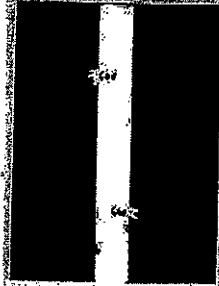
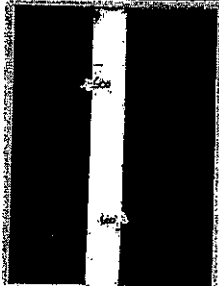
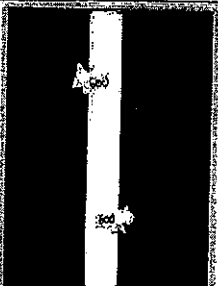
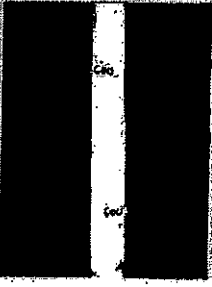
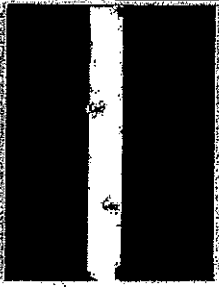
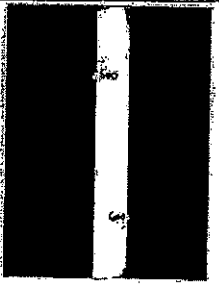
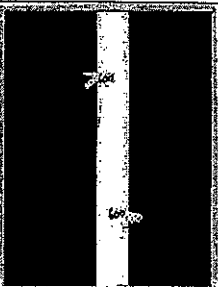
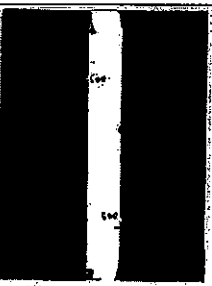
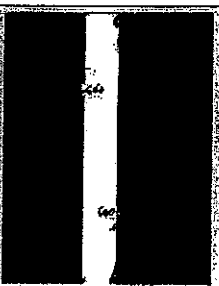
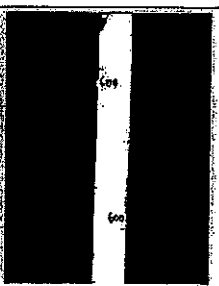
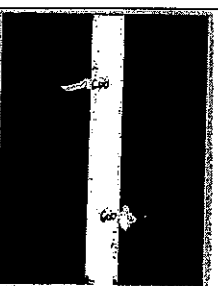
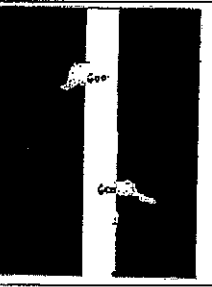
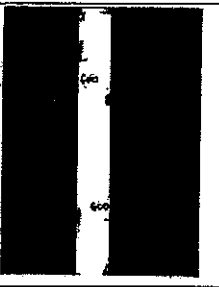
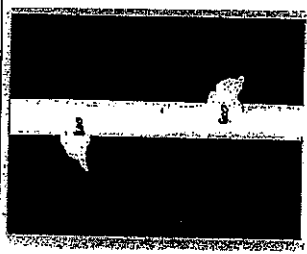
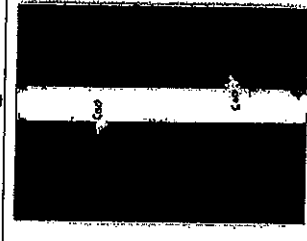
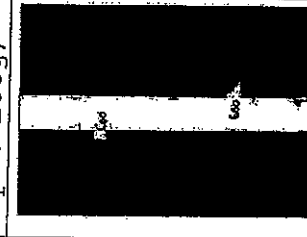
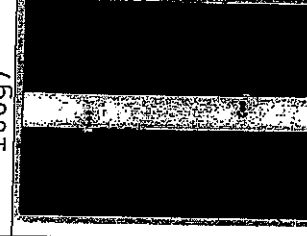
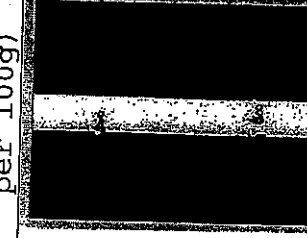
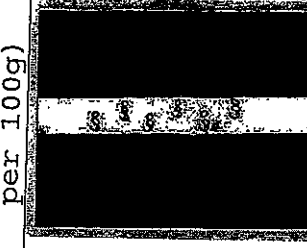


Conc. / Form	TPT	NBT	NPZ	TEAZ
0.5 wt%				
3.0 wt%				
5.0 wt%				
Untreated Ref		Sanded Ref		

Note: relative concentration for a given solvent system

Figure 1

(i) Reactivated with TPT in IPA (60min)

Sanded	Untreated	0.5wt% (1.8mmol per 100g)	1.0wt% (3.5mmol per 100g)	2.0wt% (7mmol per 100g)	3.0wt% (10.5mmol per 100g)	5wt% (17.5mmol per 100g)
						

(ii) Reactivated with NPZ in IPA (60min)

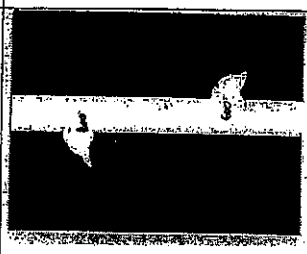
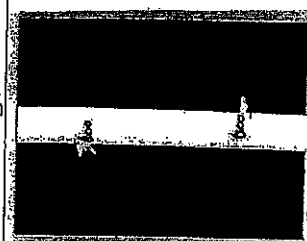
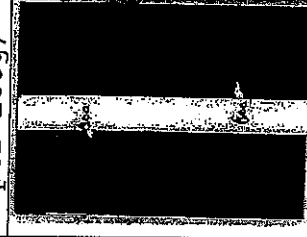
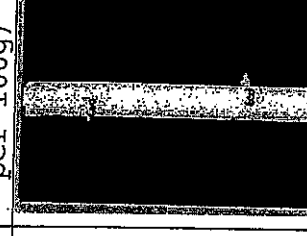
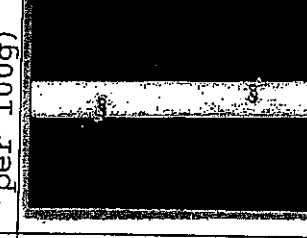
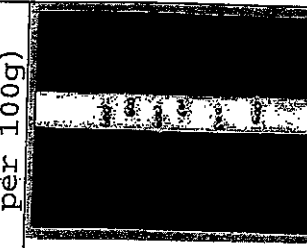
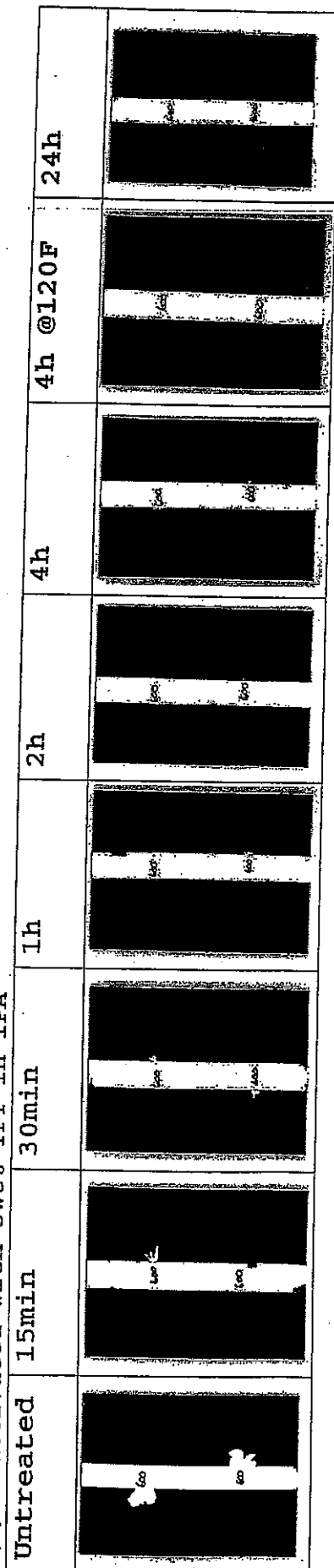
Sanded	Untreated	0.5wt% (1.1mmol per 100g)	1.0wt% (2.2mmol per 100g)	2.0wt% (4.4mmol per 100g)	3.0wt% (6.6mmol per 100g)	5wt% (11.0mmol per 100g)
						

Figure 2

(i) Reactivated with 3wt% TPT in IPA



(i) Reactivated with 3wt% NPZ in IPA

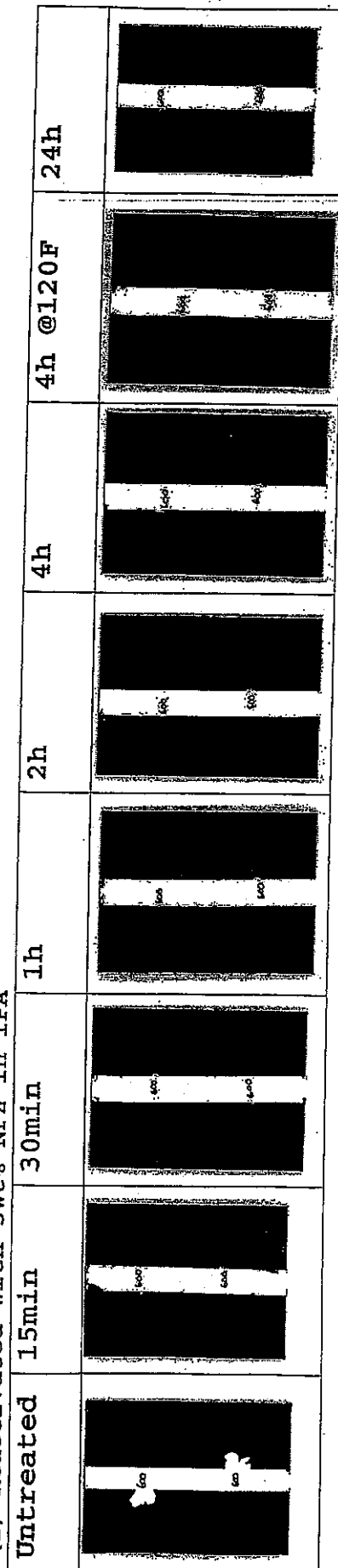


Figure 3

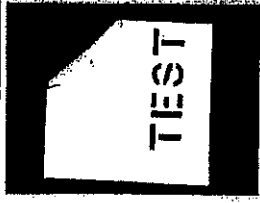
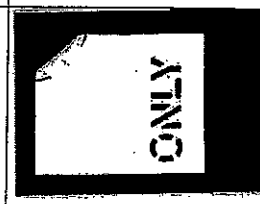
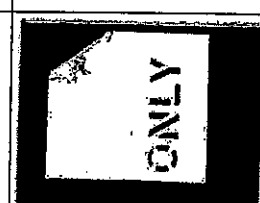
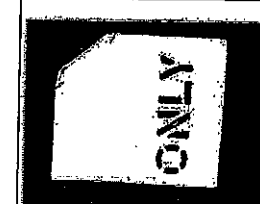
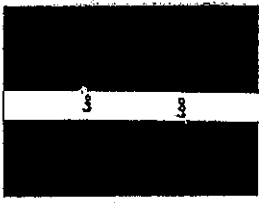
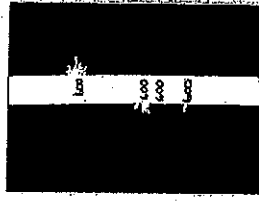
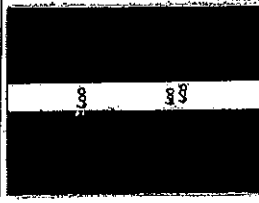
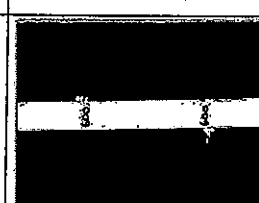
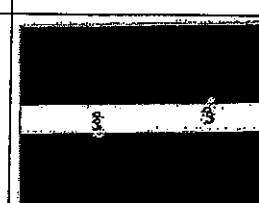
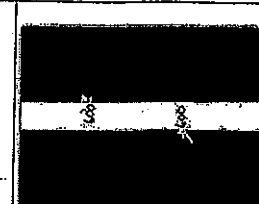
2wt% TPT				2wt% NBT			
Untreated	100% IPA	100% Progylde	40:60 Progylde:IPA	Untreated	100% IPA	100% Progylde	40:60 Progylde:IPA
							
							

Figure 4

TPT in IPA				NPZ in NPA			
Untreated	0.5wt%	3wt%	5wt%	Untreated	0.5wt%	3wt%	5wt%

Figure 5

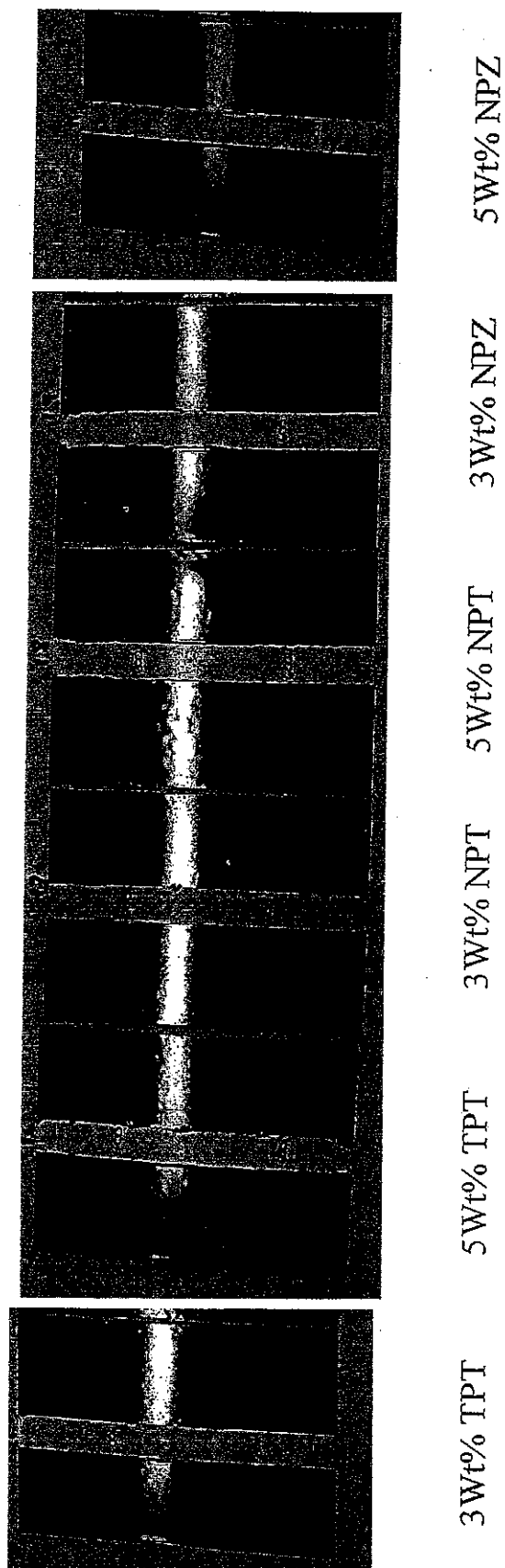


Figure 6

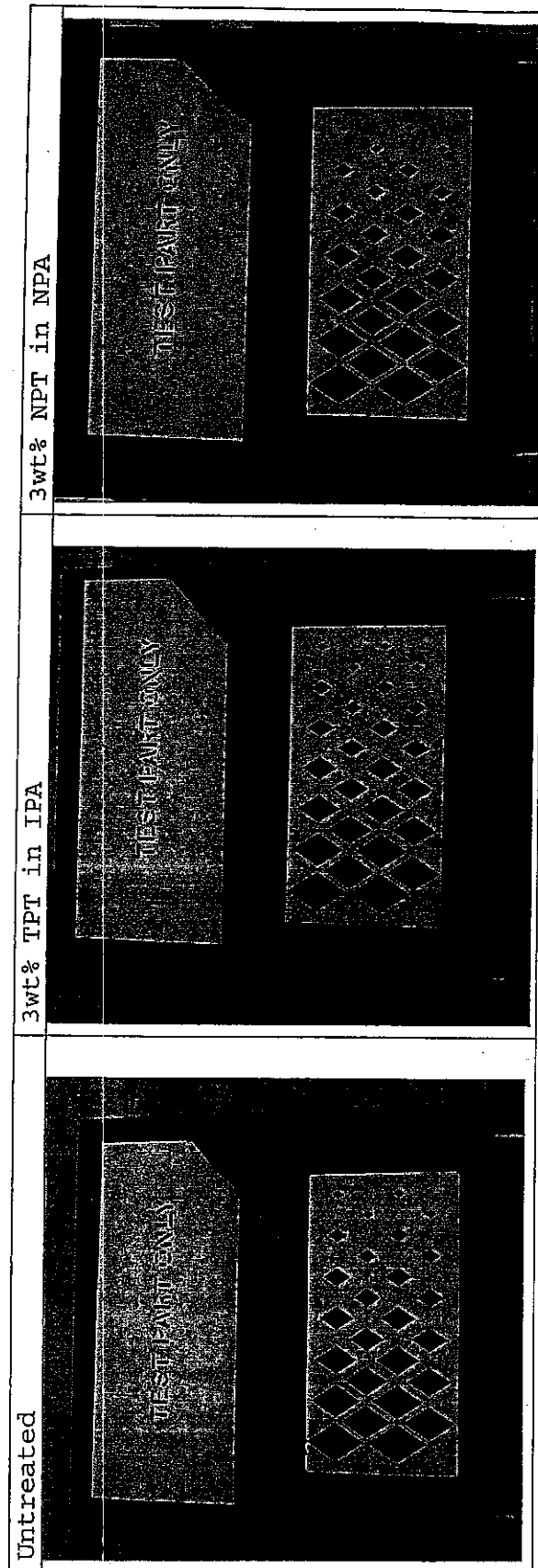


Figure 7a

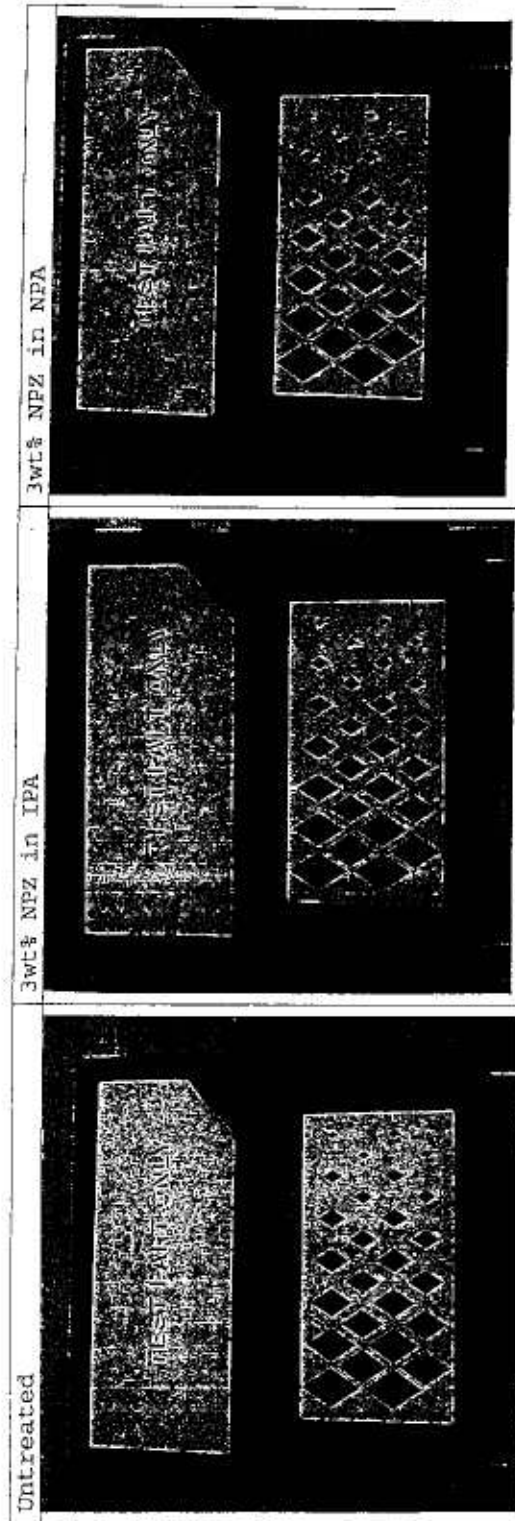


Figure 7a cont.

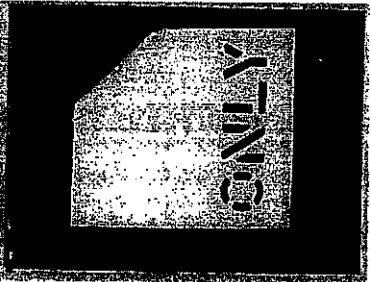
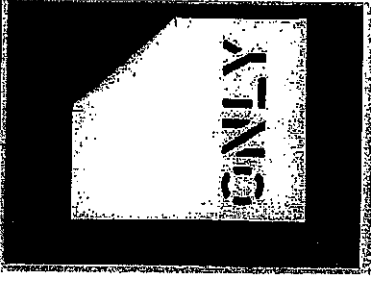
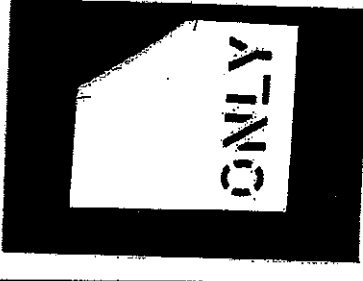
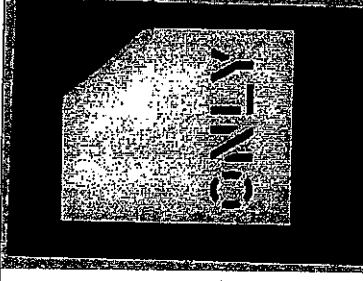
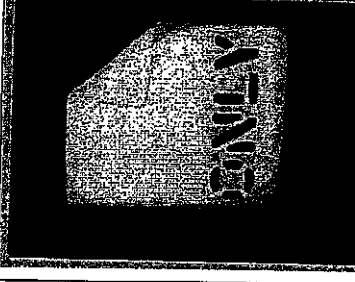
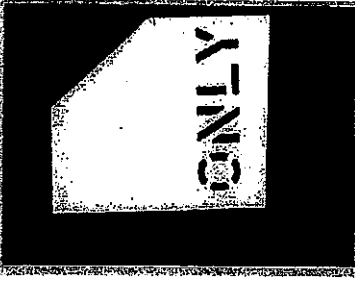
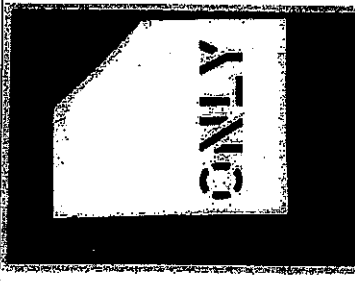
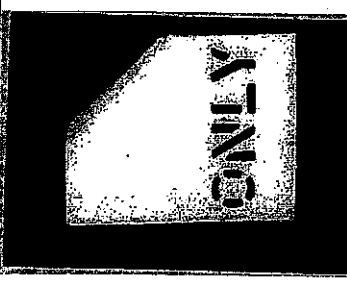
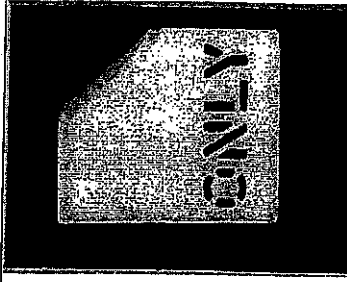
Untreated	Sanded	100% IPA	100% NPA	100% Proglyde
				
	20:80 Proglyde IPA	20:80 Proglyde NPA	40:60 Proglyde IPA	40:60 Proglyde NPA
				

Figure 7b

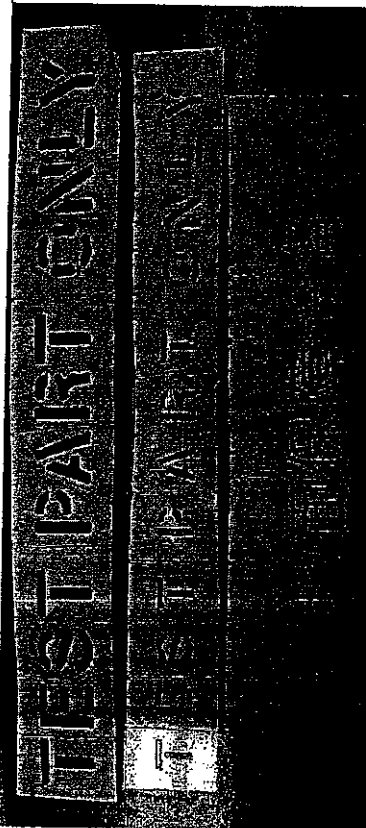
Control - No Reactivation 5 hours ambient cure then peeled all 3 stencils.	
Alkoxide Reactivation Alkoxide applied, Waited 5 min, Applied Stencil Paint, Ambient cured for 5 hours then peeled all 3 stencils.	

