”

Why has Testex changed the formula for Press-O-Film?

“Old formulation” Press-O-Film softened at temperatures above 140 °F (60 °C). On the face of it, this would seem a very safe operational upper limit. The highest recorded temperature on Earth is only 136 °F (58 °C) and the Threshold of Pain is less, approximately 120 °F (approx 50 °C).

Nevertheless, though it is difficult to imagine situations in which it’s even possible to use replica tape at temperatures above 140 °F (60 °C), it *is* possible to imagine storing the tape at these temperatures, especially if the product is kept in a closed container (specifically, a car) in direct sunlight on a very hot day. Here, temperatures can get well above outdoor-ambient.

Press-O-Film HT’s new formulation adds 12 °F (6 °C) to the product’s softening point, a margin of safety that can be important to inspectors in extreme - and, especially, in remote - locations.

In Testex’ internal testing even the old formula replica tape showed no hint of collapse after 3 hours’ at 140 °F (60 °C) temperatures, so brief exposure to even very hot environments probably need not be a source of concern, however, for safety, exposure to temperatures above 152 °F (66 °C) should never be permitted. Replica tape should always be stored at or below outdoor-ambient temperatures. Long-term storage should be at room temperature, 77 °F (25 °C), or less.

The tape itself provides a record of its own thermal history. Un-compressed **X-Coarse** grade tape should have a thickness between about 5.0 and about 6.0 mils (about 125 and about 155 µm). Thermal collapse will cause it to be less.

Old and New Replica Film Formulations:

You say the instruction change is related to the new high temperature formulation. Presumably measurements obtained from the old and new formulations are different. True?

In fact, tests show very similar replication and measurement results for replica film manufactured using the old and new chemistry. However theory associated with the change in chemistry *does* suggest some difference in response is possible even though we have not seen it in our tests. This is why we are recommending the instruction change now.

Old and New Instructions:

Does tape measured according to the new instructions give different results from tape used with the old instructions?

There will be differences for profiles in the 1.5 to 2.5 mil (38 to 64 µm) range. These differences, however, will be modest compared to the uncertainty quoted in the precision and bias section of ASTM standard D4417 describing the use and behavior of replica tape. The new (averaging) instructions, however, will yield profiles that are more consistent and more directly comparable with those obtained using other methods.

Even if modest compared with the formal uncertainty, there **can** be differences between measurements made using old and new instructions. How do I handle this at a job site?

Rather than risk the possibility of inconsistent measurements in the 1.5 to 2.5 mil range (38 to 64 μm) we recommend that jobs currently in progress be completed using the old instructions (i.e., no averaging). (Inspectors will always have the option of continuing to use the old instructions wherever agreements between contracting party and inspector specify doing so or where a need for process consistency requires it, however we do recommend switching to the updated instructions at the start of subsequent new jobs.)

Measurements made using the new POF-HT averaging procedure should be marked “HT”. Measurements made using the old (non-averaging) procedure should be marked “non-HT”.

What do you mean when you say “averaging” procedure?

The new instructions include the following guidance:

“Take an initial profile (roughness) measurement in the usual way with either **Coarse** or **X-Coarse** grade tape. If the result is between 1.5 and 2.5 mils (38 to 64 μm) *inclusive*, take a 2nd measurement with the OTHER grade. If both measurements are in the 1.5 to 2.5 mil (38 to 64 μm) range, **add the two measurements together and divide by two**”.

This is the “average”, and it is the profile value you should record.

If either of the two measurements is outside the 1.5 to 2.5 mil (38 to 64 μm) range, record it as is, i.e., without averaging.

I just received a shipment of the old non-HT Press-O-Film. Can I exchange it for the newer product?

No need. Testex has been gradually introducing the new film - though on the old-style tapes - since at least the beginning of 2010. Replica film mounted on old-style tapes purchased in the last 6 to 8 months is the same product as on the new-style tapes.

Can I average readings made using non-HT “Coarse” with readings made using HT “X-Coarse” (and vice versa)?

Yes. Again, replica film purchased during (at least) the last half year was manufactured using the new process. New and old rolls can be used interchangeably.

Can I use the old (non-HT) product with the new instructions?

Yes. Again, because virtually all replica film already in circulation, even on the old design tape, is actually the new product, new and old rolls can be used interchangeably.

Can I use the new (HT) product with the *old* instructions?

Yes. Although Testex recommends that inspectors adopt the new (averaging) instructions at their earliest convenience, there will be transitional situations under which the need for consistency requires that the old instructions continue to be used until a job is finished. This is a matter for agreement between contractor and inspector.

Will differences between measurements obtained using old vs. new instructions be greater than the formal uncertainty of measurement?

No. Measurements made with old or new instructions will differ by less than the uncertainty established in the precision and bias section of D 4417, ASTM's standard governing replica tape roughness determination.

Testex has always called attention to the fact that "replica tape measurements are most accurate near the middle of each grade's range". The new instructions offer a formalized way to act on that guidance and will provide better accuracy and consistency.

I am surprised that the uncertainty of measurement cited in the ASTM standard is as large as it is.

ASTM has a very careful and rigorous testing and analysis procedure but the calculated uncertainties in the current version of its D4417 standard were derived from tests that erroneously included surfaces outside the specified range of the tape. This is believed to have resulted in unrepresentatively large error bars. New testing in support of a revised Precision and Bias section for ASTM standard D4417 is scheduled for late 2010 or early 2011.

Do the instruction changes affect how I should make measurements using either **Coarse Minus** or **X-Coarse Plus** grades?

No. **Coarse Minus** or **X-Coarse Plus** grades should continue to be used to check measurements made at the upper and lower ends of Press-O-Film's primary range (0.8 to 4.5 mils or 20 to 115 um). At present, replica film for both of these check grades is manufactured using the old chemistry, but we will be switching over to the new formulation for these products as well by the end of 2010.

Do the instruction changes affect how I should make **metalized** measurements?

No. Our metalized film is measured using an entirely different procedure. You should continue to use it as you always have.