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ACETONE FOLD TEST **FOR CURE QUALITY OF PLASTISOL**

THIS TEST IS A QUICK EMPIRICAL TEST USED FOR LOW FILLER LEVEL PLASTISOLS, INCLUDING 10 PHR FILLER. HIGH FILLER LEVELS, SUCH AS ARE USED IN FILTER ADHESIVE SEALANTS (30-35% FILLER) WILL ALWAYS FAIL THE ACETONE FOLD TEST REGARDLESS OF CURE, BUT TOLUENE CAN BE SUBSTITUTED IN TESTING THESE PRODUCTS WITH THE SAME PROCEDURES AND INTERPRETATION.

THIS TEST CANNOT TELL YOU THAT A PLASTISOL PIECE IS FULLY CURED BUT IT TELLS YOU WHETHER OR NOT IT IS SIGNIFICANTLY UNDER CURED. IF IT FAILS THE TEST YOU KNOW IT IS NOT CURED. IF IT PASSES, IT STILL MAY NOT BE CURED FULLY OR CURED TO THE REQUIRED LEVEL. ONLY TENSILE AND TEAR TESTS CAN SHOW THIS.

IN DEALING WITH VARIOUS FORMULATIONS, ESPECIALLY THOSE WITH INTERMEDIATE LEVELS OF FILLER, YOU NEED A LADDER OF CURES TO ESTABLISH THE NEEDED CURE BY PHYSICAL TESTING (T/E, TEAR). THEN YOU RUN THE SOLVENT FOLD TEST ON THOSE PIECES TO RELATE THEIR BEHAVIOR IN THIS TEST TO WHAT YOU ESTABLISHED BY THE PHYSICAL TESTING. I.E., YOU SHOW HOW FAR BELOW FULL CURE THE SOLVENT FOLD TEST GIVES YOU A PASS. ONCE THIS IS DONE THE SOLVENT FOLD TEST CAN BE USED ON A ROUTINE BASIS.

THE TEST:

THE TEST IS BASED ON USE OF A FLAT STRIP (APPROXIMATELY $\frac{1}{8}$ " THICK) THAT IS BENT DOUBLE BETWEEN YOUR FINGERS INTO A TIGHT LOOP (SUCH THAT YOU CAN'T PASS A $\frac{1}{8}$ " ROD THROUGH IT). THE IDEA IS TO STRETCH THE OUTER LAYER OF THE SPECIMEN, PLACE IT UNDER HIGH TENSILE STRAIN. DIFFERENT THICKNESSES CAN AND WILL BE USED, PARTICULARLY IF THEY MUST BE SLICED OFF OF LARGER PARTS. IT IS IMPORTANT TO REMEMBER THAT THINNER ONES WILL NEED A SMALLER DIAMETER LOOP TO PRODUCE THE SAME DEGREE OF STRETCH AND THAT THICKER ONES WILL NOT REQUIRE AS TIGHT A LOOP. NOTE THAT AN OUTER SURFACE OF A PART WILL BE CURED BEFORE ANY INTERNAL PORTION, SO NOTE WHICH SIDE IS ON THE OUTSIDE OF THE LOOP AND TEST BOTH SIDES TO THE OUTSIDE OF THE LOOP.

IF THE TEST SPECIMEN CRACKS OR SPLITS WHEN FOLDED IN THIS MANNER, IT IS GROSSLY UNDER CURED. IF IT SURVIVES THE FOLD, THE NEXT STEP IS TO APPLY A DROP OR TWO OF ACETONE TO THE STRETCHED OUTER SURFACE OF THE LOOP (STILL HELD TIGHTLY IN YOUR FINGERS). THERE IS A GRADATION IN THE RESULTS OBSERVABLE. AS DEGREE OF CURE PROGRESSES FROM POOR TO BETTER, THE SIZE AND SPEED OF INITIATION AS WELL AS PROPAGATION OF A SPLIT WILL DECREASE TO THE POINT WHERE NO SPLIT IS OBSERVED. IF YOU HAVE UNIFORM TEST PIECES AND SOLVENT APPLICATION YOU CAN EVEN COUNT THE SECONDS TAKEN FOR THE SPLIT TO START, OUT TO A MINUTE OR MORE WHEN NEAR THE PASS/FAIL LIMIT.

MORE PROLONGED STRESS TESTING (SPECIMEN HELD IN A CLAMP OR VICE) WITH OR WITHOUT ADDED ACETONE DROPS MIGHT WELL PROVIDE INFORMATION ON EVEN BETTER CURED PARTS, BUT I HAVE NO KNOWLEDGE OF ITS BEING ATTEMPTED. BEAR IN MIND, HOWEVER, THAT WITH ENOUGH ACETONE, EVEN FULLY "CURED" PLASTISOL WILL BE DISSOLVED, BECAUSE THERE ACTUALLY IS NO CURE IN A CHEMICAL SENSE, ONLY AN ATTAINMENT OF TOTAL SOLUTION BETWEEN THE VINYL AND PLASTICIZER.