Figure 7c

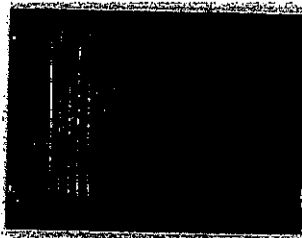
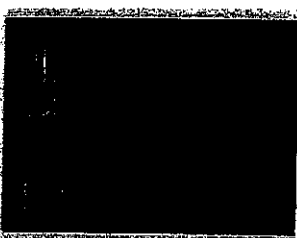
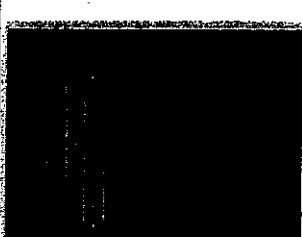
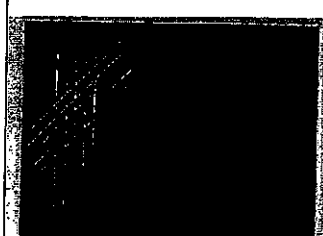
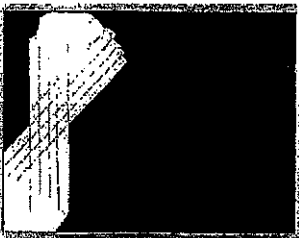
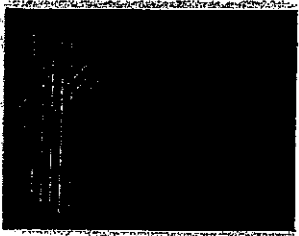
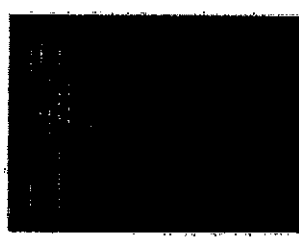
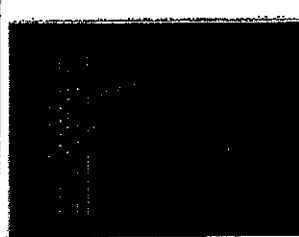
5 min after overcoat heat cure, (Overcoat DHS BAC50103, C2, 1 mil, 1h flash and 3.5h @120F) BSS7225 Class 5						
Untreated	Sanded	3wt% TPT in IPA	3wt% NPT in NPA	3wt% NPZ in NPA	3wt% NPZ in IPA	
						
At 12h+ after overcoat application, (Overcoat DHS BAC50103, C, 2 mil, ambient, 75F, 40%RH) BSS7225 Class 5						
Untreated	Sanded	3wt% TPT in IPA	3wt% NPT in NPA	3wt% NPZ in NPA	3wt% NPZ in IPA	
						

Figure 8

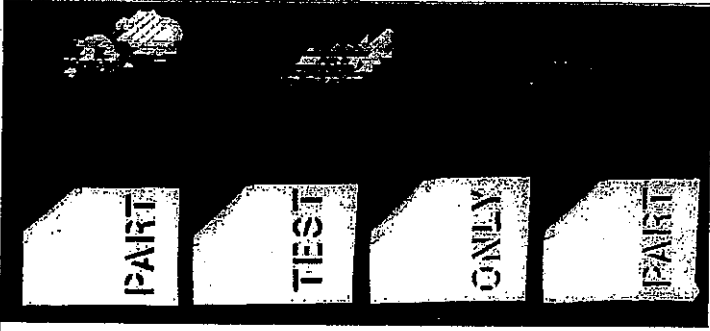
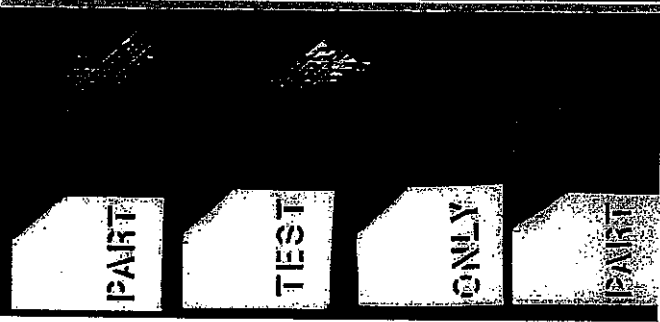
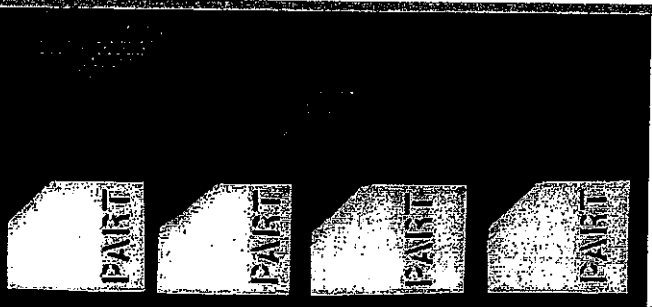
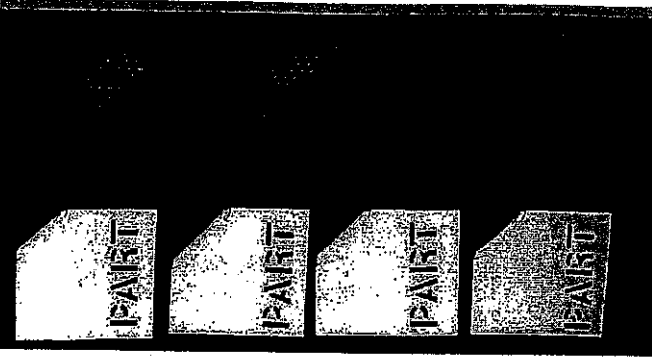
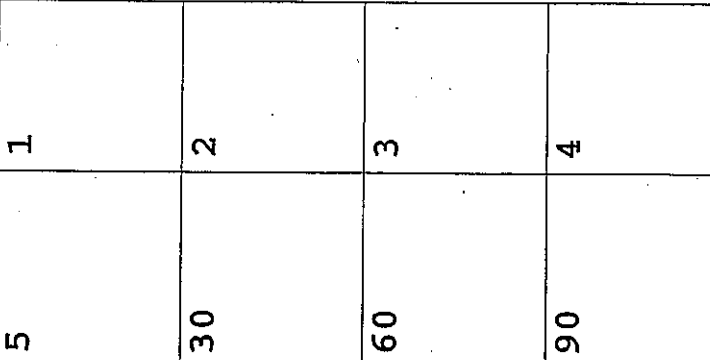
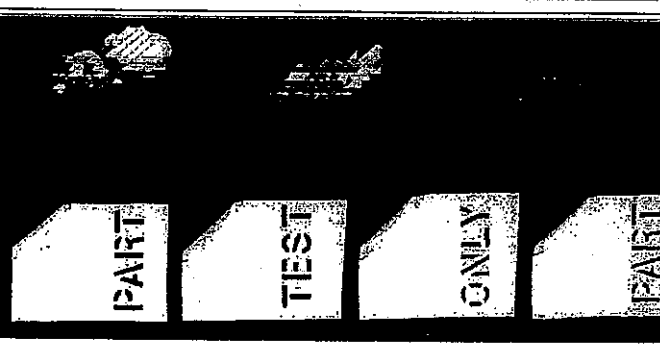
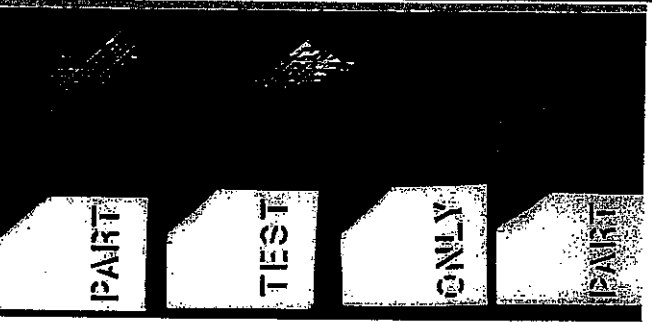
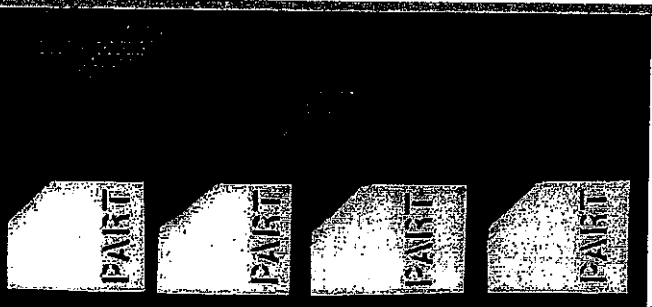
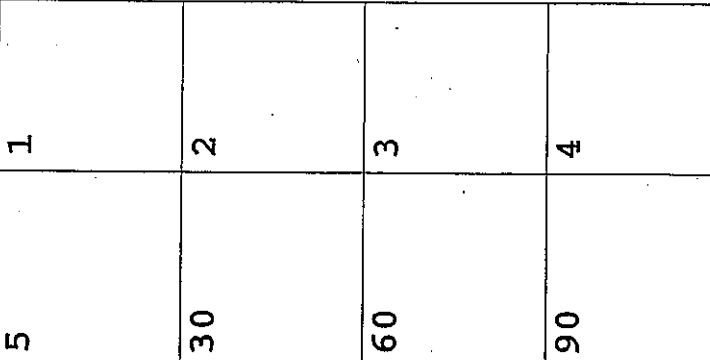
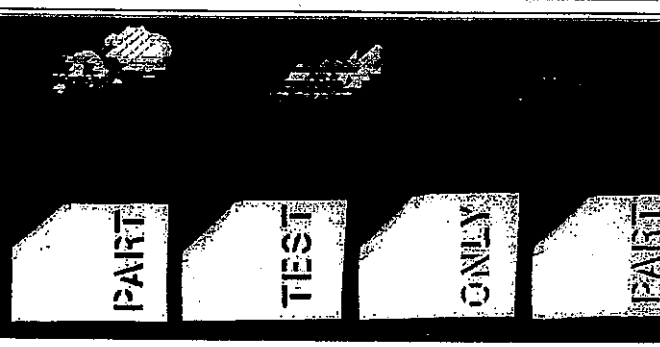
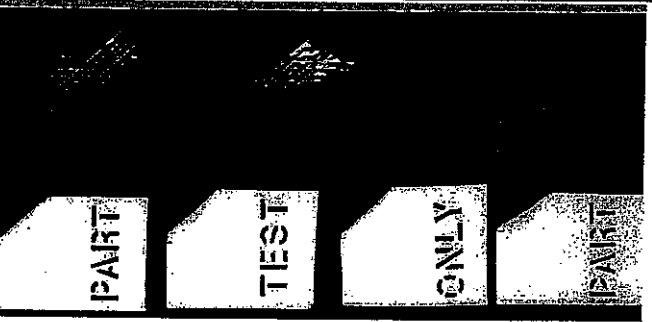
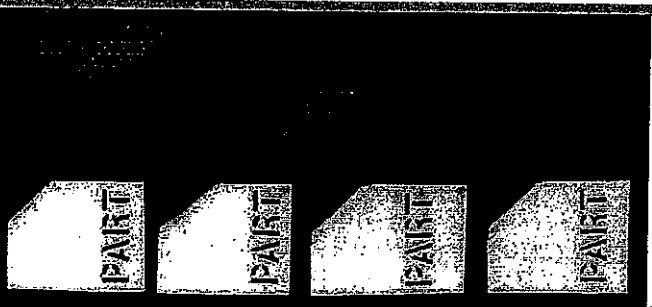
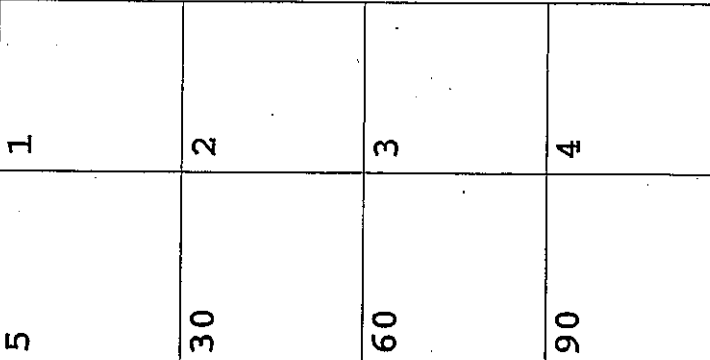
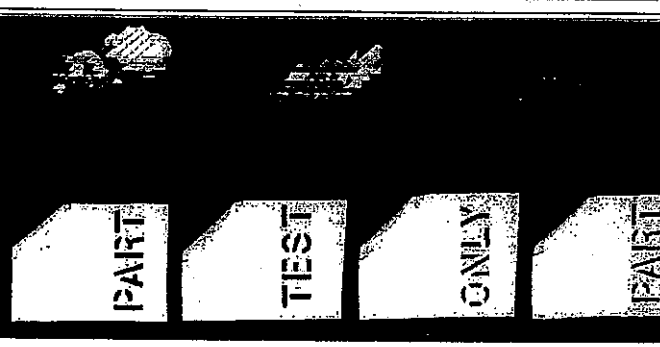
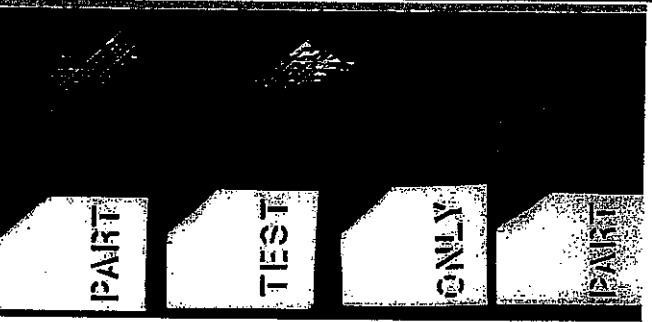
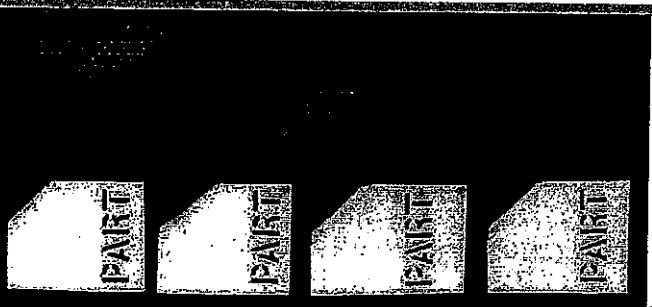
Stencil Pull Time (min)	Scribe Test Time (h)	Untreated	Sanded	3wt% TPT in IPA - 30min dwell	3wt% TPT in IPA - 90min dwell
5	1				
30	2				
60	3				
90	4				

Figure 9

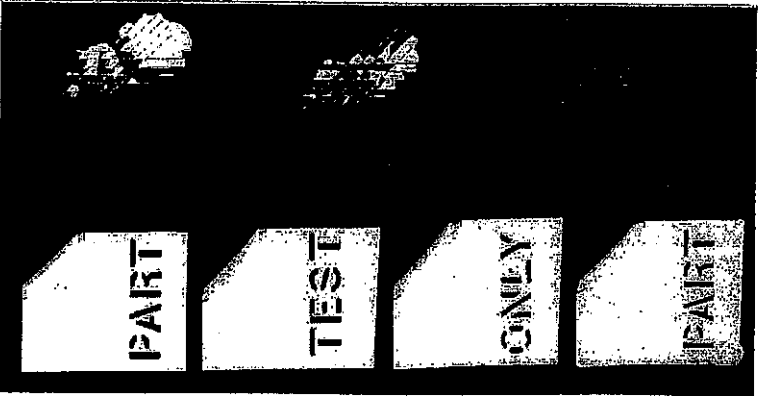
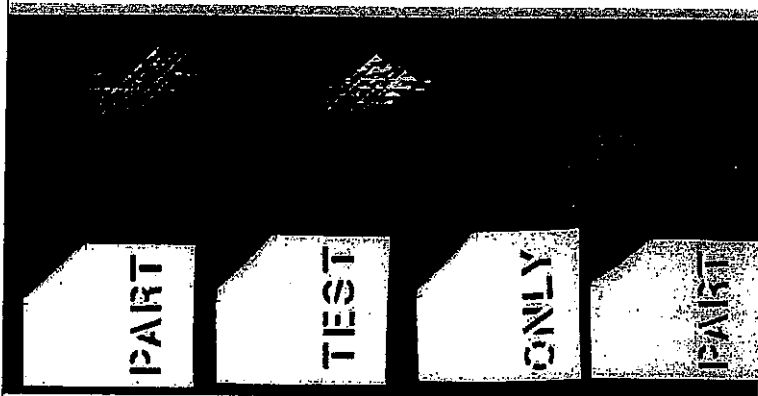
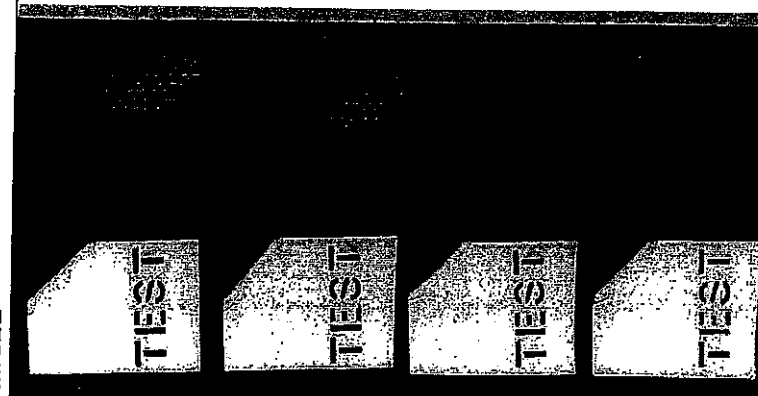
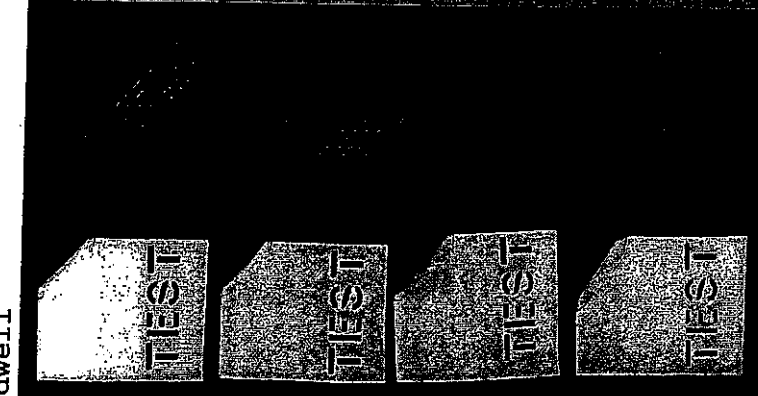
Untreated	Sanded	3wt% NPZ in IPA - 30min dwell	3wt% NPZ in IPA - 90min dwell
			

Figure 9 cont.

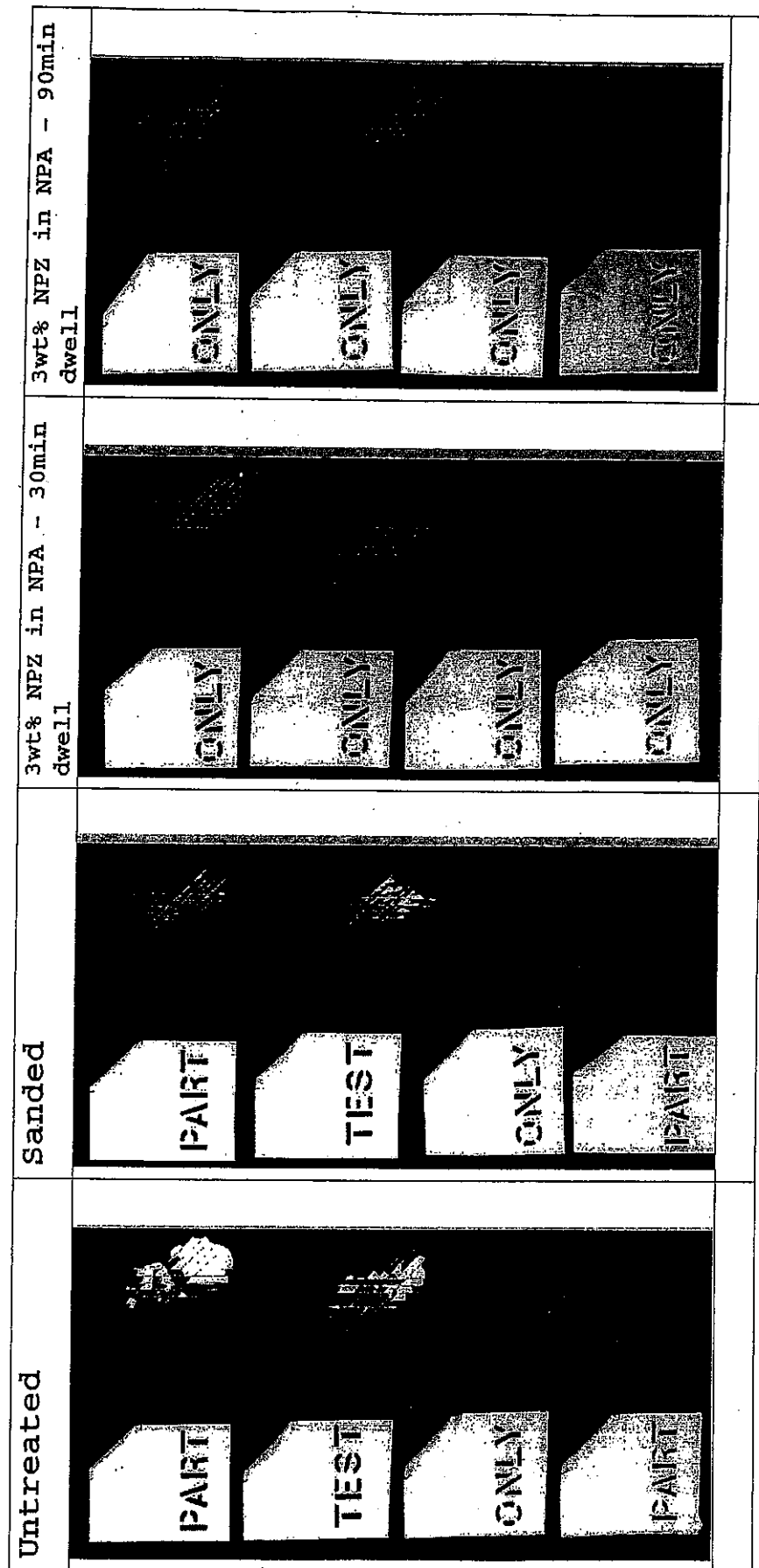


Figure 9 cont.

