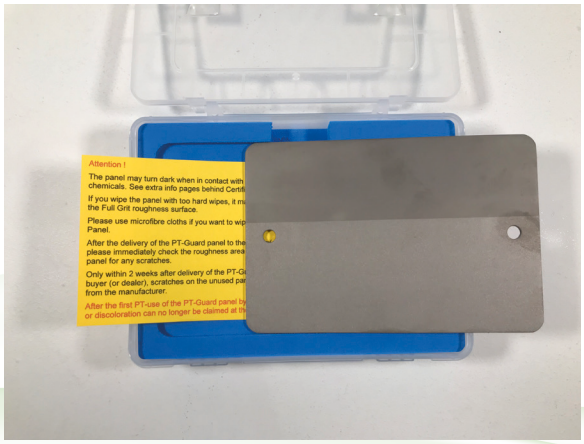
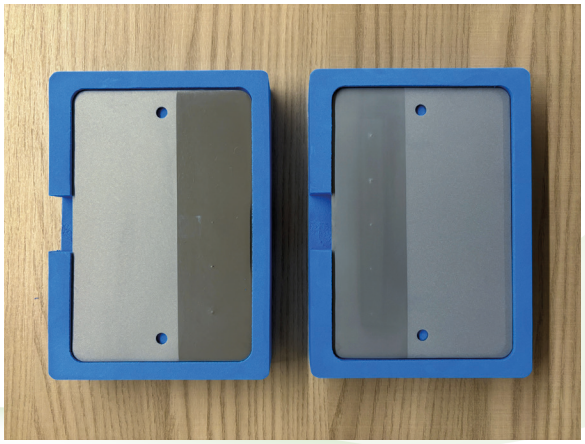
TAM Panel 146040





DESCRIPTION

The stainless steel TAM Panel is made by Hoffmann and consists of a 0.100" (2.5 mm) stainless steel plate. Half of the test surface is coated with a 0.003" thick hard chrome alloy (0,0762 mm). This hard coated half contains five evenly spaced cracks, forming star-like shapes The non-coated side is grit blasted with roughness equal to Ra = 2.0 for testing the penetrants' washability. The tool is used for the process verification of the inspection with both dye and fluorescent penetrants, but it can also be used for the comparison between penetrants of different brands with the same or different sensitivity. Polished or Grit models available.

USER INSTRUCTIONS

Use TAM Panel 146040 at the start of each work shift to monitor the effectiveness of the penetrant and detect any unexpected changes in the performance of materials or hardware. Perform the "system test" before accepting production parts and record the processing variables in a log, such as dwell and pre-wash time, immersion and emulsifier's discharge times, oven temperature and exposure time, wash water temperature and pressure and development time.

Penetration times when using the TAM Panel must be those least favourable to high sensitivity performance, but always within the specified time limits. For example, if the penetration time is between 10 and 30 minutes and the washing time is between 1 and 3 minutes, TAM Panel tests should be performed with the shortest penetration time (10 minutes) and the longest washing time (3 minutes).

It is recommended using a pair of TAM Panels to perform an accurate verification process. Although two TAM Panels have not exactly the same crack pattern, they are still very similar to each other. This slight difference between TAM Panels can be used to establish a base-line for recording crack characteristics for reference purposes. Therefore, designate one of the two panels as the "working TAM Panel" and the other as the "control TAM Panel"; use the former to perform routine tests, while the latter should be used periodically as a control tool for the "working TAM Panel" or to check for any discrepancies and anomalies. In addition, both TAM Panels must be periodically examined against each other in the CGM CIGIEMME S.p.A. laboratory.

Once this is accomplished, proceed as follows:

1. Establish a starting point for new TAM Panels by treating them with new penetrants. Use the same materials and processing parameters employed in the liquid penetrant system that the Panel is intended to monitor. In particular, if a dry powder developer is used, apply the powder in the same way as it is applied in the system (e.g., spray chamber, immersion, electrostatic, etc.). Record the starting point, i.e. the number of cracks detected, their appearance and the background conditions.
2. Next, clean the panel by following the cleaning and storage procedure outlined in the AMS 2647 standard, which, in short, recommends removing the developer with water and a soft bristle brush, drying, then soaking the panel in a volatile solvent, such as isopropyl alcohol, acetone, methyl ethyl ketone, etc. (Velnet/ Solnet is recommended) for at least ten minutes. Finally, dry thoroughly before reuse. Do not store TAM panels in an alkaline solution.

USER RECOMMANDATIONS

1. The TAM Panel must be clean and completely dry before use.
2. Place the TAM Panel near the centre of the basket in a position as vertical as possible; it must not be laid flat. It must always be positioned in the same way each time a test is performed.
3. Use the TAM Panel at the beginning of each shift. Record all variations in a logbook. The Panel can be used alone or with other parts. In this case, ensure that the other parts do not damage it. Furthermore, if the Panel is used with other parts that must be pre-cleaned, do not pre-clean the Panel if there is a risk of thermal shock.
4. Follow standard production procedures. If processing is carried out manually, it is recommended to use the parameters that are most unfavourable to system performance, such as:
   - Minimum allowed dwell time of the penetrant.
   - Maximum allowed washing, immersion in emulsifier and draining times.