BAC70846 Base coat: 16h, 120F, 8%RH, C, Adhesion promoter: 4h, Overcoat: BAC50103, 96h 120F, C2									
	Untreated		Sanded		3wt% TPT in IPA		5wt% NPZ in IPA		3wt% TPT in 80:20 IPA: proglyde
BAC70846 Base coat: 72h, 75F, 60%RH, C, Adhesion promoter: 4h dwell, Overcoat: BAC707, 96h 120F, C2									
	Untreated		Sanded		3wt% TPT in IPA		5wt% NPZ in IPA		3wt% TPT in 80:20 IPA: proglyde

Figure 10

BAC70846 Base coat: 16h, 120F, 8%RH, C, Adhesion promoter: 4h, Overcoat: BAC50103, 96h 120F, C2

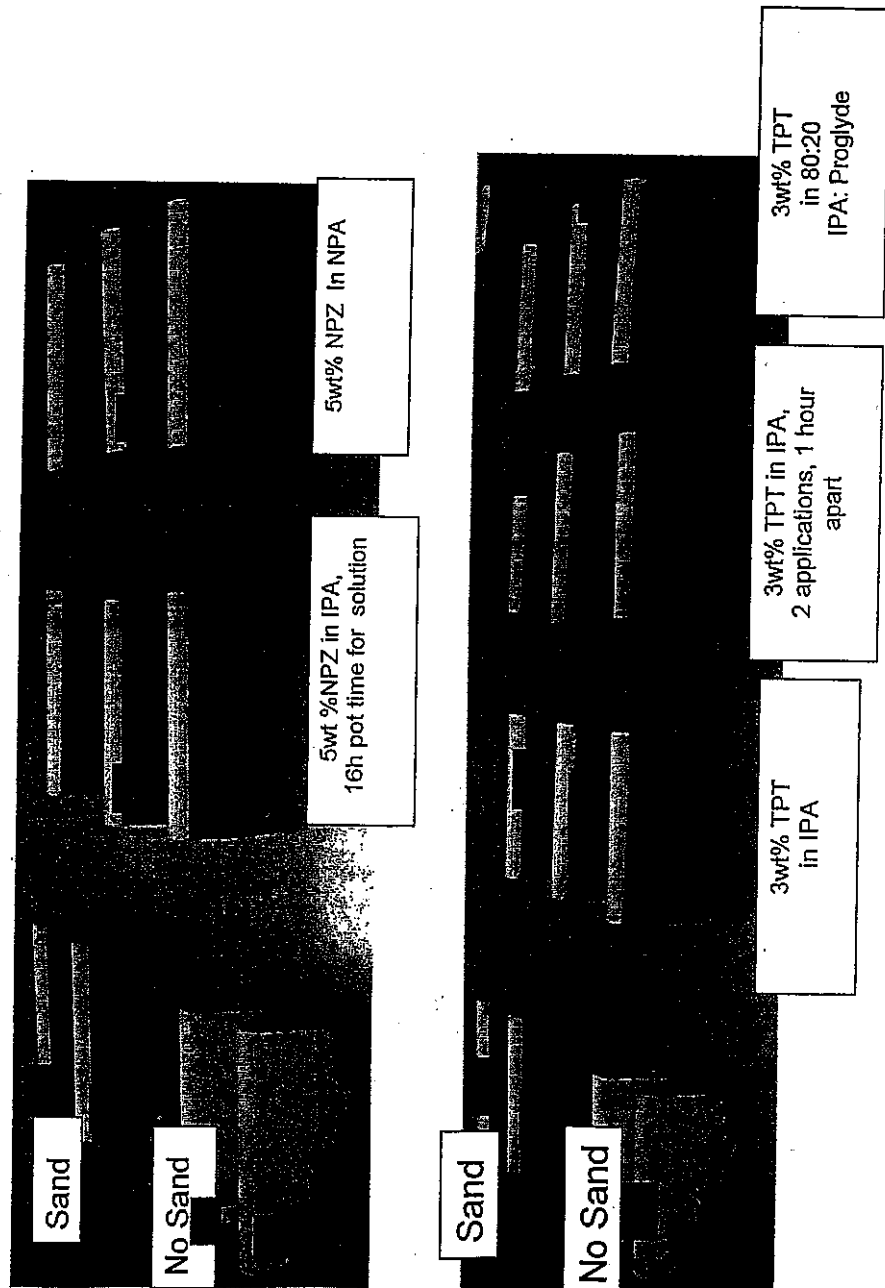


Figure 11

BAC70846 Base coat: 72h, 75F, 60%RH, C, Adhesion promoter: 4h dwell, Over coat: BAC707, 96h 120F, C2

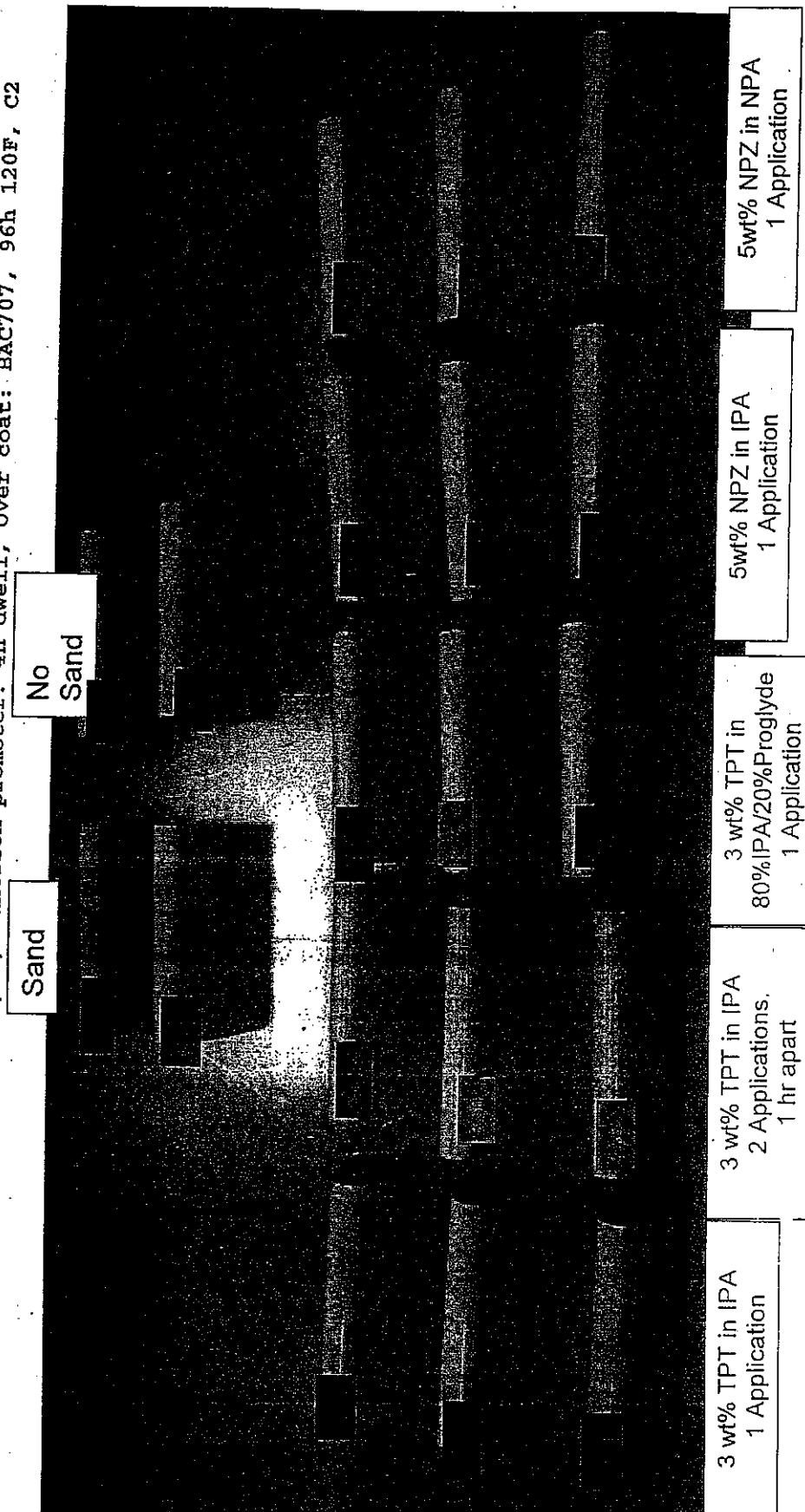


Figure 11 cont.

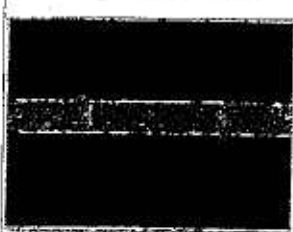
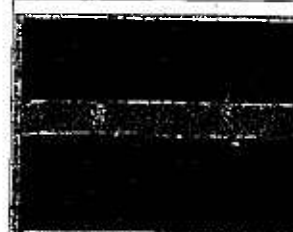
Base coat: BAC50817 yellow (CTR), Cure conditions: 16h, 120F (<8%RH) Over coat: BAC1247 red (CT2), Cure conditions: 96h, 120F (10%RH). Dwell time = -3h									
Untreated									
	Sanded		3wt%TPT / IPA	5wt% NPZ / IPA	5wt% NPZ / NPA	3wt%TPT / IPA x2	3wt%TPT	20:80	proglyde:IPA
Base coat: BAC50817 yellow (CTR), Cure conditions: 72h, 75F (80%RH) Over coat: BAC1247 red (CT2), Cure conditions: 96h, 120F (10%RH). Dwell time = -3h									
Untreated									
	Sanded		3wt%TPT / IPA	5wt% NPZ / IPA	5wt% NPZ / NPA	3wt%TPT / IPA x2	3wt%TPT	20:80	proglyde:IPA

Figure 12

Base coat: Ecl-G-14 BAC70846 (TR-109), Cure conditions: 16h, 120F (<8%RH) Over coat: Ecl-G-2048 BAC50817 (TR-112), Cure conditions: 96h, 120F (10%RH) Dwell time ~3h									
Untreated	Sanded	3wt% TPT / IPA	5wt% NPZ / IPA	5wt% NPZ / NPA	3wt% TPT / IPA x2	3wt% TPT / IPA x2	3wt% TPT / IPA x2	3wt% TPT / IPA x2	3wt% TPT / IPA x2
Base coat: Ecl-G-14 BAC70846 (TR-109), Cure conditions: 72h, 75F (80%RH) Over coat: Ecl-G-2048 BAC50817 (TR-112), Cure conditions: 96h, 120F (10%RH) Dwell time ~3h									
Untreated	Sanded	3wt% TPT / IPA	5wt% NPZ / IPA	5wt% NPZ / NPA	3wt% TPT / IPA x2	3wt% TPT / IPA x2	3wt% TPT / IPA x2	3wt% TPT / IPA x2	3wt% TPT / IPA x2

Figure 13

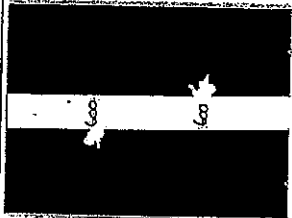
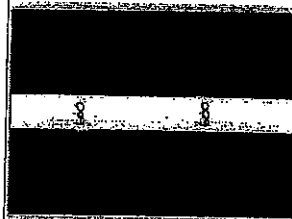
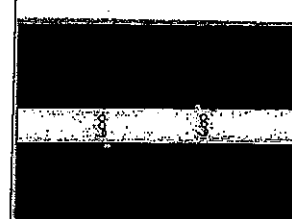
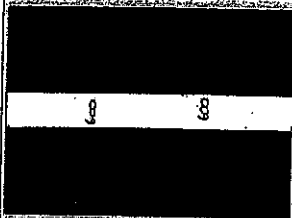
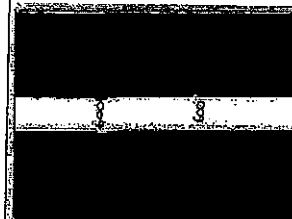
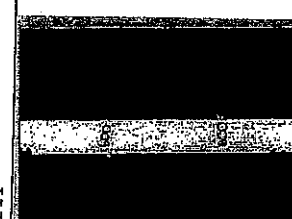
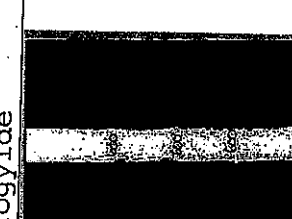
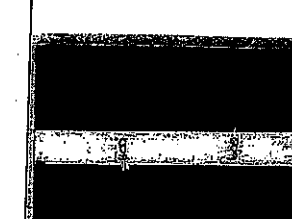
BAC70846 Base coat: 16h, 120F, 8%RH, C, Adhesion promoter 1h dwell, Overcoat BAC50103, 96h 120F, C2					
					
	Untreated	5wt% NPZ in IPA	5wt% NPZ in NPA	5wt% NPZ in Progylde	
					
	Sanded	5wt% NPZ 20:80 progylde:IPA	5wt% NPZ 20:80 progylde:NPA	5wt% NPZ 40:60 progylde:IPA	5wt% NPZ 40:60 progylde:NPA

Figure 14

DHS CA8800

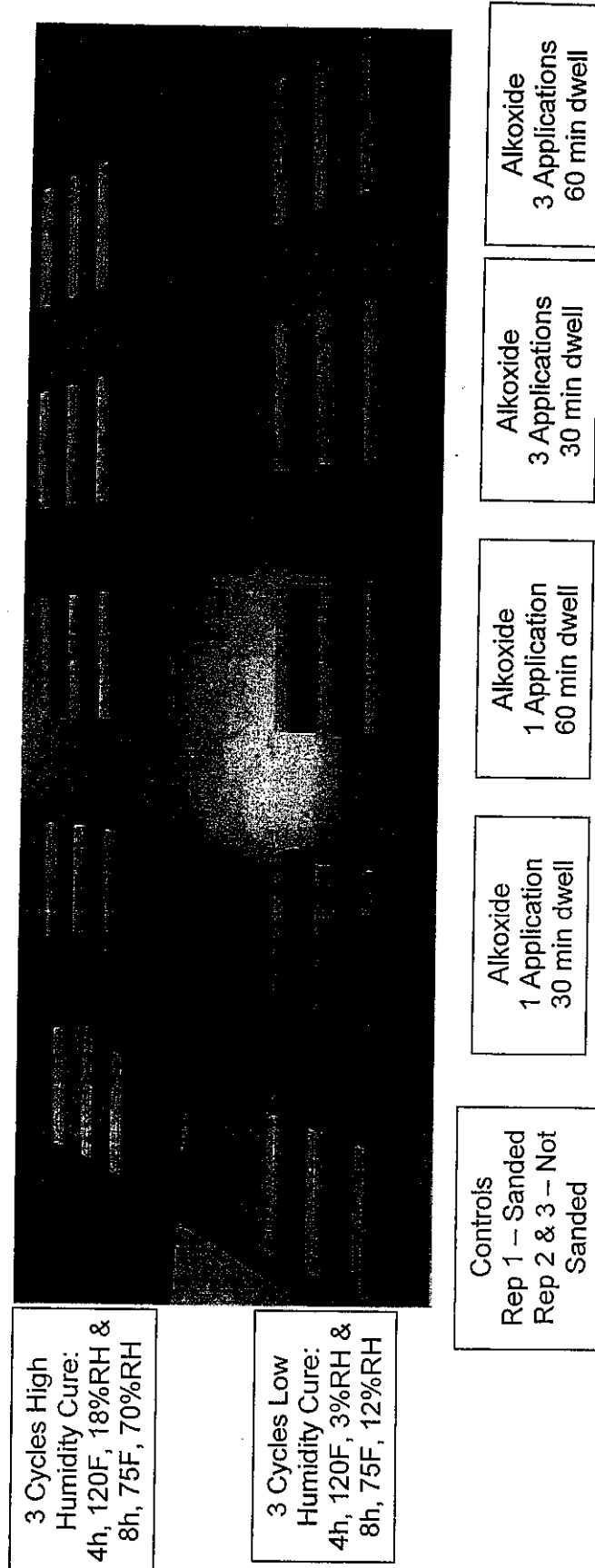


Figure 15

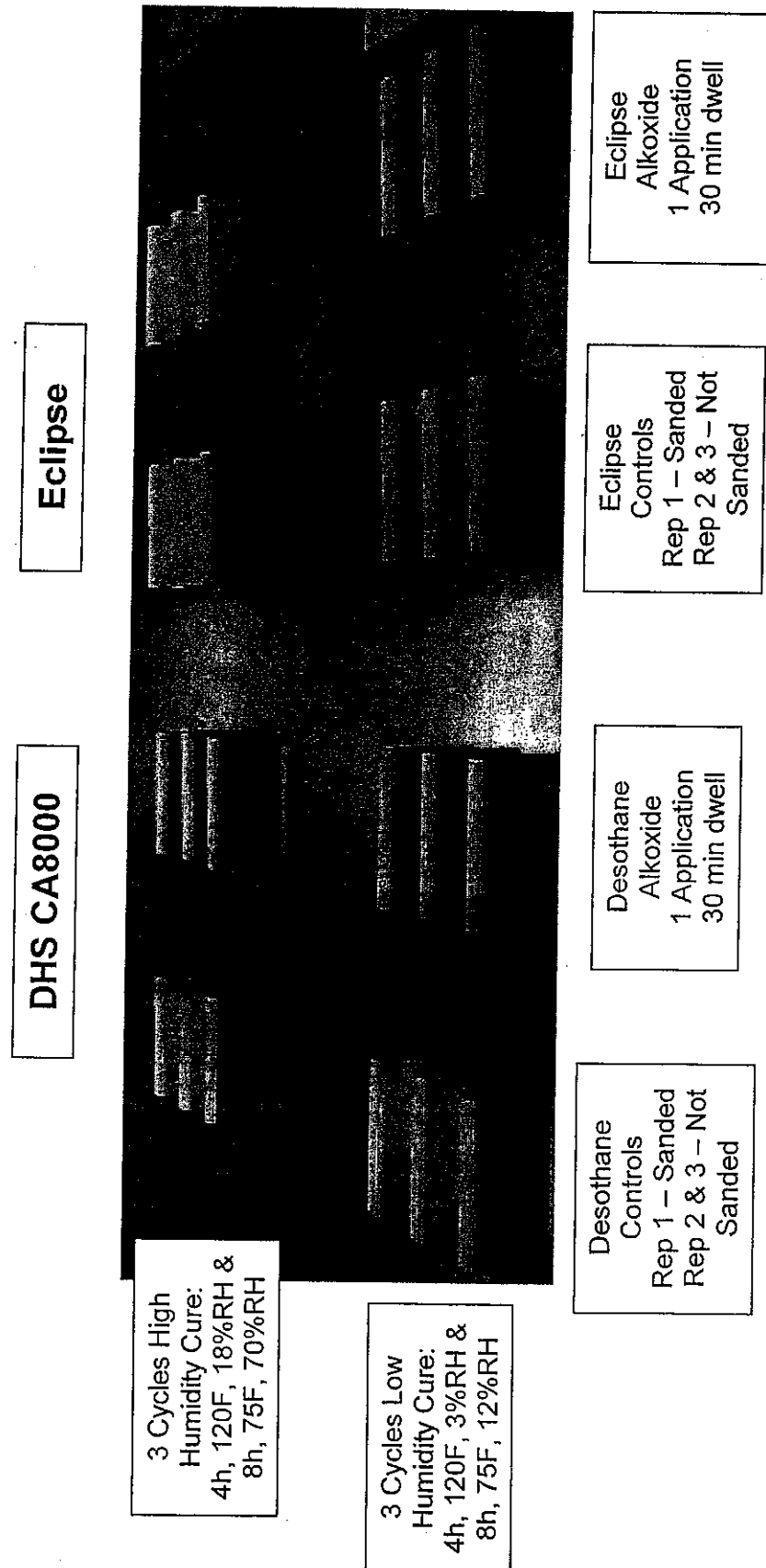


Figure 15 cont.

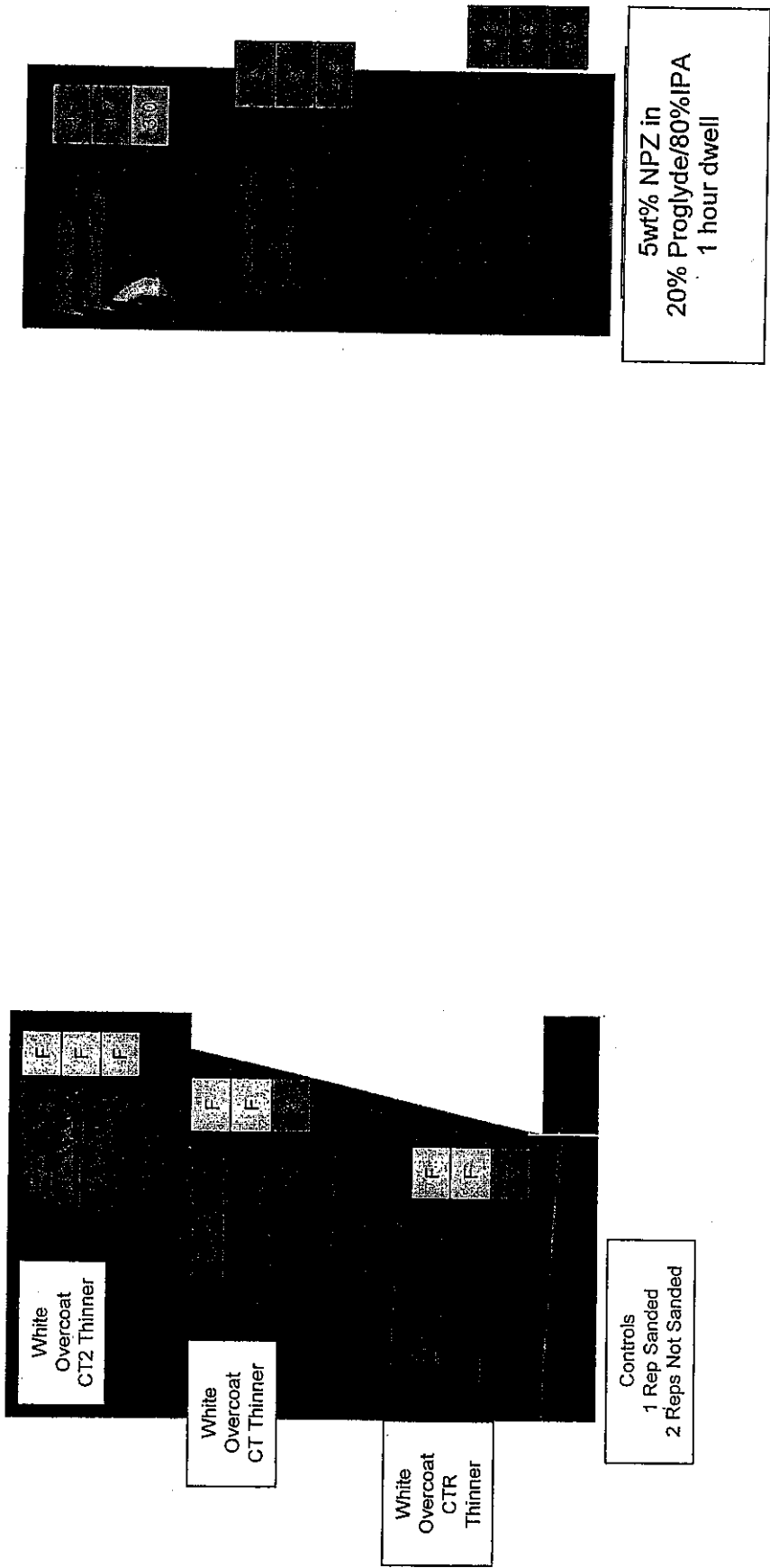


Figure 16a

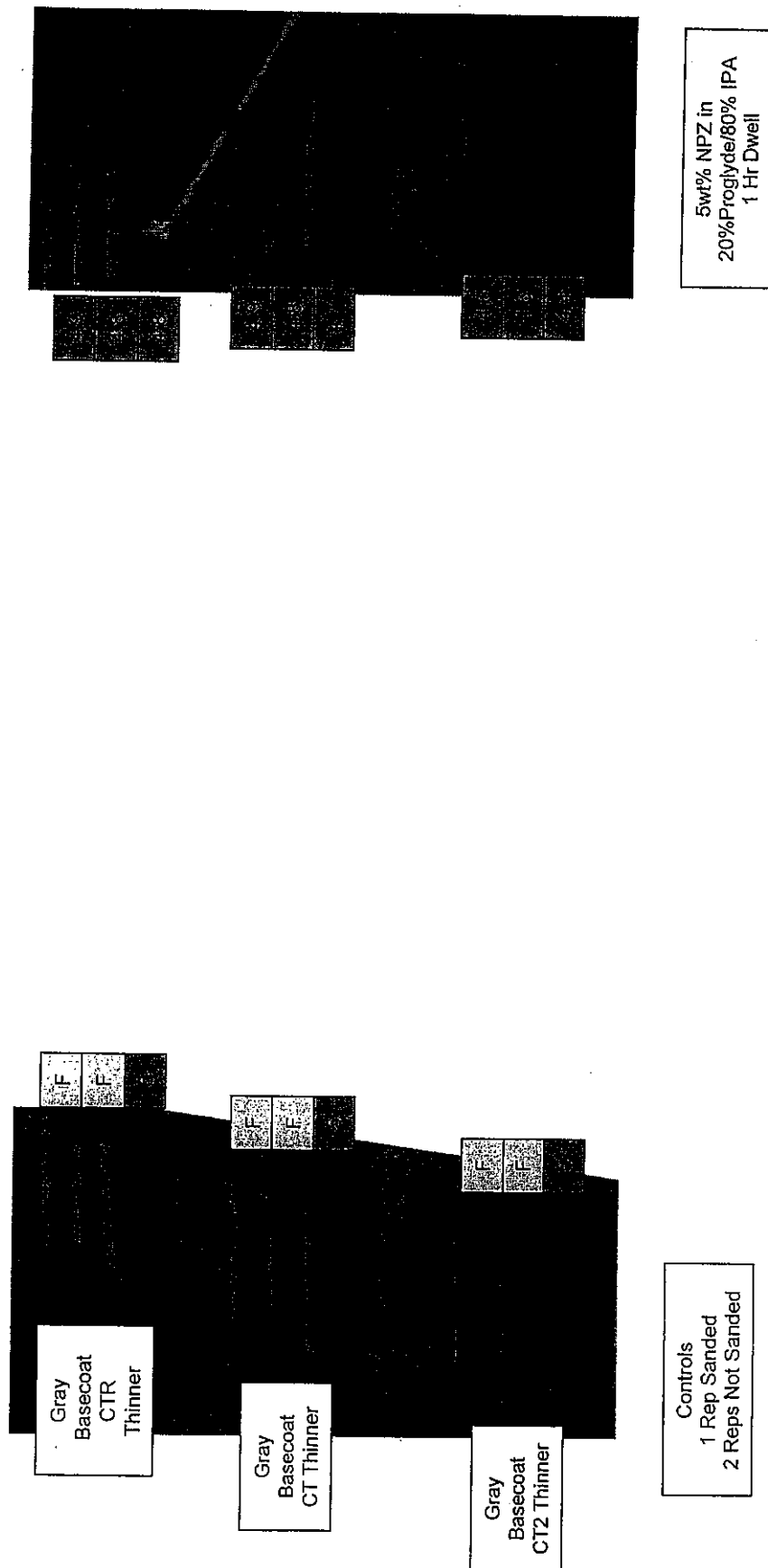


Figure 16b

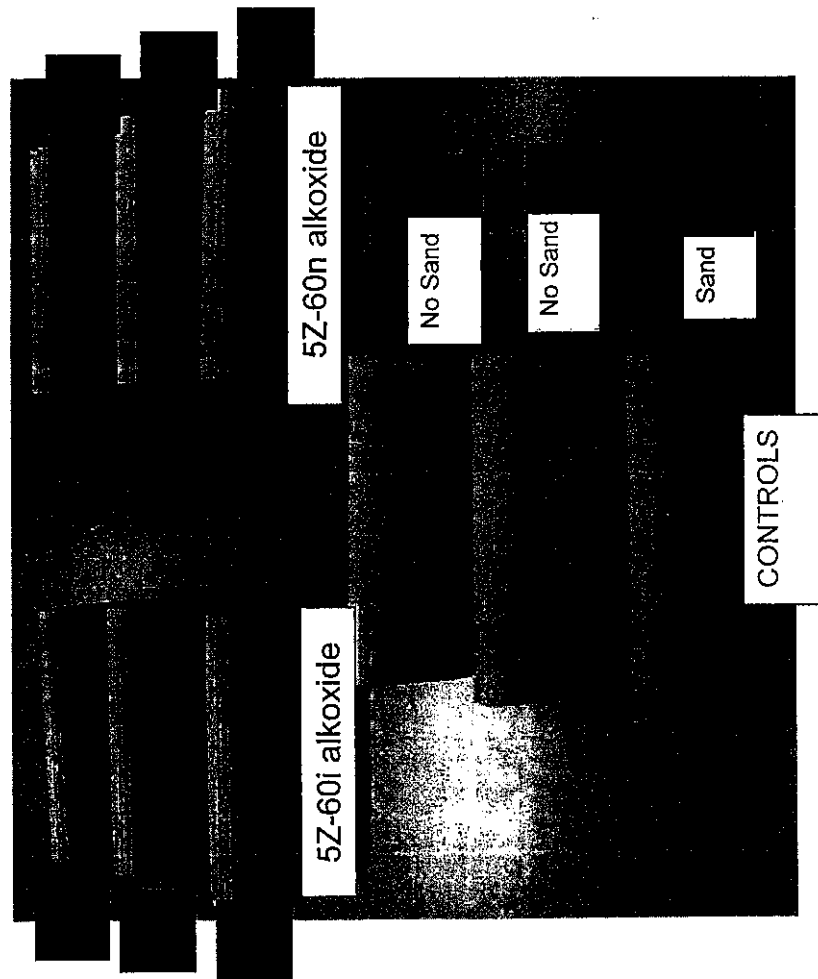


Figure 17a

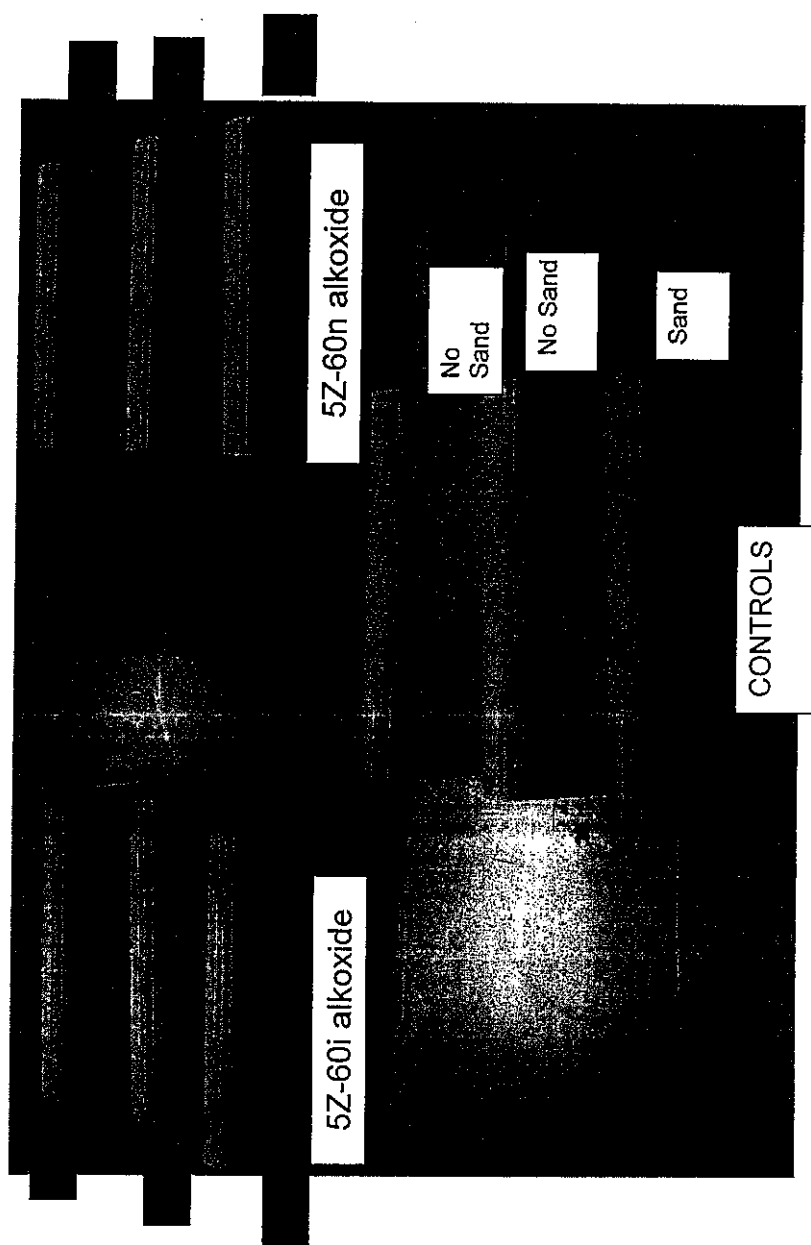


Figure 17b

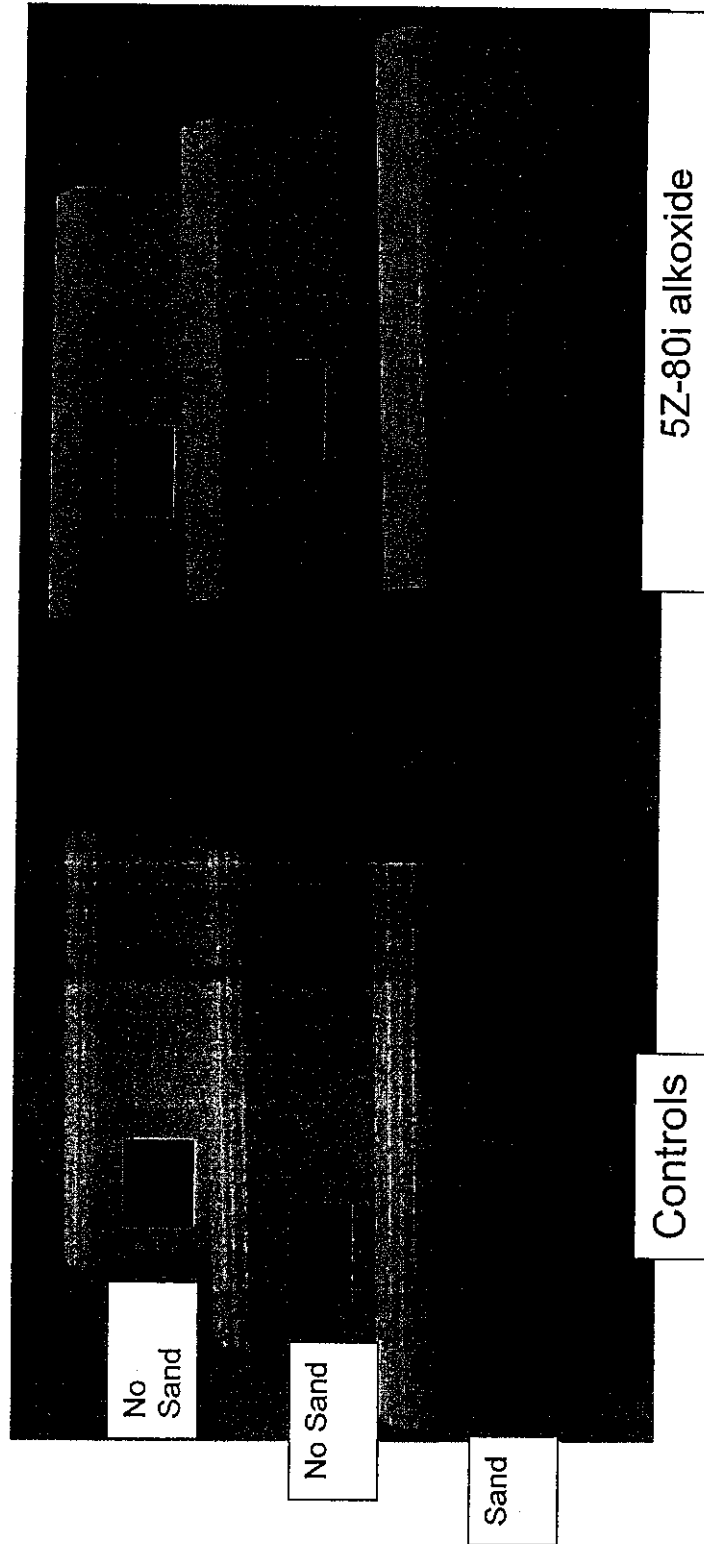


Figure 18a

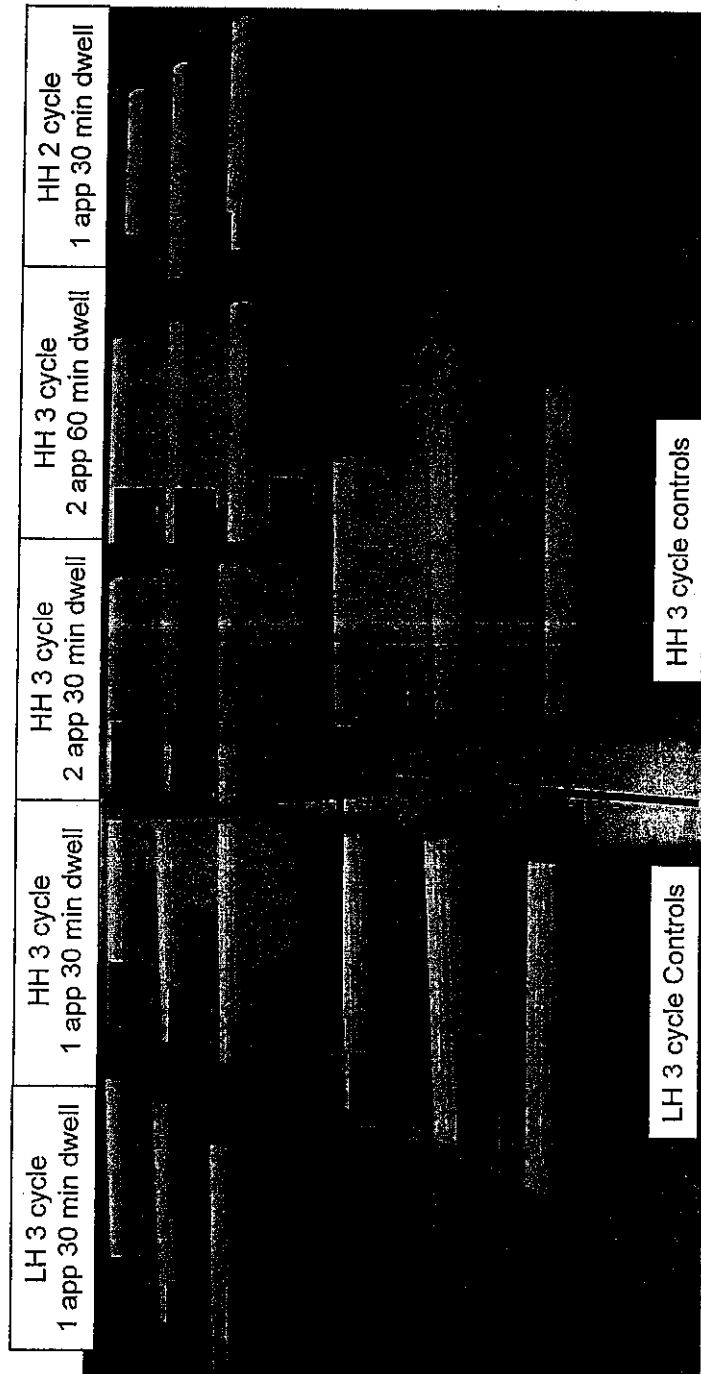


Figure 18b

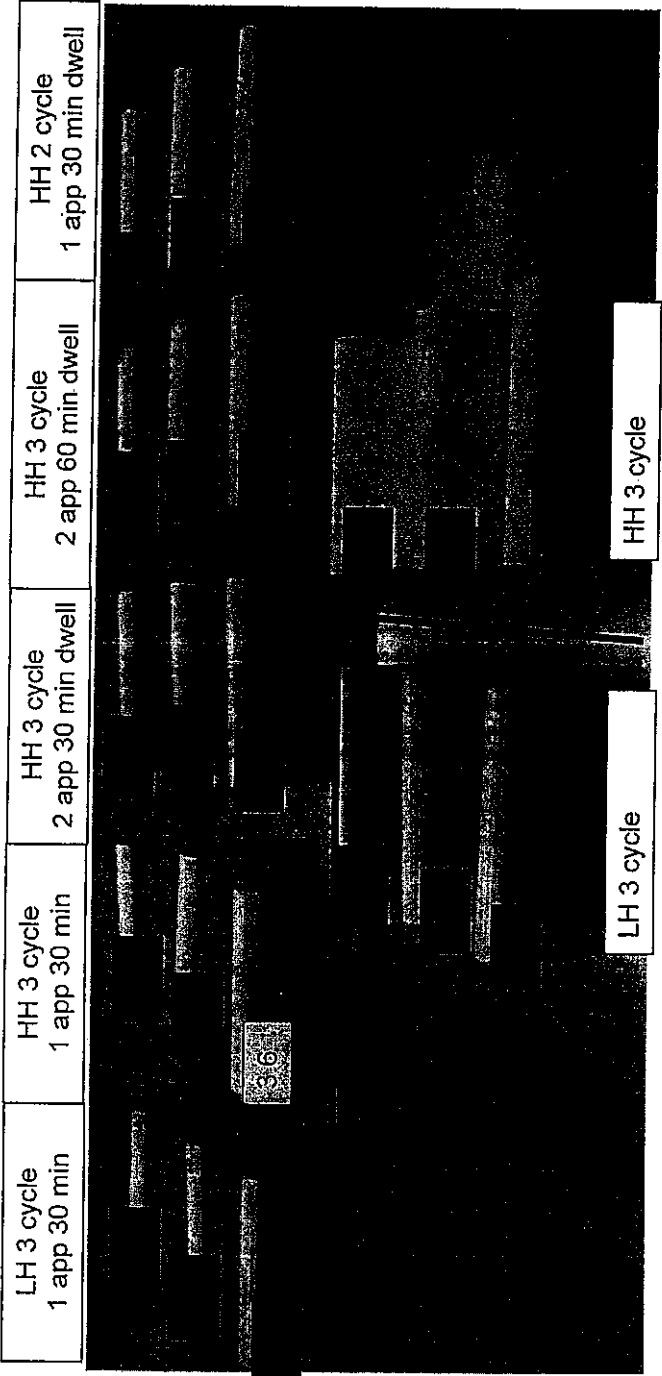


Figure 18c

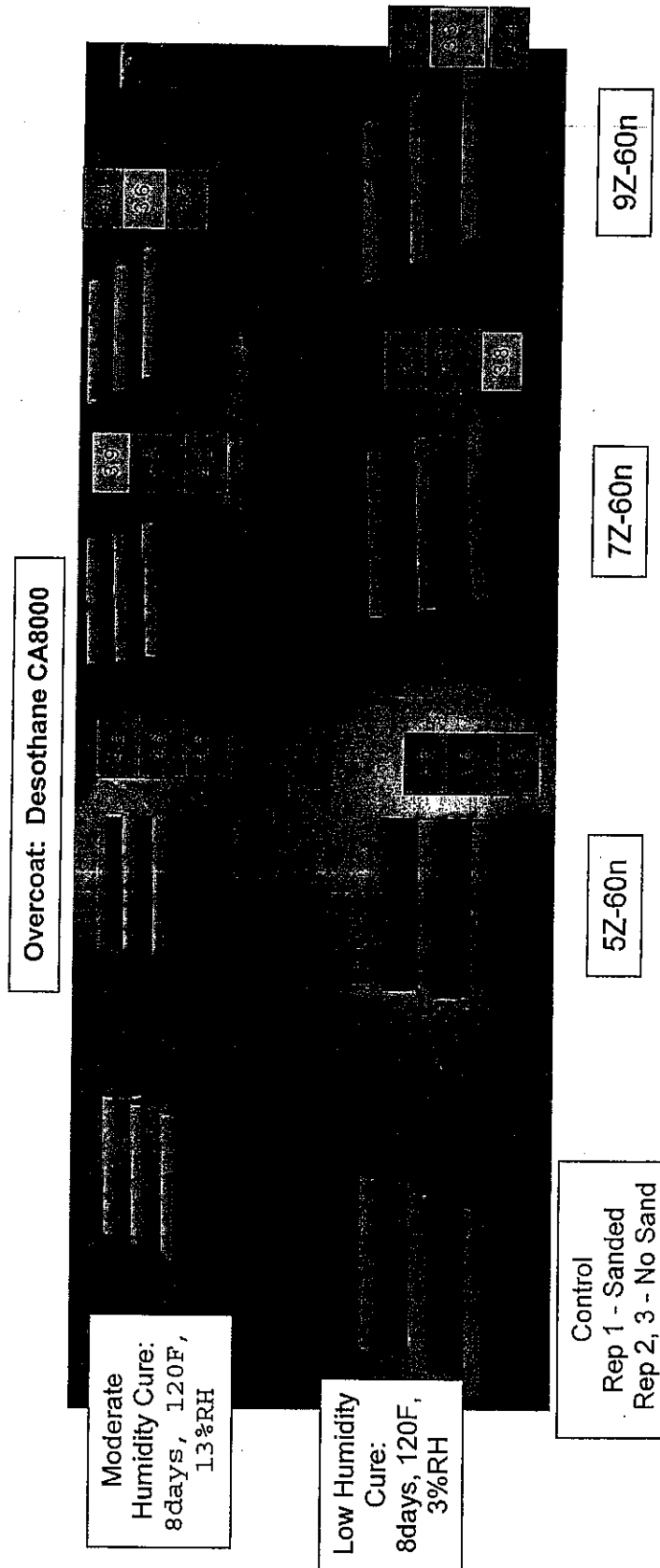


Figure 19

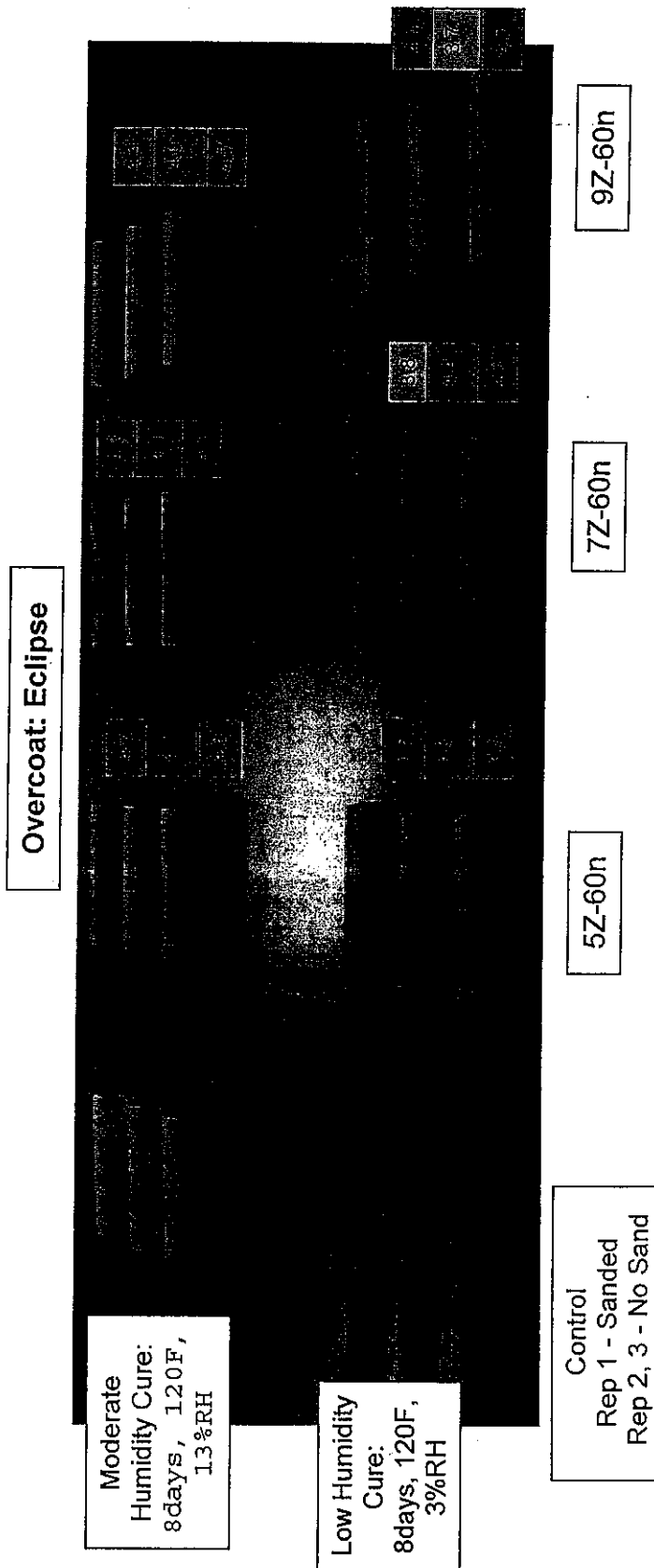


Figure 19 cont.

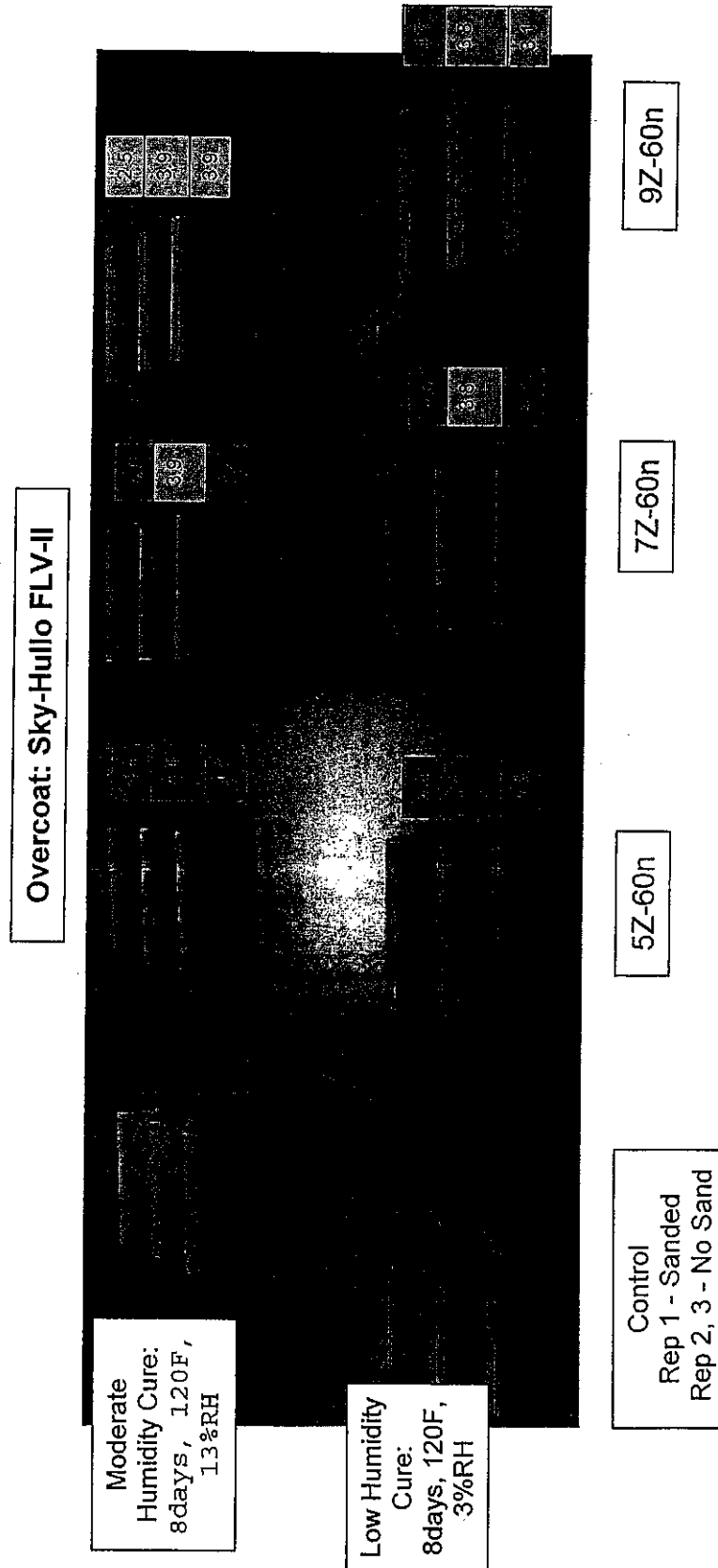


Figure 19 cont.