- Maximum expected pressure and temperature for washing.
- Maximum expected oven temperature and exposure time.
- Minimum allowed development time.

5. Handle the TAM Panel with care to avoid scratches, thermal shock, or other damage.
6. Clean the TAM Panel immediately after use. Ensure that it is completely clean and dry before each use.

CLEANING AND MAINTENANCE

TAM Panels 146040 are made of chrome-plated stainless steel to ensure long life, and although they are not as easily damageable as NiCr Test Panels or subject to corrosion as Aluminum Sensitivity Test Block, TAM Panels must be handled with care to avoid:

- Scratches on chromed or sandblasted sections.
- Excessive heat, which could damage the chromed plating.
- Excessive rubbing or brushing, which could reduce the sandblasted roughness.
- Excessive exposure to corrosive materials that could damage the chromed plating.
- Contamination and obstruction of cracks. With the usage, the smallest discontinuities tend to become clogged with penetrant residues and the sandblasted area tends to lose its roughness.

Use a separate set of TAM Panels for each system. Do not use different types of penetrants (fluorescent and dye contrast) or penetrants with different sensitivity levels on the same set of panels.

Thorough cleaning and careful use will enable operators to avoid most of the risks associated with use. Cleaning requires particular attention.

Final cleaning is essential to delay or prevent clogging of the small discontinuities in the TAM Panel, which must be cleaned immediately after each use. Do not allow the penetrants to dry or oxidise in the discontinuities.

CLEAN AFTER EACH USE. It is recommended prolonged soaking – at least 4 hours – in a volatile solvent, such as isopropyl alcohol (Velnet/Solnet recommended). Before immersion, it is useful removing developer particles from the panel surface with a mild detergent solution (Detergent H_2O recommended) and a soft bristle brush, followed by rinsing with running water. It is not necessary to dry the panel before immersion in alcohol. (**WARNING**: Isopropyl alcohol, like Velnet/Solnet, is highly flammable. Ultrasonic cleaning with a volatile solvent is the recommended final cleaning method, on condition that the solvent employed meets health and safety requirements. A water-based cleaning solution (it is recommended our Clean 19 Al) can also be used in an ultrasonic cleaner, but this must

be followed by immersion in isopropyl alcohol or a similar solvent (Velnet/Solnet).

Clogged discontinuities. Smaller discontinuities (diameter 0.015-0.031" and depth 0.003") tend to become clogged with residues, such as developer particles and hard water minerals (calcium/magnesium), thus becoming undetectable. This problem can be minimized if the final cleaning includes the removal of developer particles with a mild detergent solution, as recommended above, and the application of deionised or distilled water during Panel use, particularly in the final rinsing stage.
An effective method to clearing discontinuities is to apply a drop of a slightly acidic product, such as a domestic degreaser, directly onto the discontinuity for about three minutes. Then rinse thoroughly with water. Use deionised or distilled water if the next step is drying.

Dry before reuse. The solvent or water present in the TAM Panel cracks interferes with the tests and must be evaporated before reuse. Let it dry completely before performing any tests. To ensure that the TAM panel is completely dry, it is recommended to place it in a temperature-controlled oven; remember to let it to cool before performing the tests.

Thorough periodic cleaning. Even with routine post-wash cleaning, penetrant residues will still accumulate at break points. Therefore, a more thorough cleaning, followed by careful inspection using a developer, should be carried out periodically to ensure proper maintenance.
Leave the TAM Panel to soak in the solvent throughout the night. Once dry, apply a thick layer of non-aqueous developer, such as Rotrivel U. Next, place the Panel in an oven at approximately 70°C for ten minutes. The developer and heat will bring the dissolved penetrant residues to the surface. Let it cool and, without removing the developer, examine the instrument under UV light or white light, depending on the type of penetrant used. If discontinuities are visible, continue to apply the developer, heat and examine the Panel until the discontinuities are no longer visible. For particularly contaminated panels, additional soaking and ultrasonic cleaning may be necessary.

Durability. Several factors affect the life of the TAM Panel. Excessive thermal cracks, scratches, scuffs and improper use reduce its durability. In addition, induced cracks naturally propagate with temperature cycles and use. Deep cracks may resist cleaning. The sandblasted section may gradually become smooth due to the usage and the cleaning process. Once it reaches a critical state, the Panel needs to be replaced.

Recalibration. It is recommended recalibrating the TAM Panel approximately every six months. Experience proved that recalibration requirements vary depending on usage and maintenance. CGM CIGIEMME S.p.A. recommends recalibrating TAM Panels at least once a year.

AVAILABLE MODELS

Part Number	Description	Ref.
HOF-GRIT	Grit surface with certificate, P&W TAM 146040	No.1-fg
HOF-GRIT-PHOTO	Grit surface with certificate and one full size photo, P&W TAM 146040	No.3-fg
HOF-GRIT-PHOTO5	Grit surface with certificate, one full size photo & single photo for each stars, P&W TAM 146040	No.2-fg
HOF-POL	Polished surface with certificate, P&W TAM 146040	No.1-po
HOF-POL-PHOTO	Polished surface with certificate and one full size photo, P&W TAM 146040	No.3-po
HOF-POL-PHOTO5	Polished surface with certificate, one full size photo & single photo for each stars, P&W TAM 146040	No.2-po