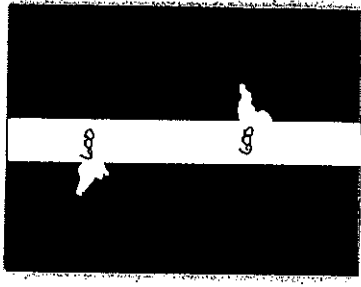
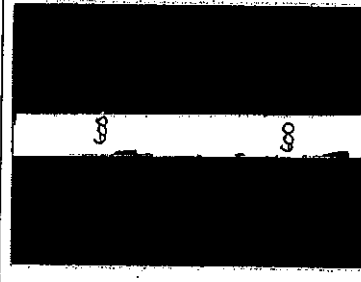
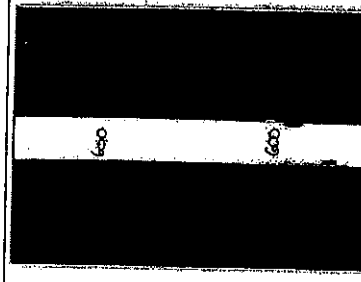
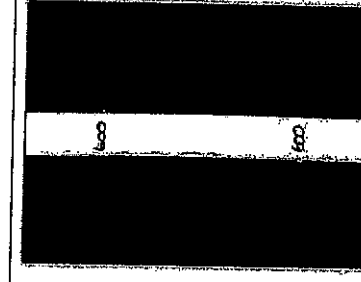
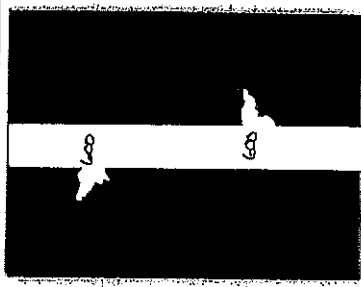
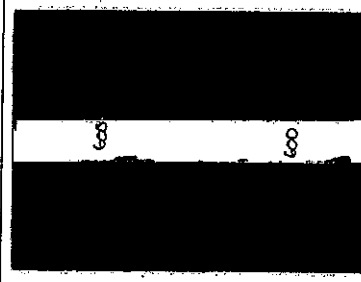
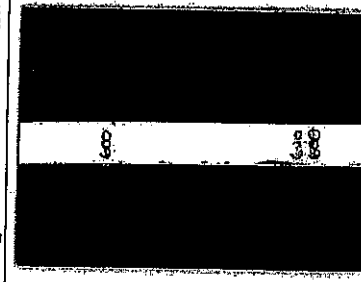
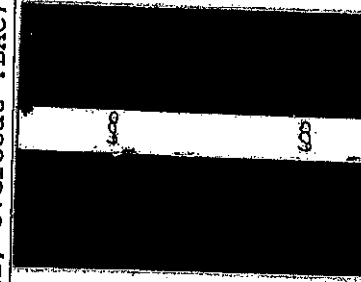
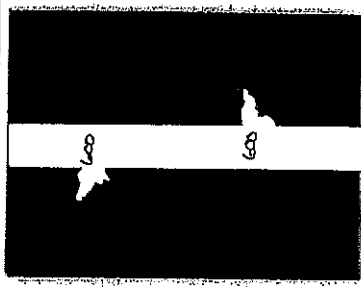
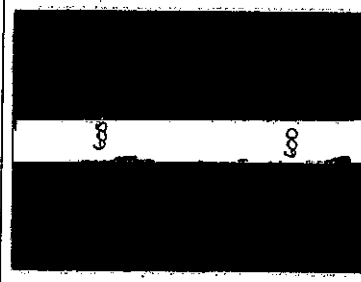
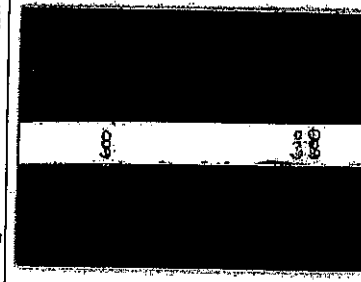
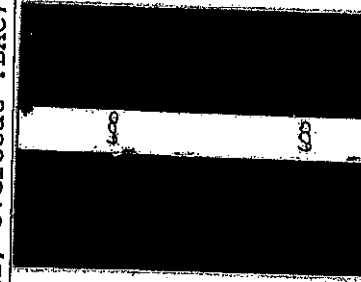
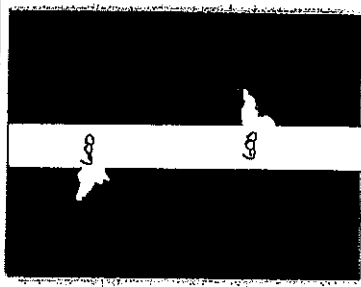
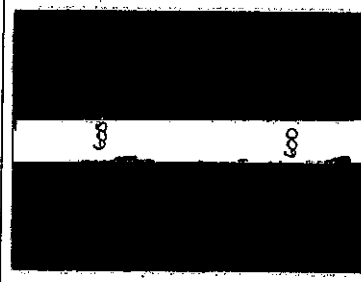
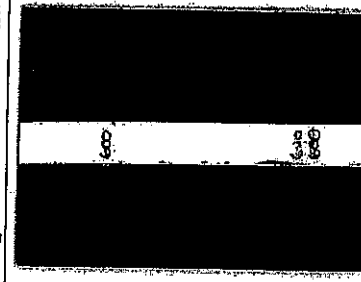
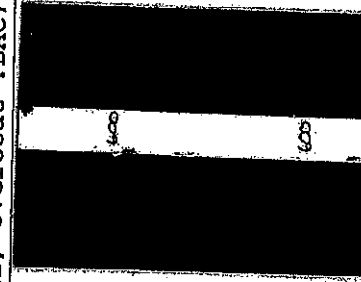
BAC70846 Base coat: 16h, 120F, 8%RH, C2, Adhesion promoter: 2h dwell, Overcoat: BAC50103, 96h 120F, C2					
Time - 3months	Untreated	Sanded		5% TPT / IPA	5% NPZ / IPA
					
Time - 3months	Untreated	Sanded		5% TPT / IPA	5% NPZ / IPA
					
Untreated		Sanded		3% TPT / IPA	3% NPZ / IPA
					
Untreated		Sanded		3% TPT / IPA	3% NPZ / IPA
					

Figure 20

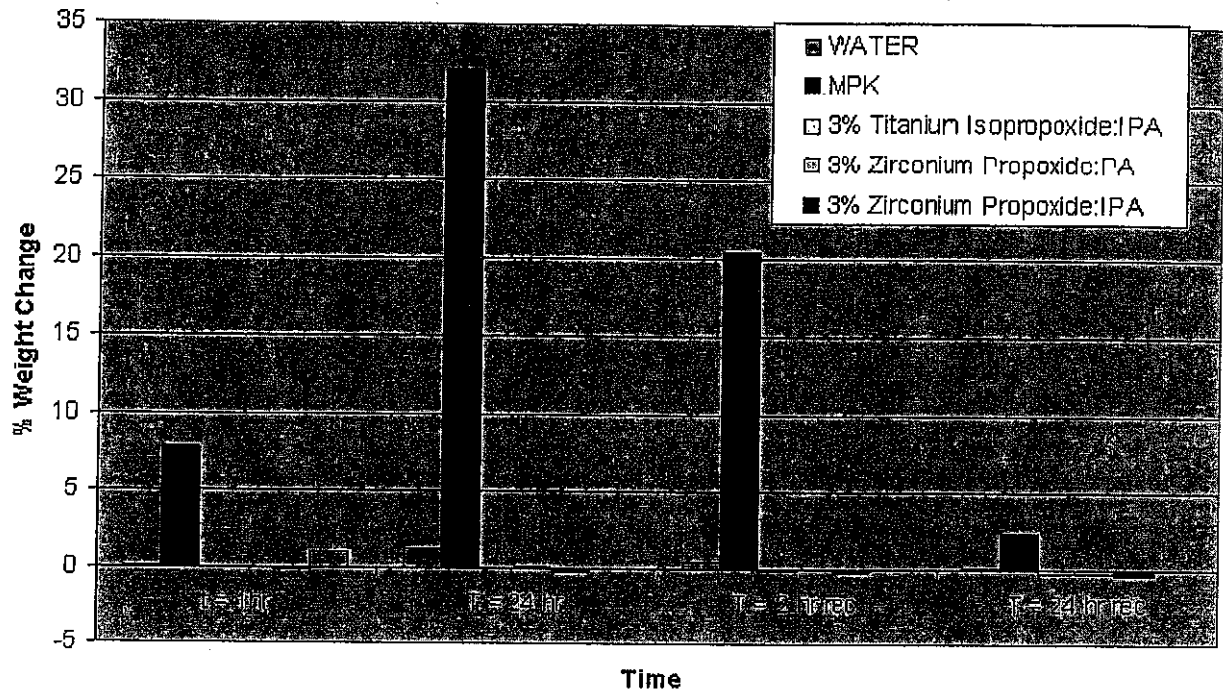


Figure 21a

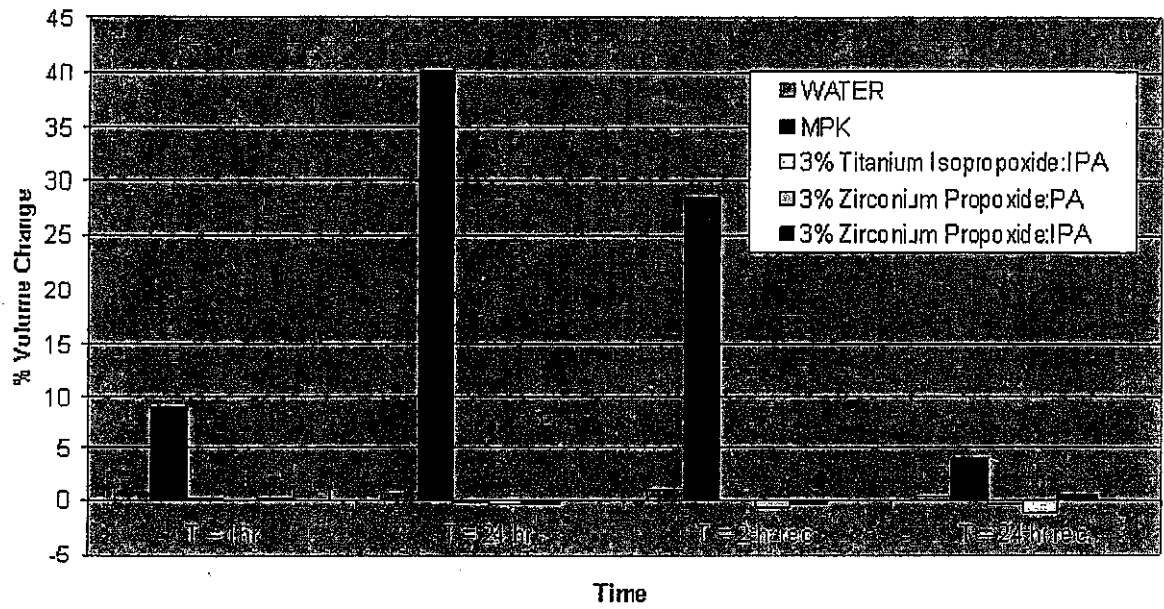


Figure 21b

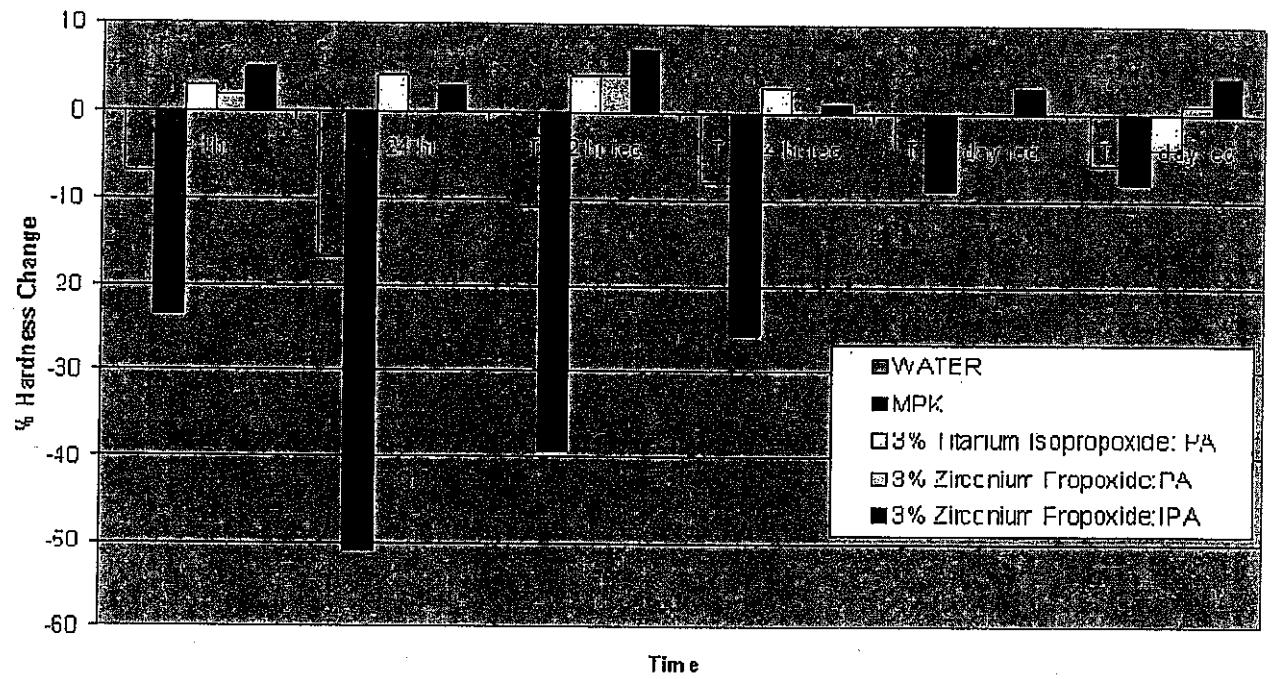
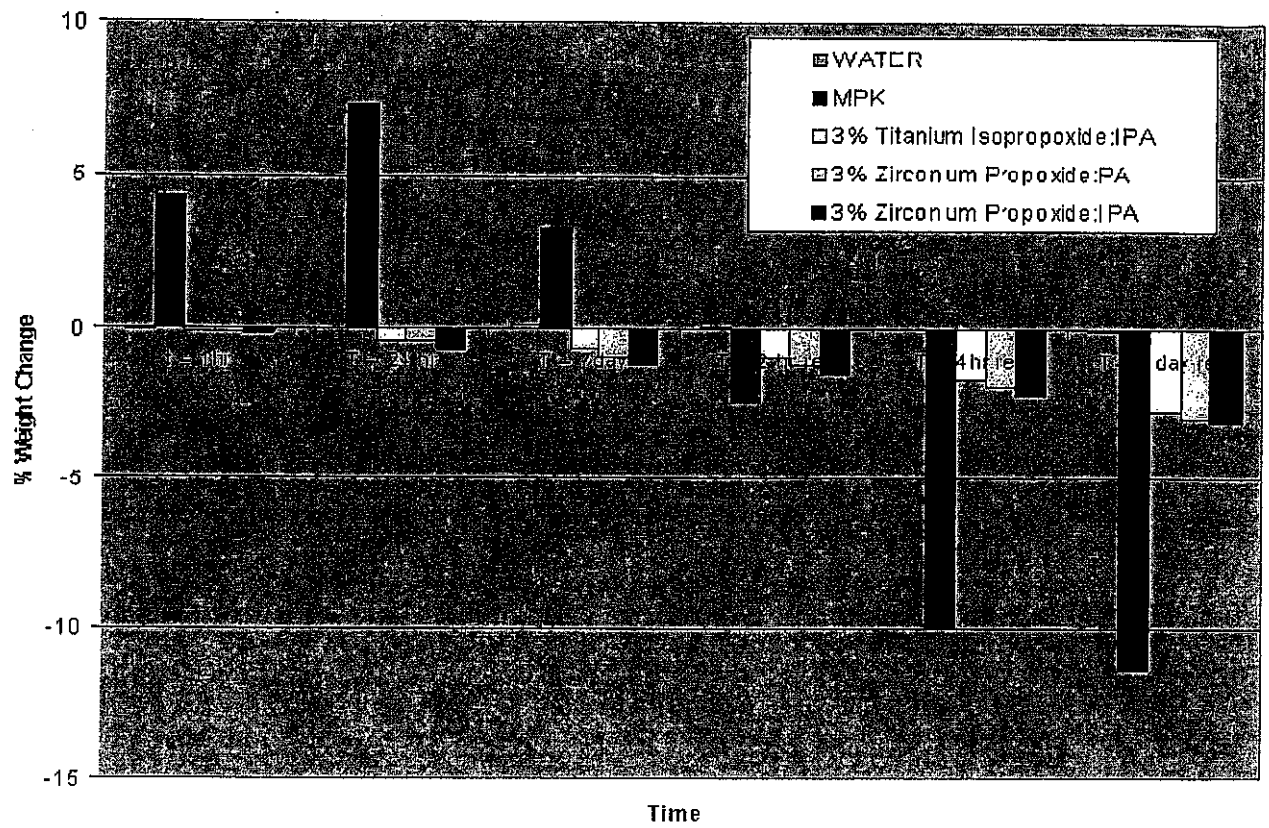


Figure 21c



Time
Figure 22a

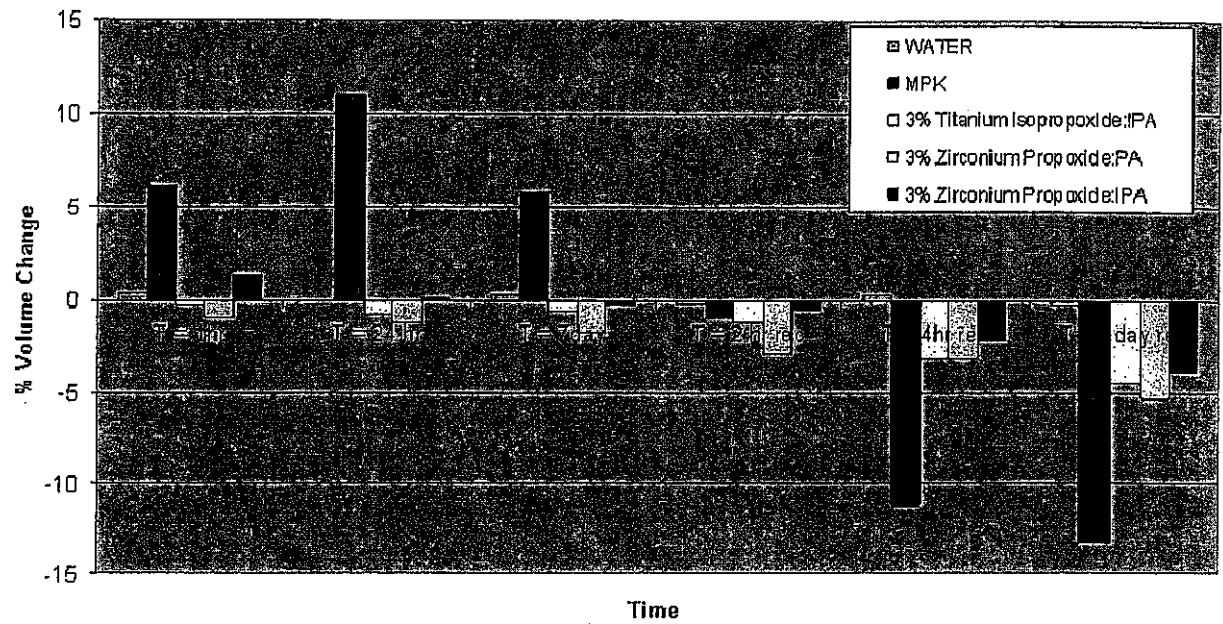


Figure 22b

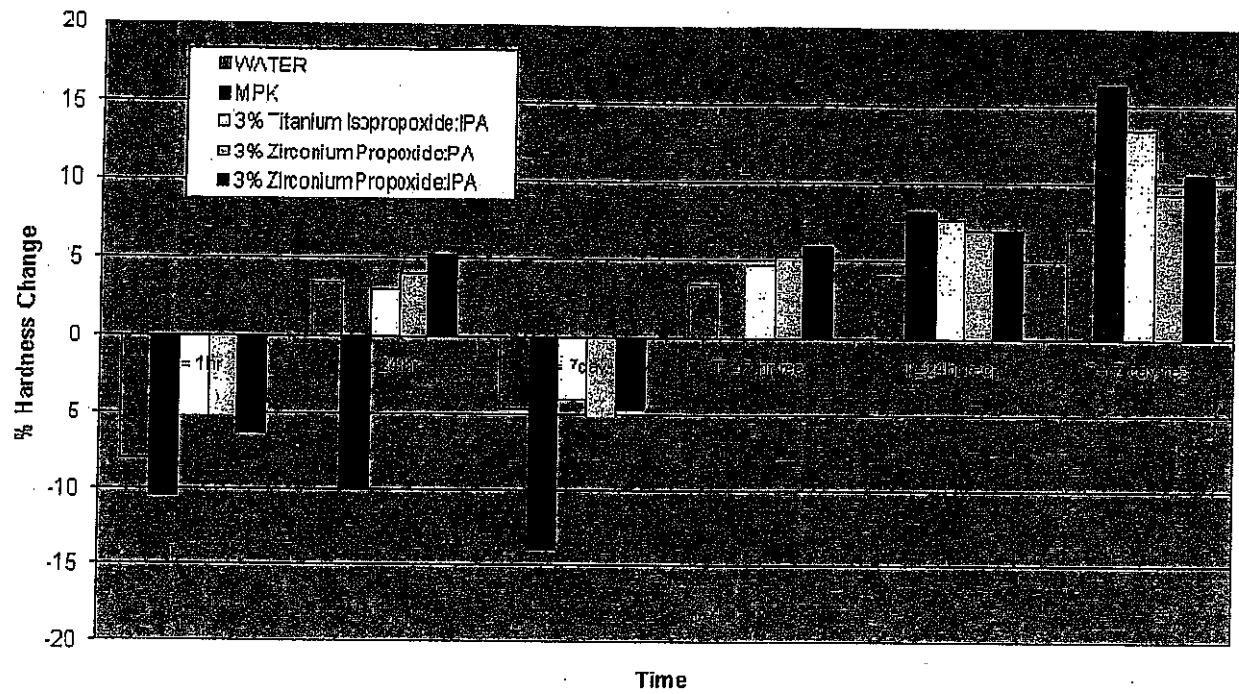


Figure 22c

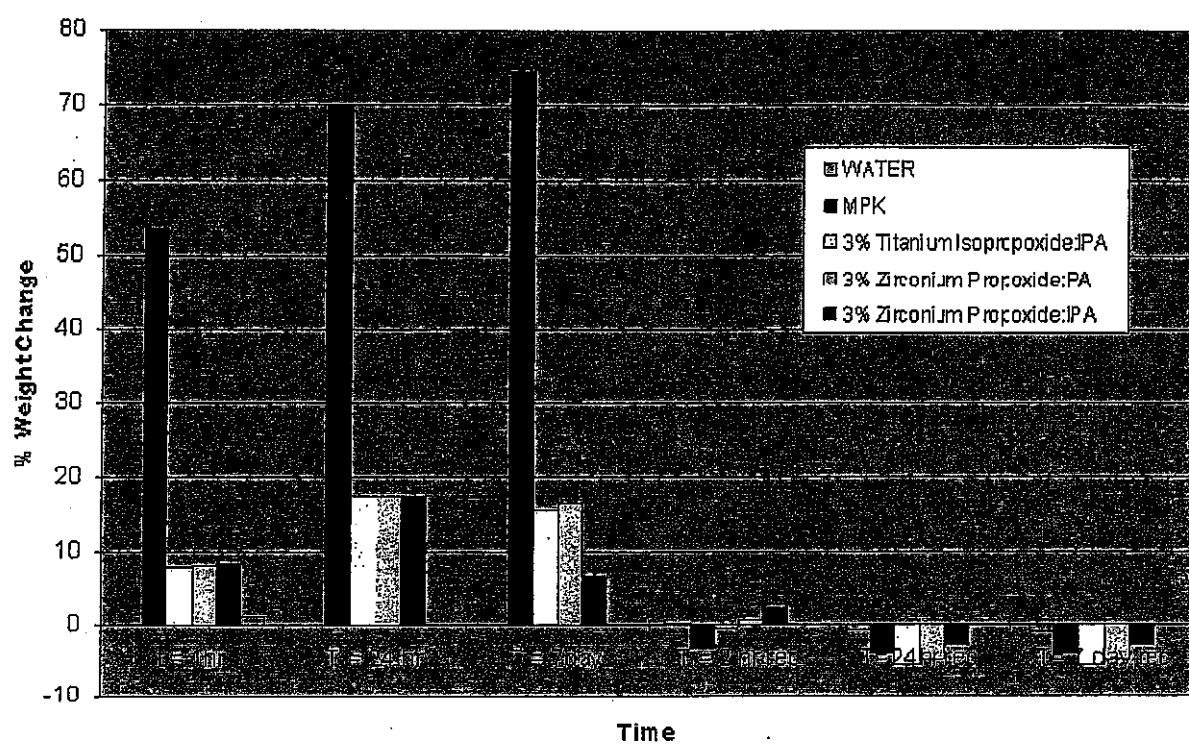


Figure 23a

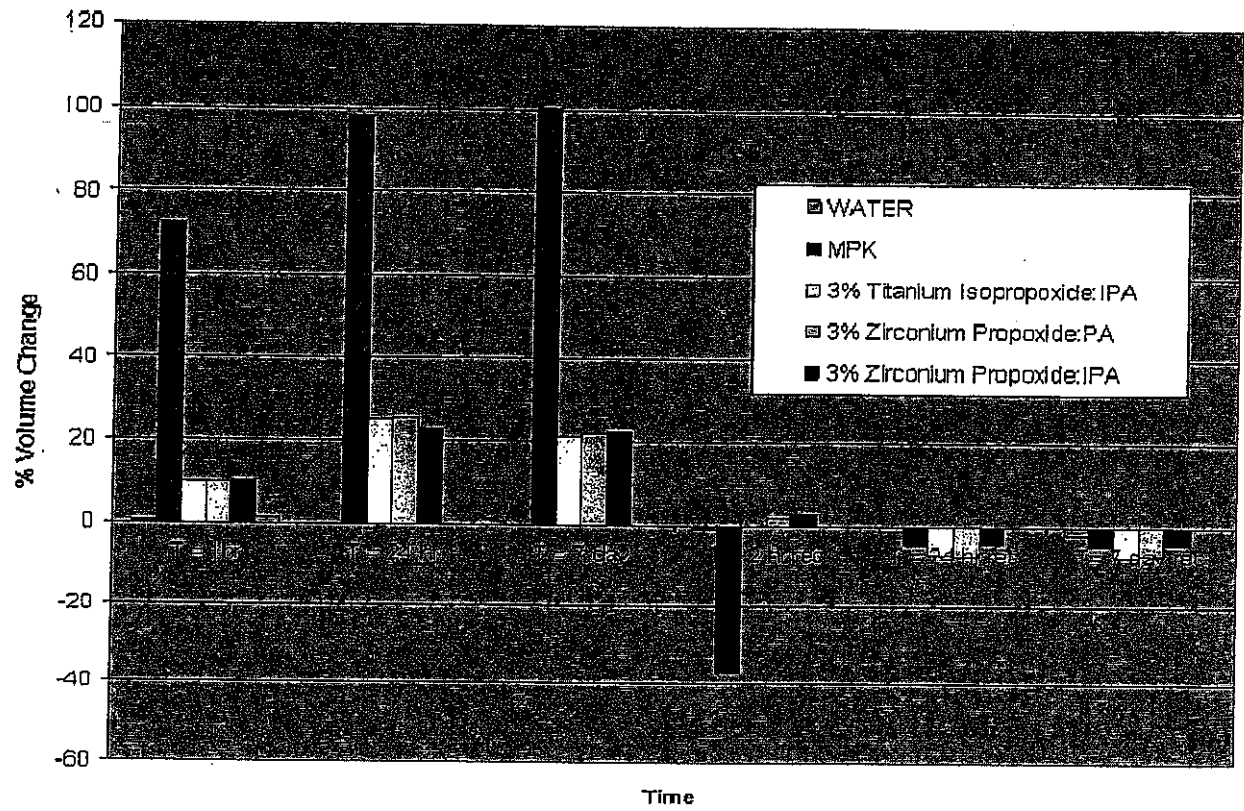


Figure 23b

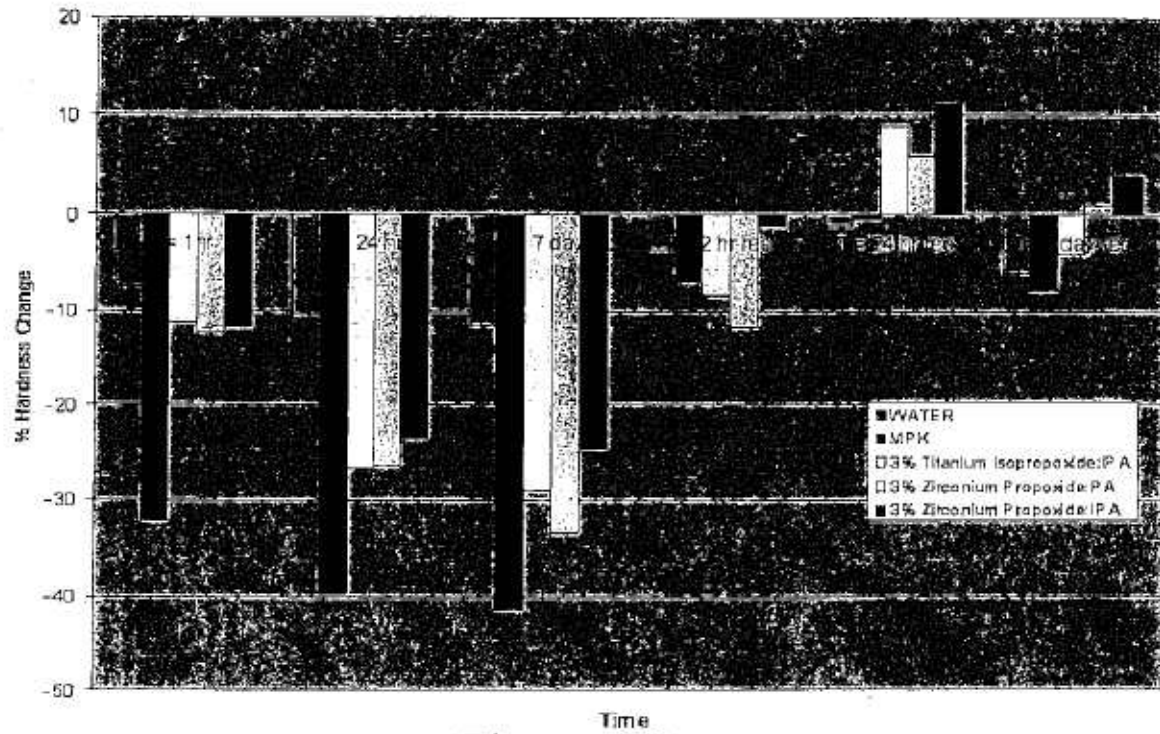


Figure 23c

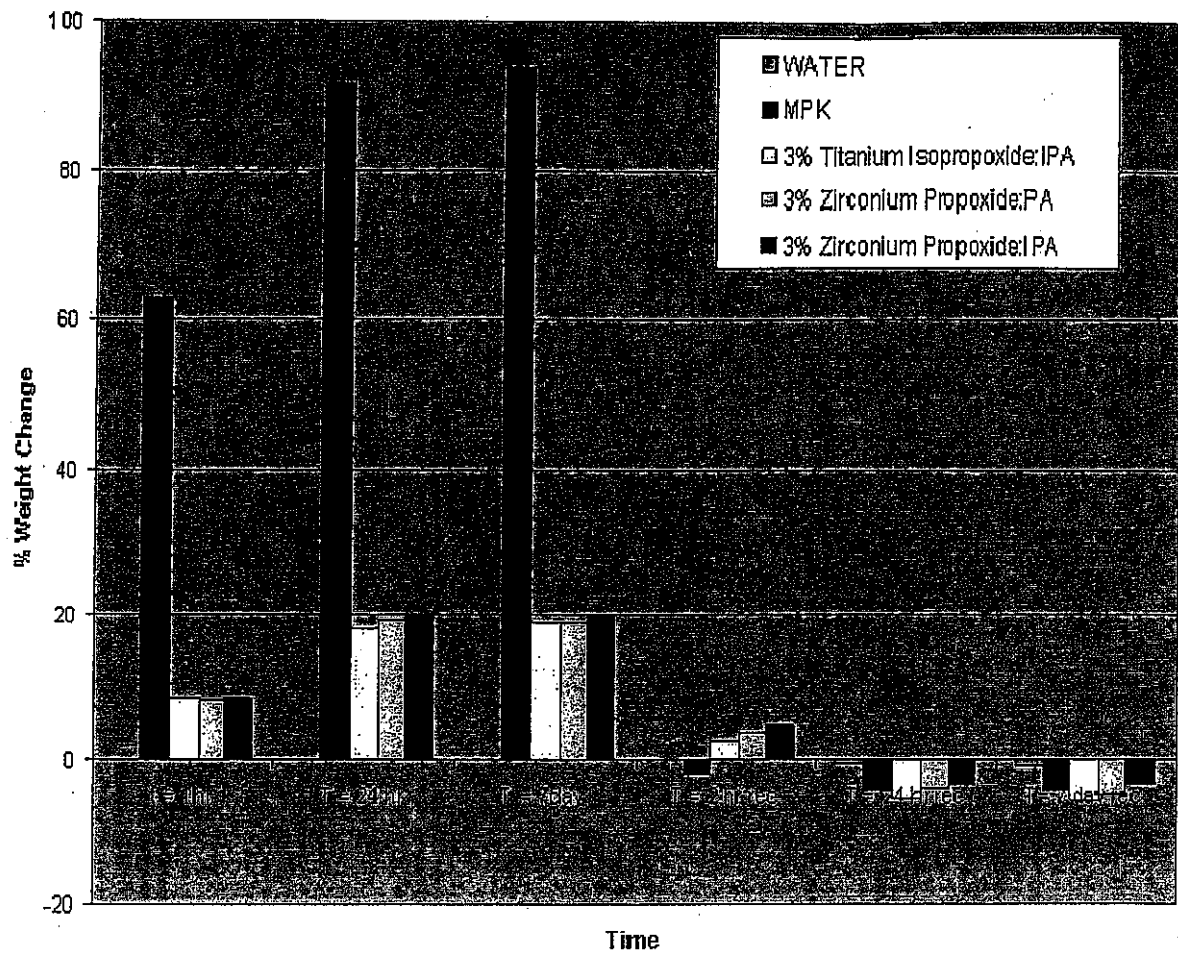


Figure 24a

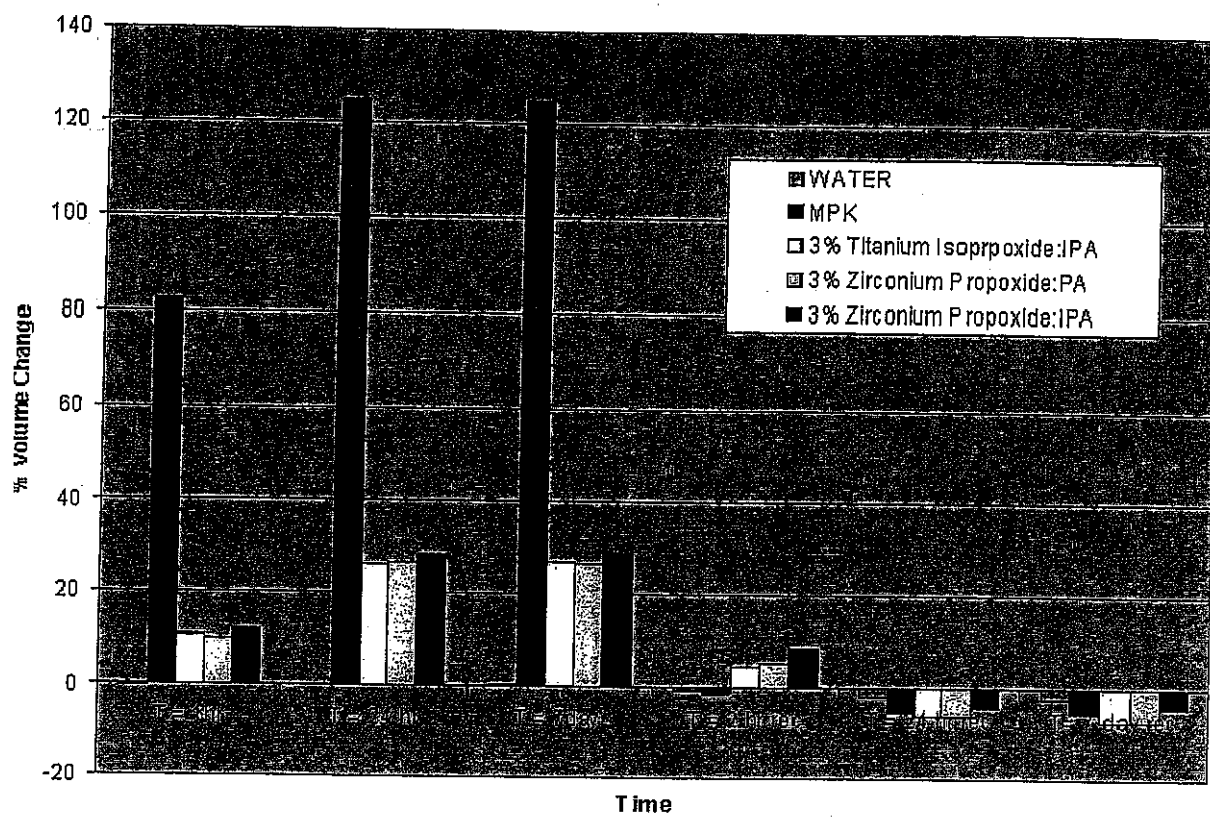


Figure 24b

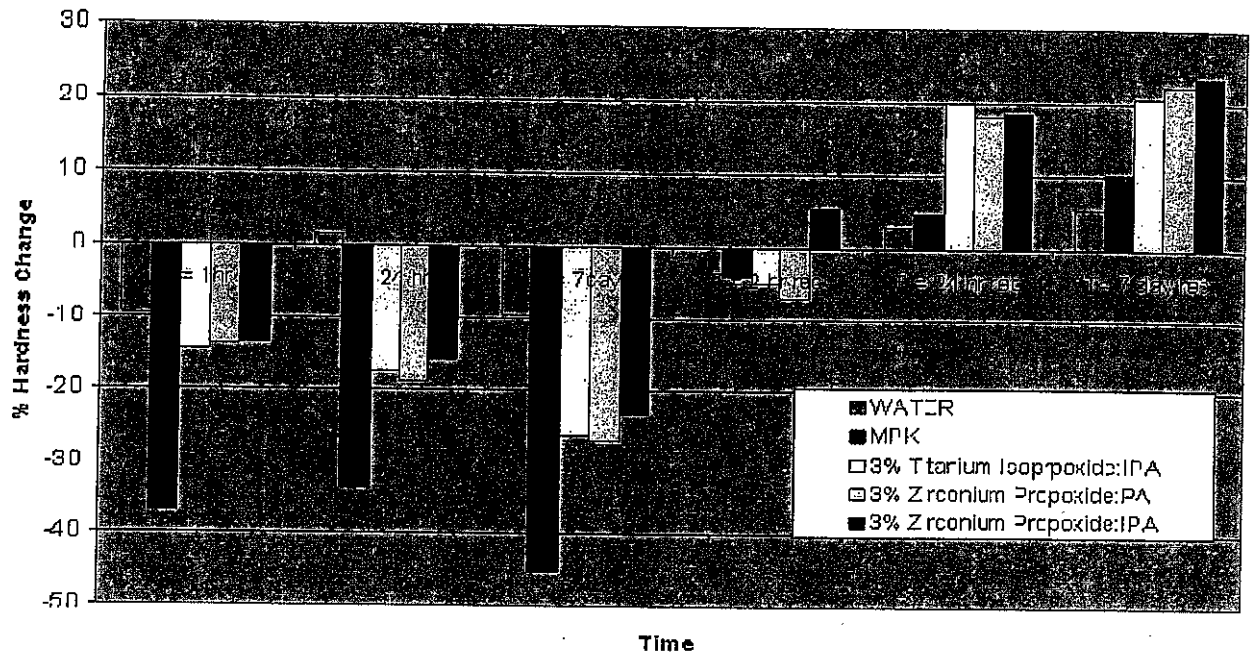


Figure 24c

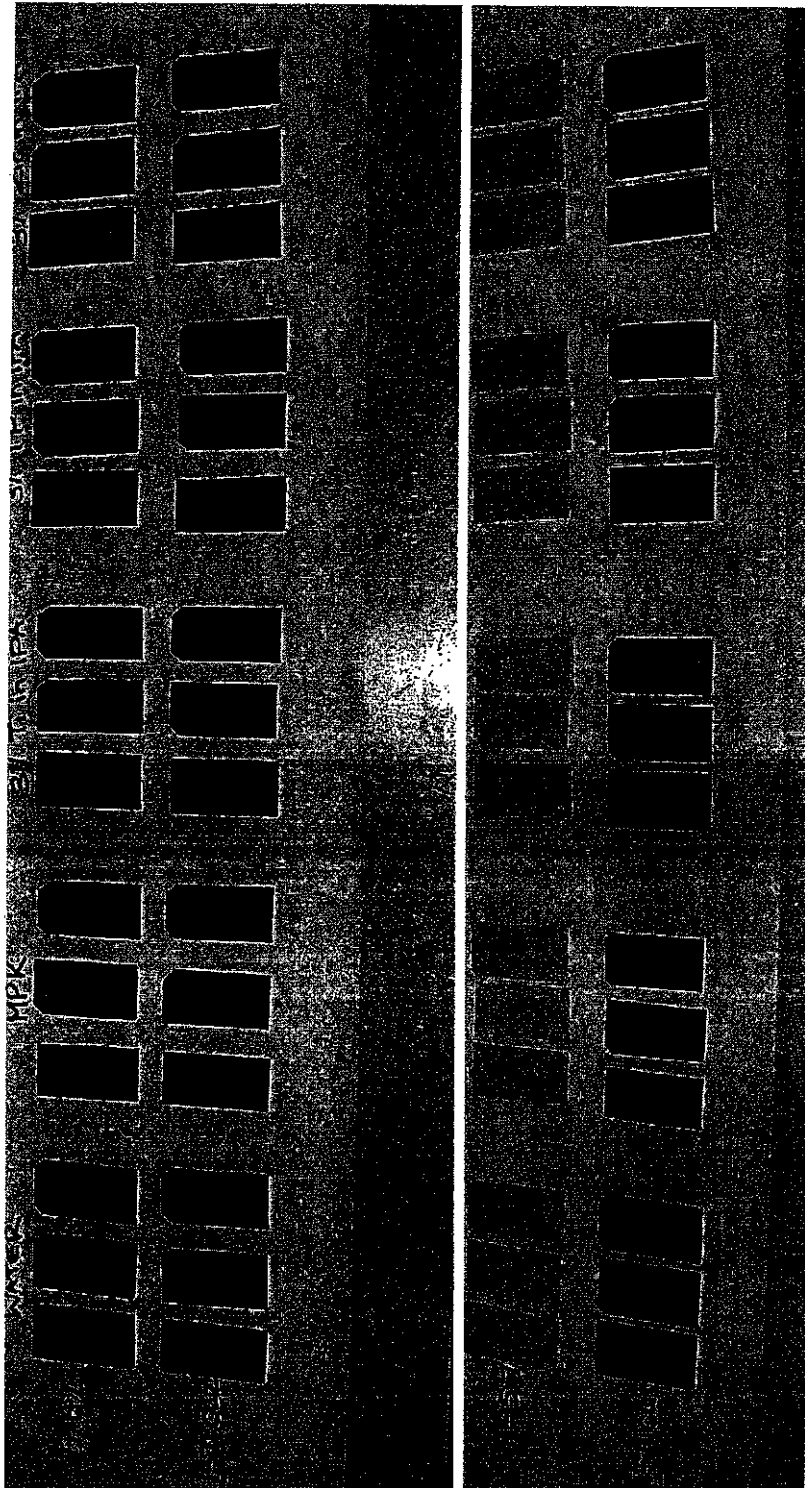


Figure 25

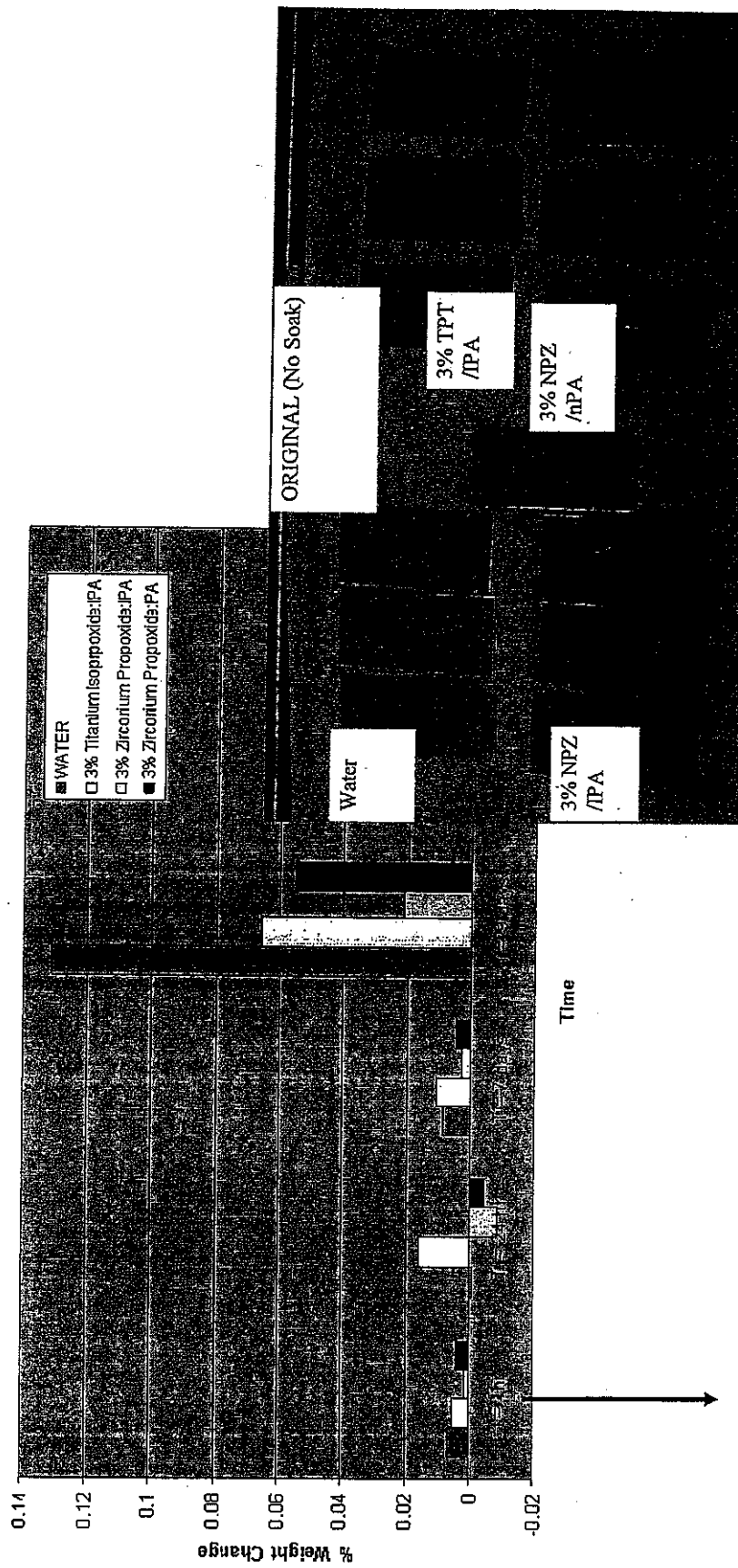


Figure 26

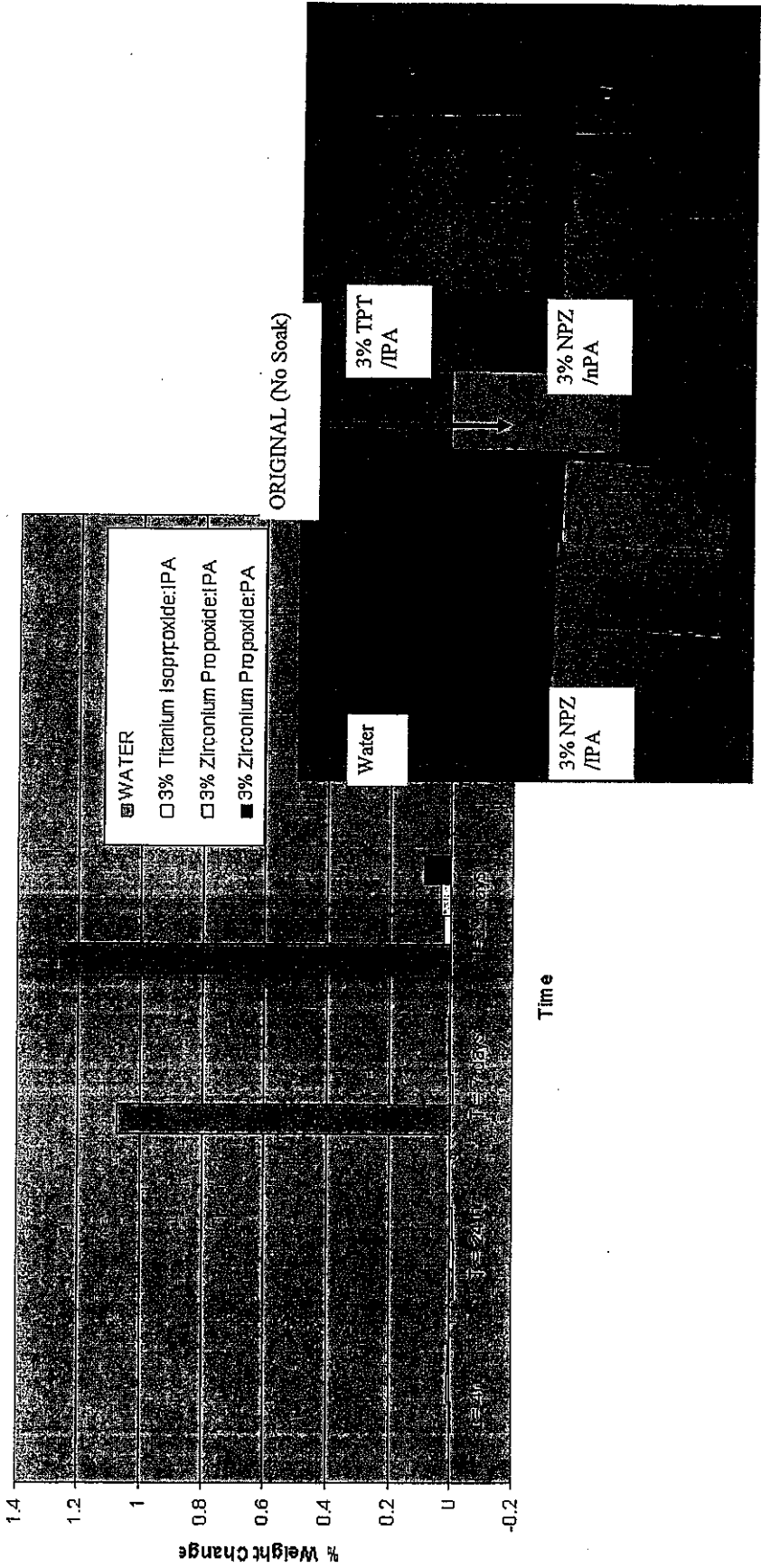


Figure 27

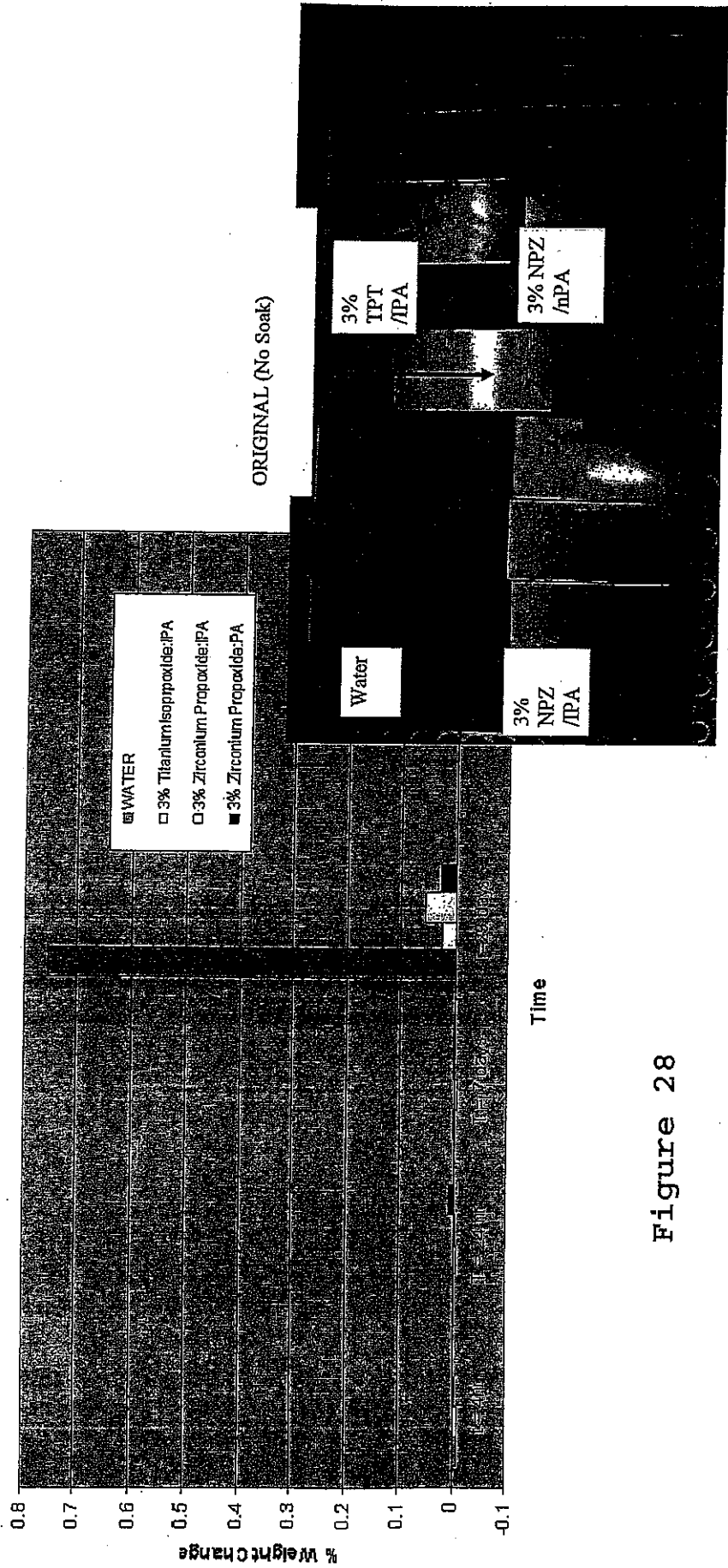


Figure 28

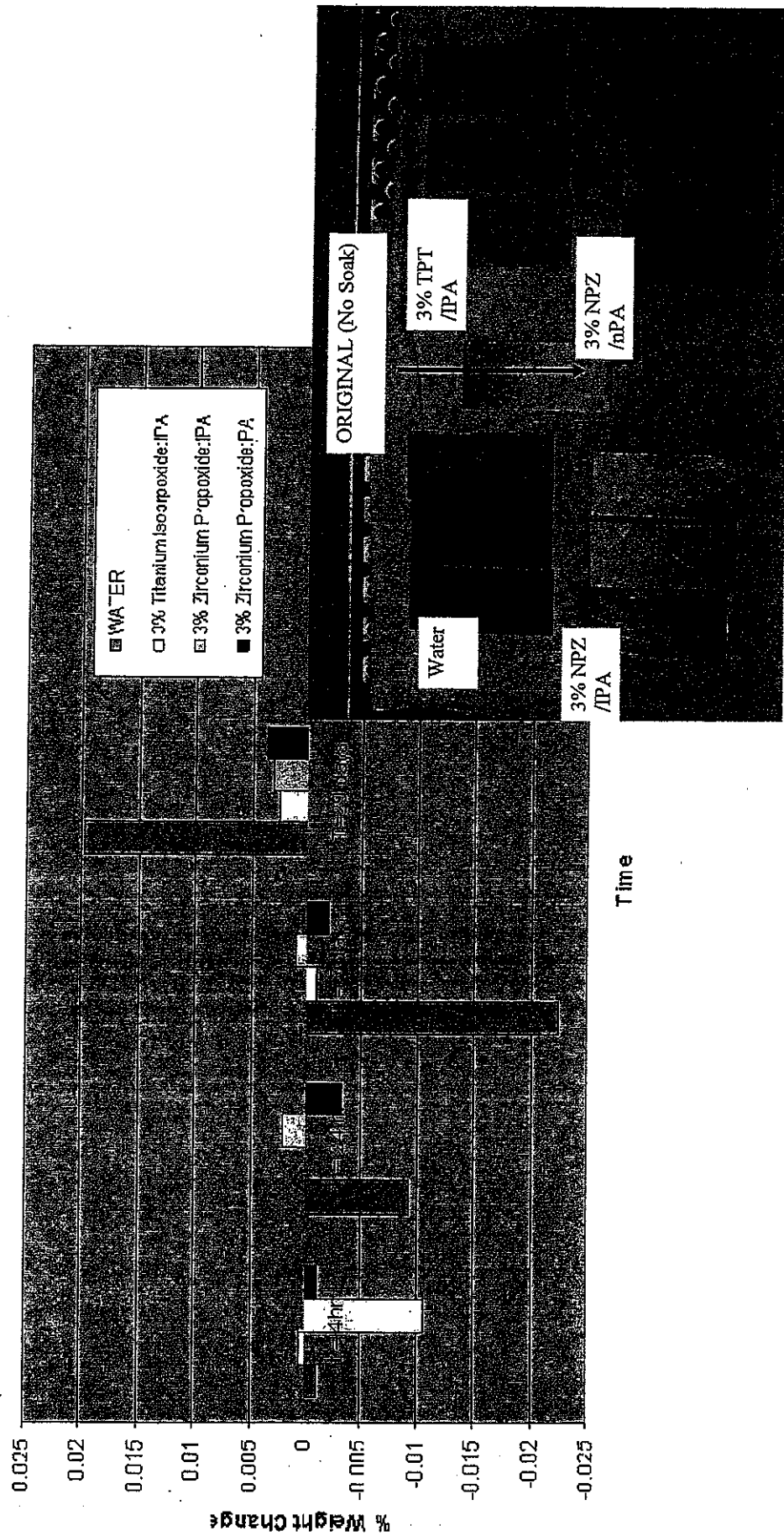


Figure 29

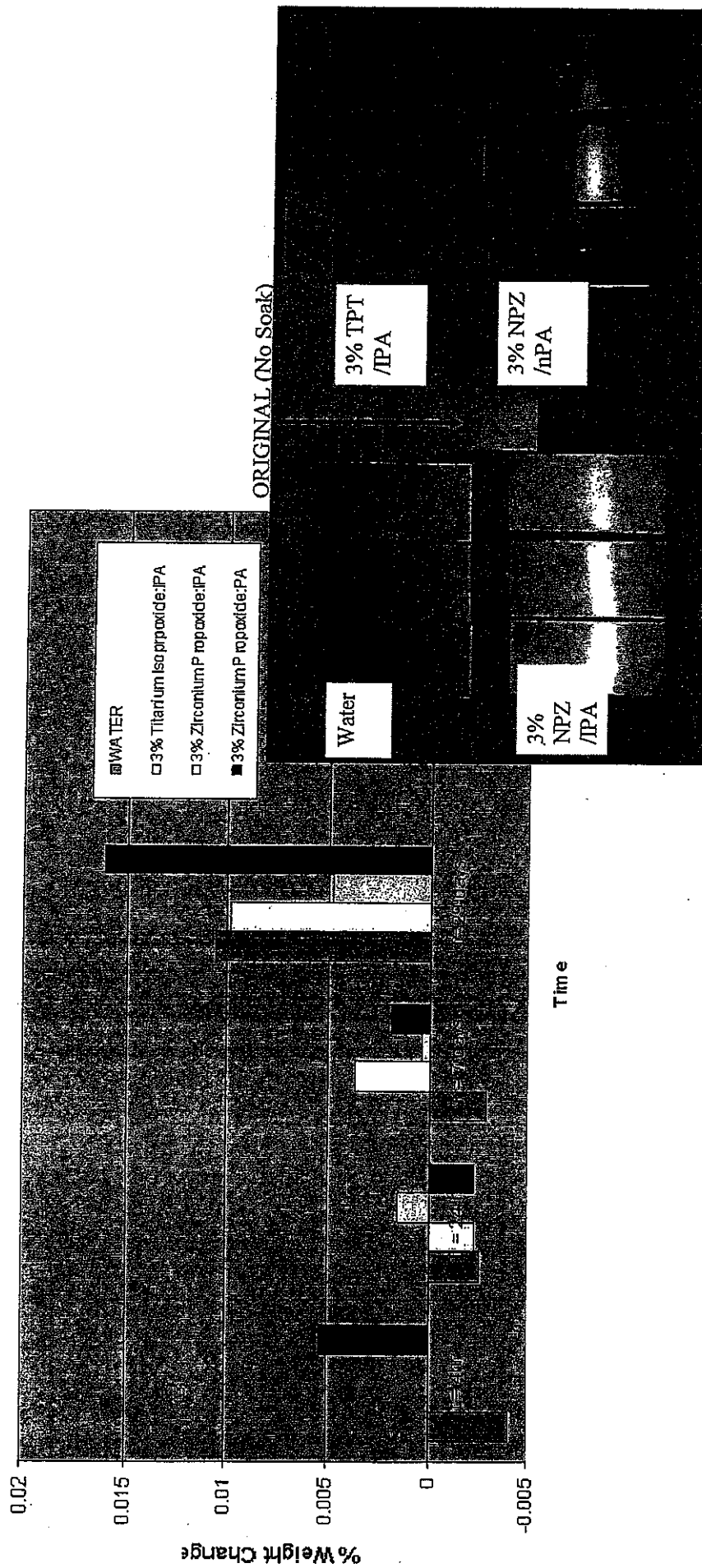
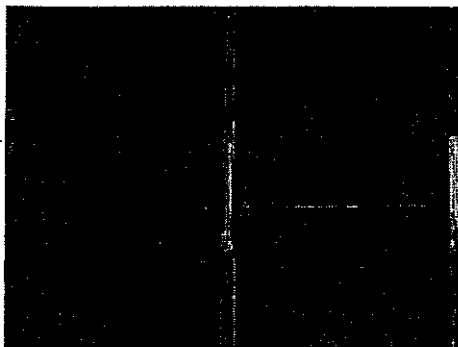


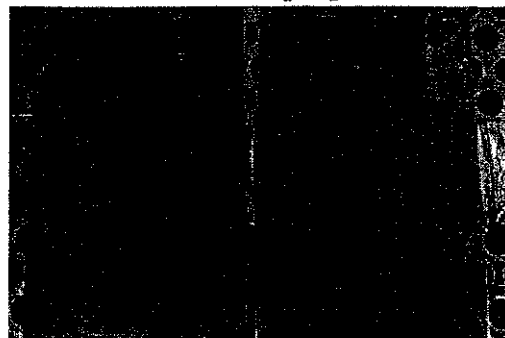
Figure 30

52/65

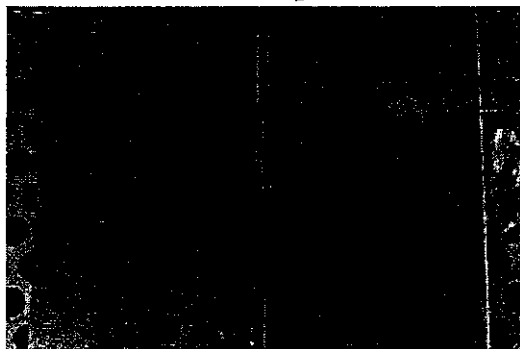
Water Reference



3% Titanium Isopropoxide in IPA



3% Zirconium Propoxide in IPA



3% Zirconium Propoxide in PA (NPA)



Figure 31a

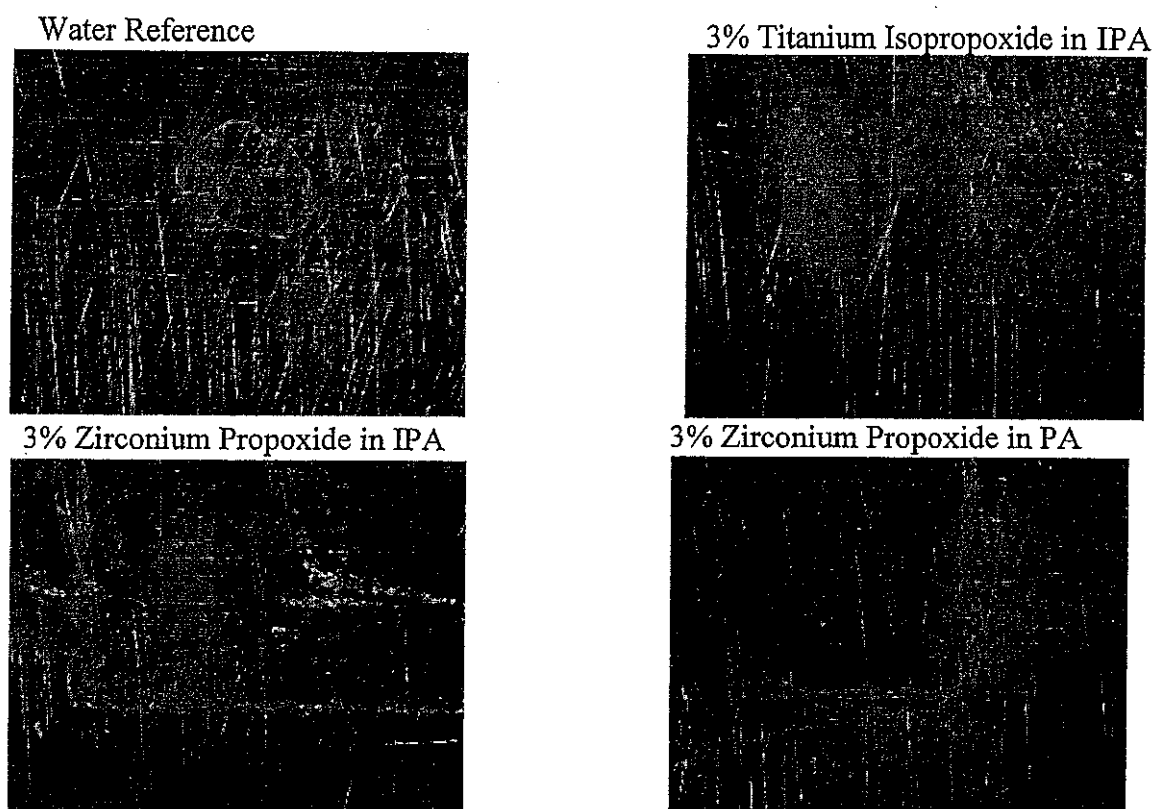
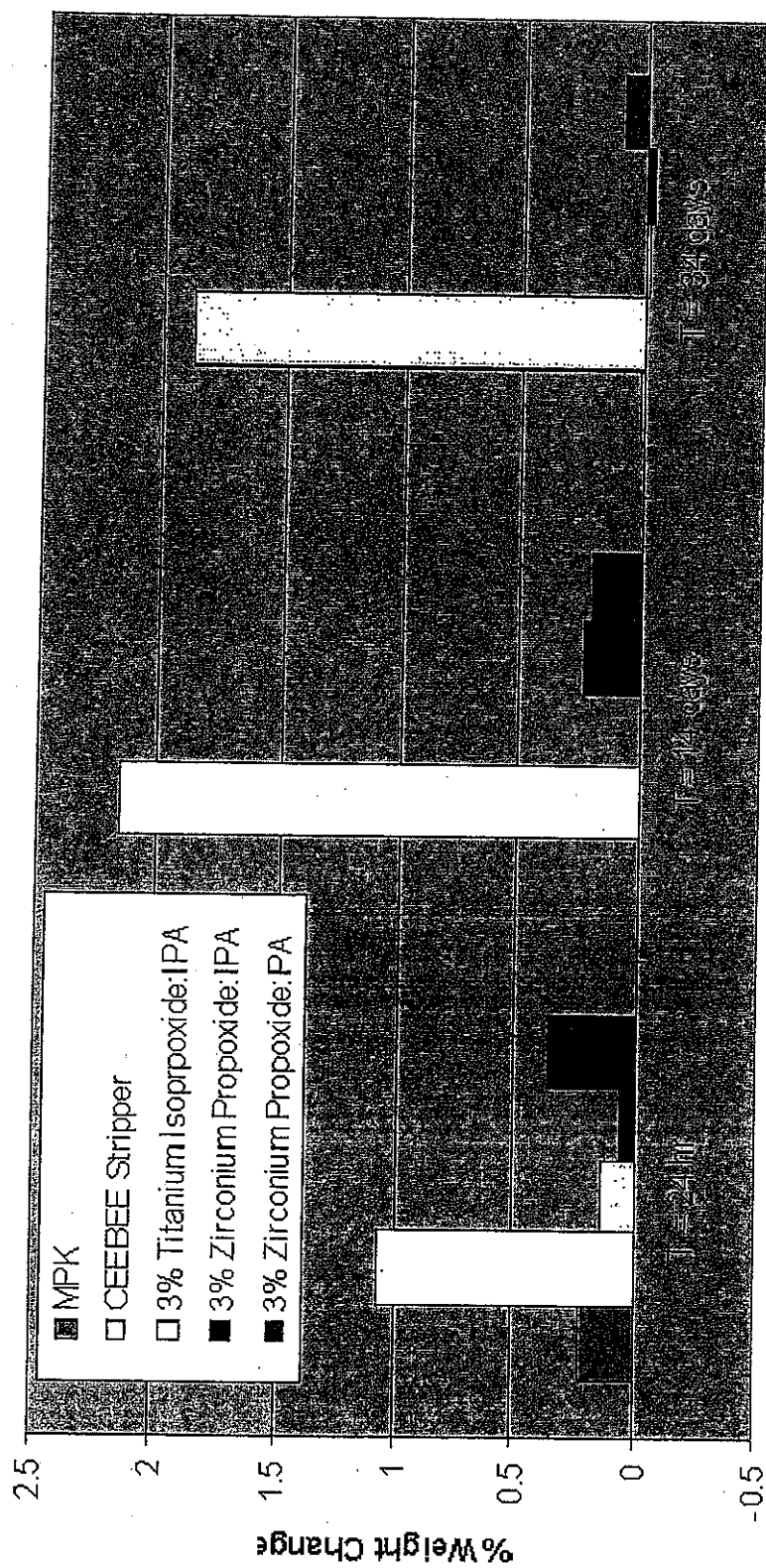
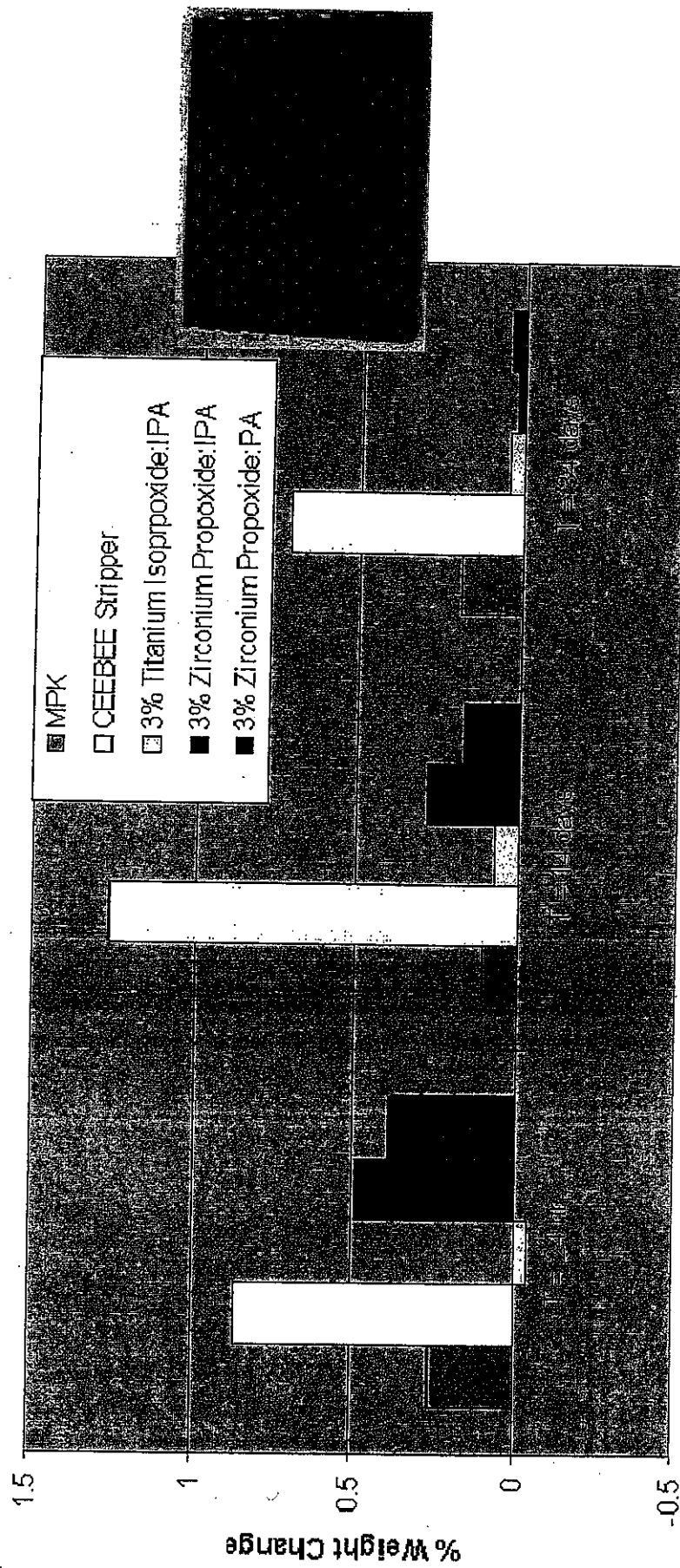


Figure 31b



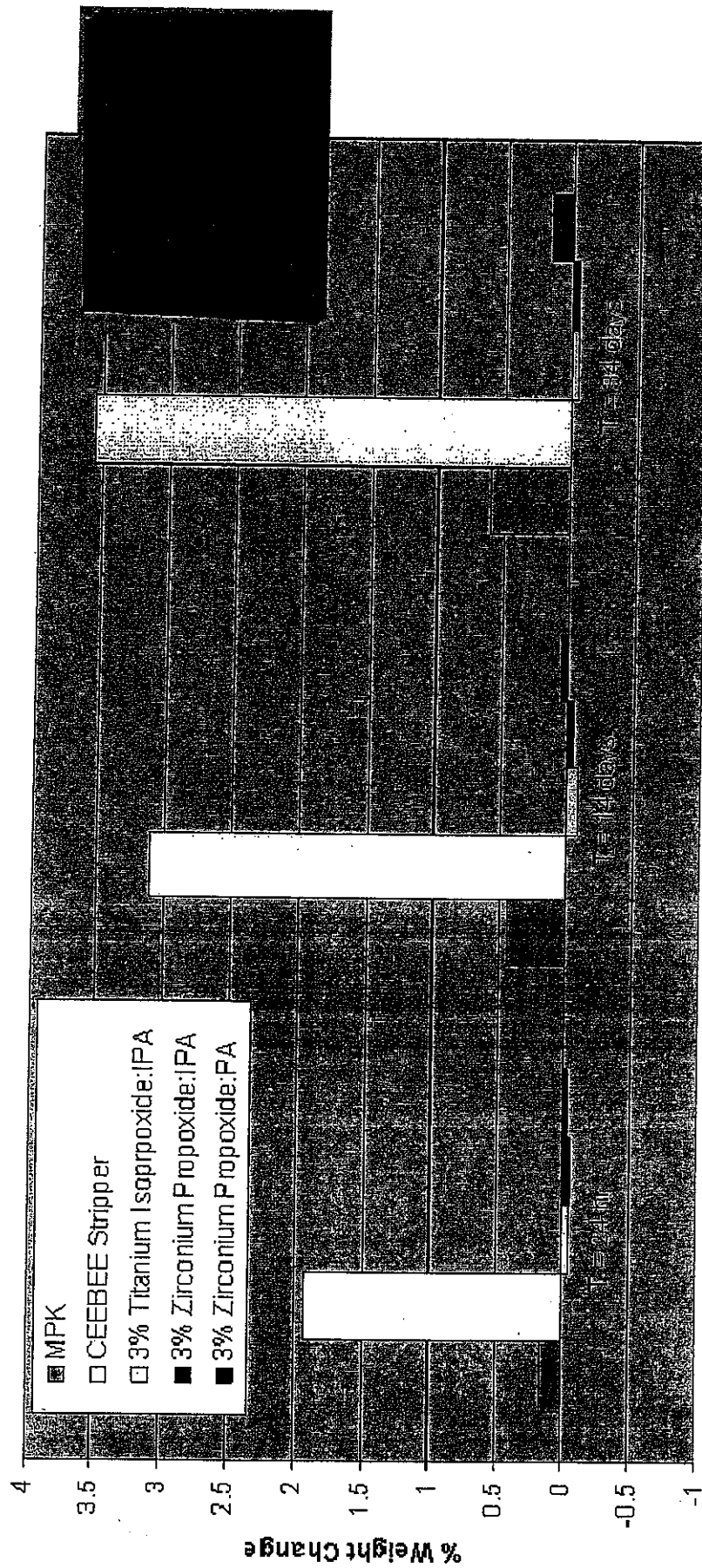
Time

Figure 32



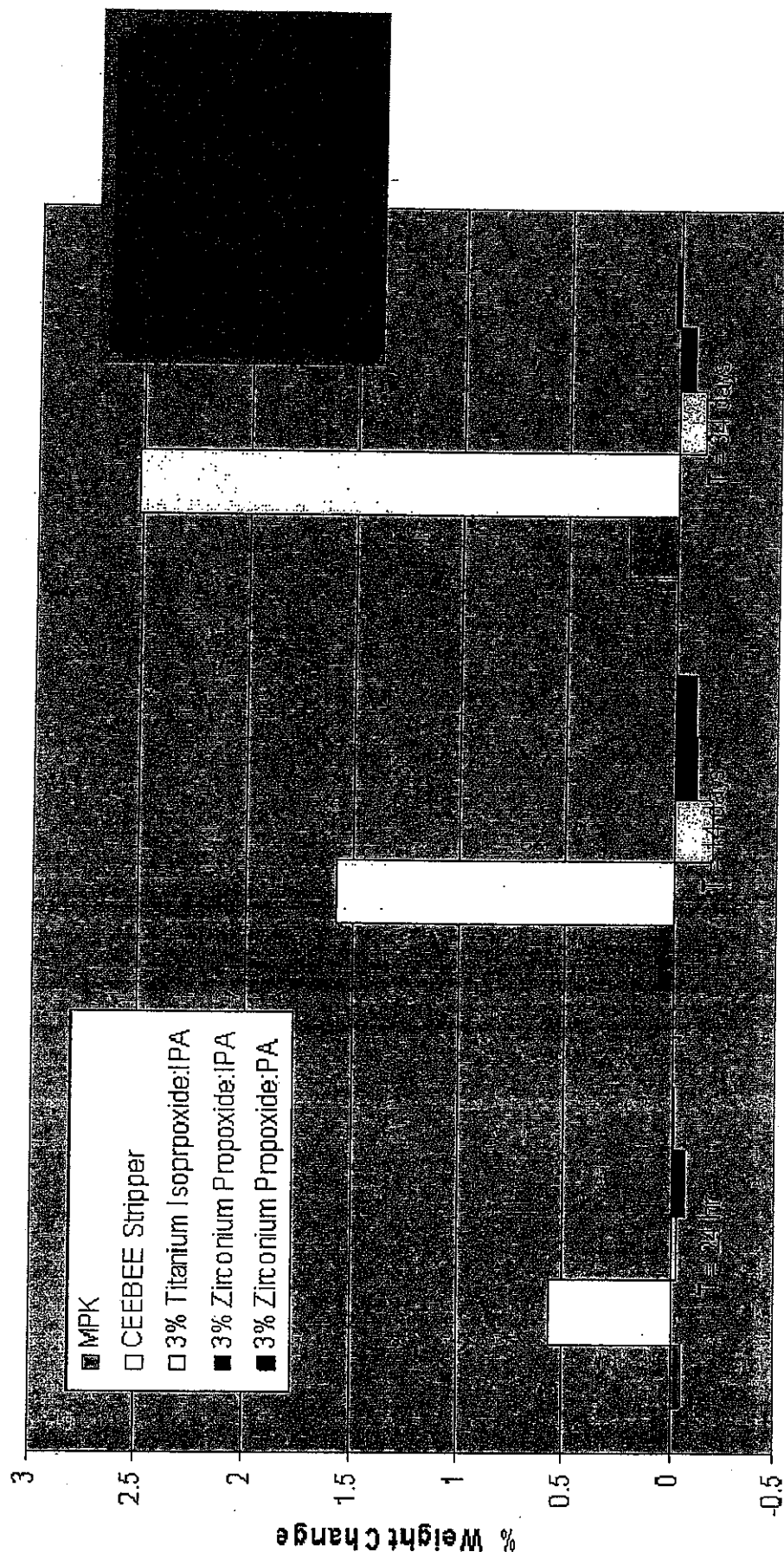
Time

Figure 33



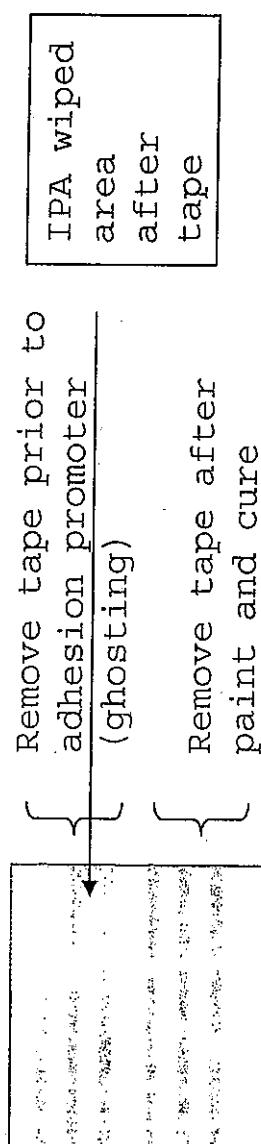
Time

Figure 34



Time

Figure 35



Untreated

Figure 36

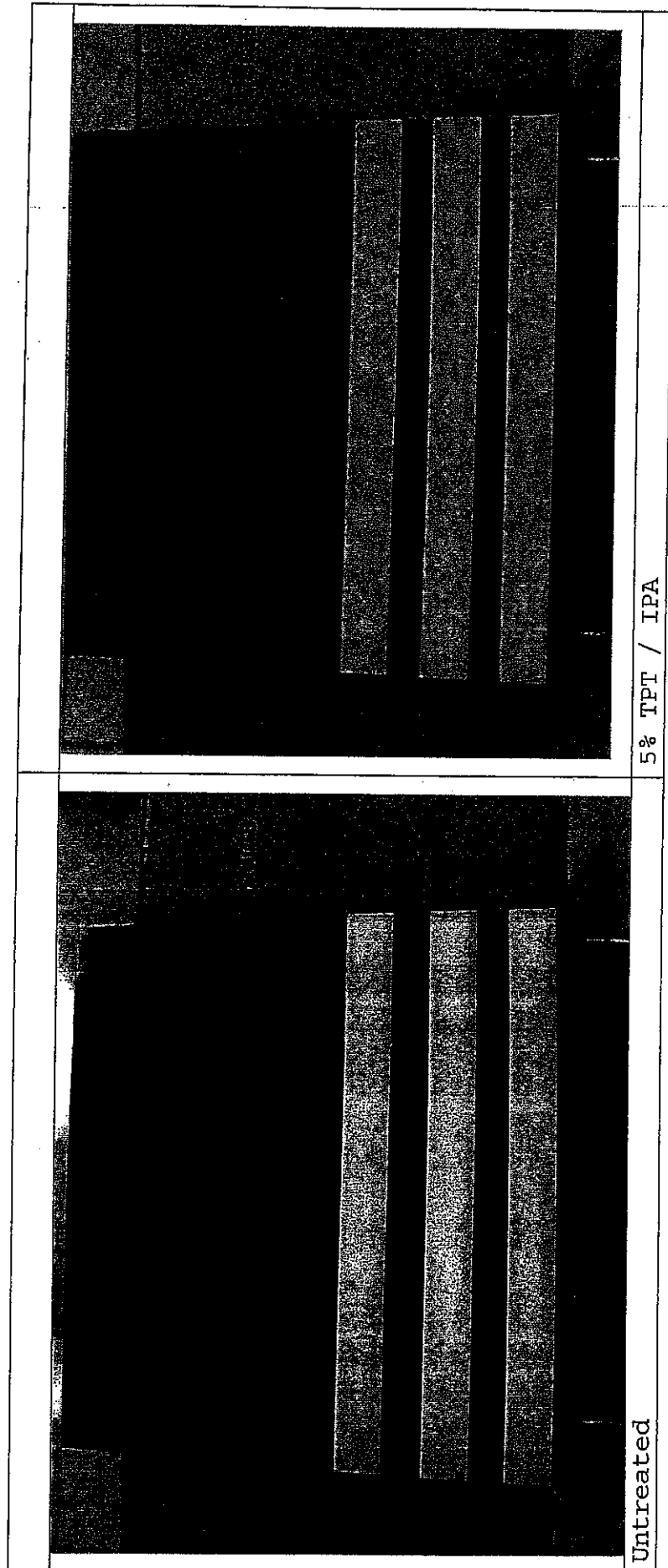


Figure 36 cont.

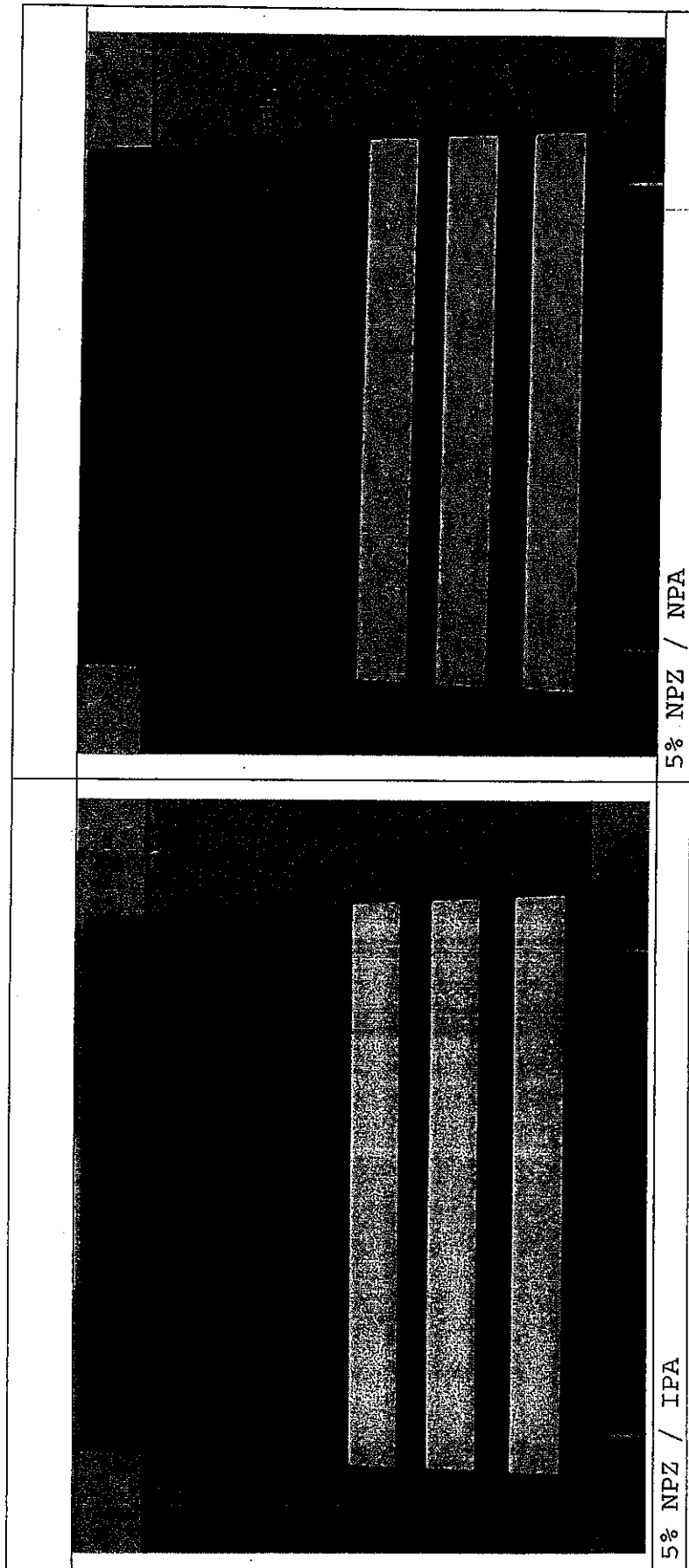


Figure 36 cont.

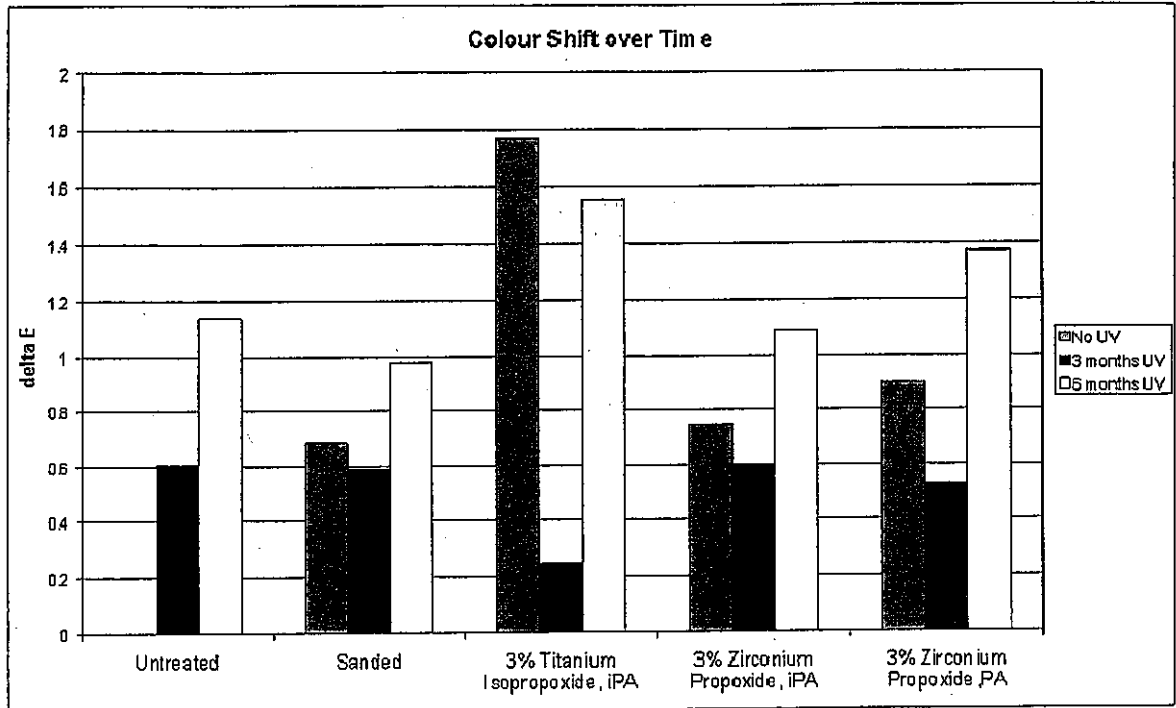


Figure 37

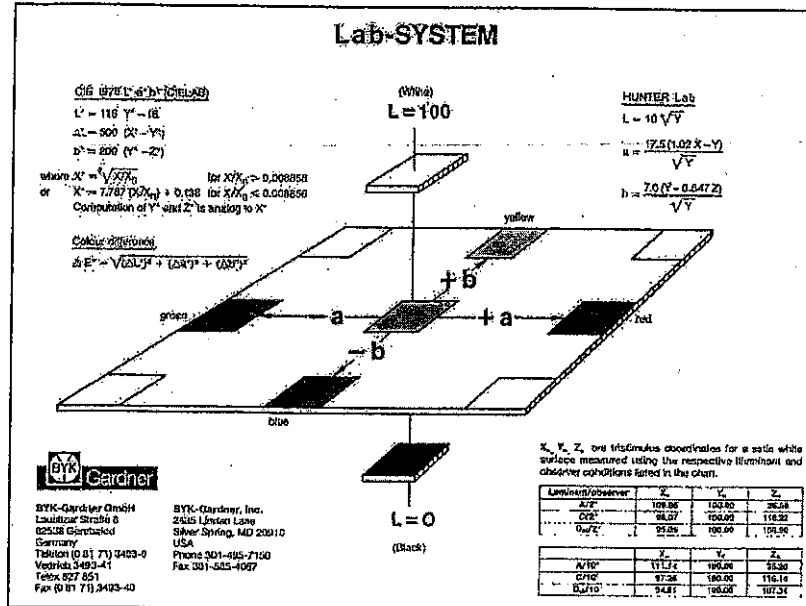
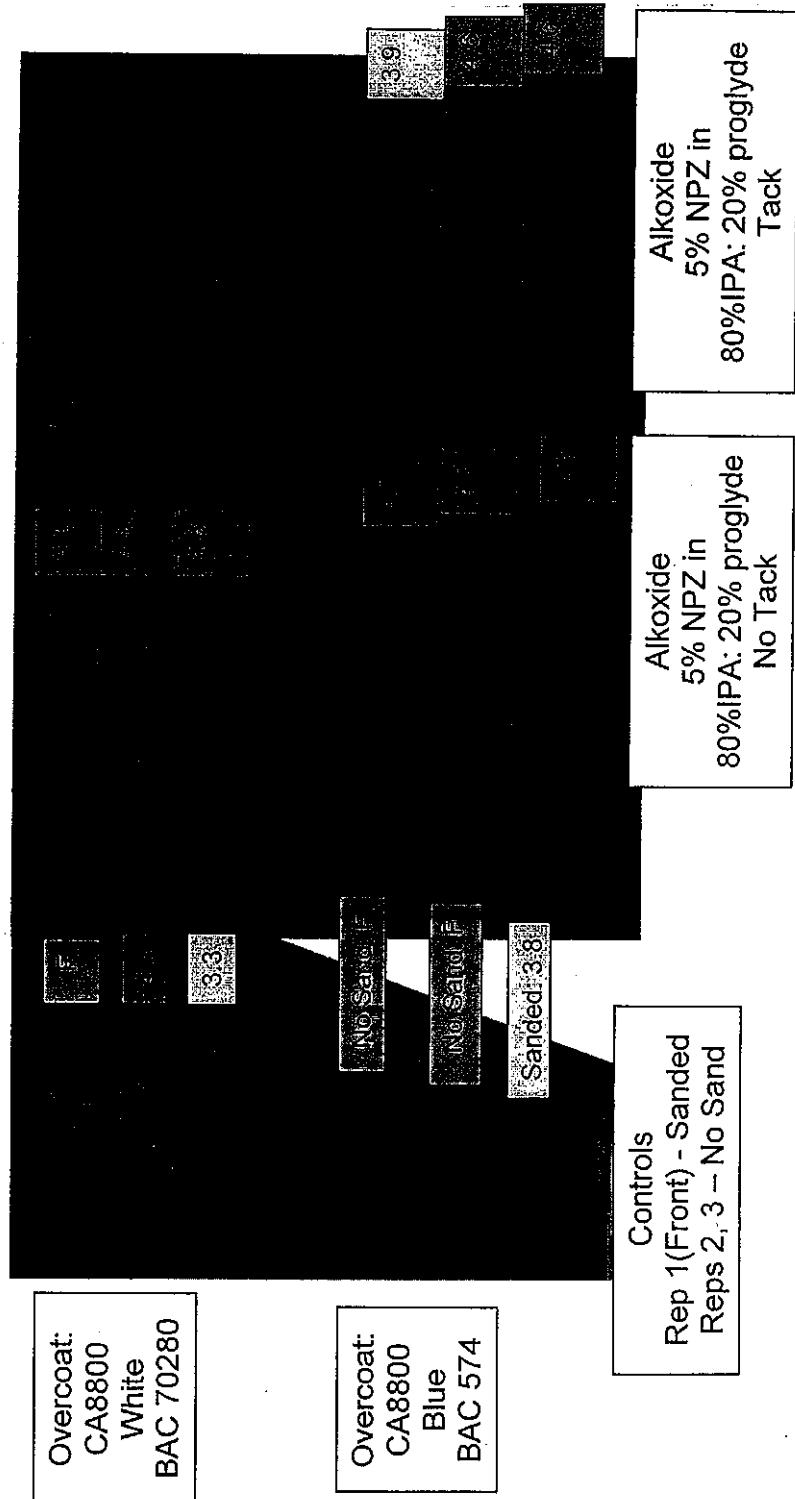


Figure 38



F = Fail with maximum tear length more than $\frac{3}{4}$ "

Figure 39

1stCoat	cure	Modification Agent	Overcoat	Before Hydraulic Fluid Soak rating	After 30 day hydraulic fluid soak
DHS 70846	75F 12%RH 72hr	untreated	DHS 707	5H	3B
DHS 70846	75F 12%RH 72hr	5%Zr 60%IPA/40%Prog	DHS 707	5H	F
DHS 70846	75F 12%RH 72hr	5%Zr 60%nPA/40%Prog	DHS 707	5H	F
DHS 70846	75F 12%RH 72hr	5%Zr 80%IPA/20%Prog	DHS 707	5H	F
DHS 70846	75F 70%RH 72hr	untreated	DHS 707	5H	B
DHS 70846	75F 70%RH 72hr	5%Zr 60%IPA/40%Prog	DHS 707	5H	H
DHS 70846	75F 70%RH 72hr	5%Zr 60%nPA/40%Prog	DHS 707	5H	H
DHS 70846	75F 70%RH 72hr	5%Zr 80%IPA/20%Prog	DHS 707	5H	F
Ecl 70846	75F 70%RH 72hr	untreated	Ecl 707	5H	3H
Ecl 70846	75F 70%RH 72hr	5%Zr 60%IPA/40%Prog	Ecl 707	5H	4H
Ecl 70846	75F 70%RH 72hr	5%Zr 60%nPA/40%Prog	Ecl 707	5H	4H
DHS8800 70846	75F 70%RH 72hr	untreated	CA 8800 70281	5H	HB
DHS8800 70846	75F 70%RH 72hr	5%Zr 60%IPA/40%Prog	CA 8800 70281	5H	H
DHS8800 70846	75F 70%RH 72hr	5%Zr 60%nPA/40%Prog	CA 8800 70281	5H	B

DHS - Desothane

Ecl - Eclipse

Overcoat cure protocol: 3 days 120F, 14% RH

Figure 40

Basecoat Application	Modification Agent	Overcoat Application	Paint Thickness (mils)	Gardner Impact Passed (lbs)
2 Coats	Untreated	2 Coats 51265 Blue	3.45	60
2 Coats	Untreated	2 Coats 51265 Blue	3.17	60
2 Coats	Alkoxide	2 Coats 51265 Blue	2.85	80
2 Coats	Alkoxide	2 Coats 51265 Blue	3.47	80
2 Coats	Untreated	2 Coats 2574 Orange	3.09	80
2 Coats	Untreated	2 Coats 2574 Orange	3.16	80
2 Coats	Alkoxide	2 Coats 2574 Orange	3.44	80
2 Coats	Alkoxide	2 Coats 2574 Orange	3.21	70
3 Coats	Untreated	3 Coats 51625 Blue	3.90	80
3 Coats	Untreated	3 Coats 51625 Blue	3.79	80
3 Coats	Alkoxide	3 Coats 51625 Blue	4.18	70
3 Coats	Alkoxide	3 Coats 51625 Blue	4.19	80
3 Coats	Untreated	3 Coats 2574 Orange	4.57	80
3 Coats	Untreated	3 Coats 2574 Orange	3.97	80
3 Coats	Alkoxide	3 Coats 2574 Orange	3.70	80
3 Coats	Alkoxide	3 Coats 2574 Orange	3.89	80
4 Coats	Untreated	4 Coats 51625 Blue	5.20	80
4 Coats	Untreated	4 Coats 51625 Blue	5.09	80
4 Coats	Alkoxide	4 Coats 51625 Blue	4.88	80
4 Coats	Alkoxide	4 Coats 51625 Blue	3.99	70
4 Coats	Untreated	4 Coats 2574 Orange	5.07	80
4 Coats	Untreated	4 Coats 2574 Orange	5.96	80
4 Coats	Alkoxide	4 Coats 2574 Orange	4.41	80
4 Coats	Alkoxide	4 Coats 2574 Orange	5.40	80

Figure 41