

Evaluation Of Coating Performance Of INSTACOAT™ 4G In The Bectochem Perforated Pan

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PURPOSE

INSTACOAT™ 4G, a high solids, low viscosity formulation allows coating across a broad range of process parameters in any type of a coating equipment. It significantly reduces coating process time and delivers coated tablets with good surface finish. This study evaluates coating uniformity and tablet appearance of Instacoat 4G™ in a fully perforated Bectochem perforated pan.

OBJECTIVE

The objective was to perform a coating trial with INSTACOAT™ 4G using Bectochem perforated pan.

METHOD

9.1 mm round biconvex tablets having monogram (IC Logo) on one side, were used for the coating trials. INSTACOAT™ 4G, a high productivity film coating system from IDEAL CURES, was reconstituted at 35% solids concentration in water and applied at a target weight gain of 3%. The coating dispersion was evaluated for appearance and viscosity. Coating trial was conducted in Bectochem Perforated Pan (Autocoater; Model: T-043), equipped with 3 spray guns (Devilbiss) using predetermined coating parameters (Table No. 1). Coated tablet samples were collected at 15 minute intervals throughout the process which was continued until a 3% weight gain was achieved. Tablets were assessed for visual appearance, color difference, disintegration time and coating defects. Color difference of the coated tablets was measured using a reflectance spectrophotometer.

Table No. 1: Coating Process Parameters

INSTACOAT™ 4G		Yellow
Coating Pan Details		
Pan Diameter (Inch)	48	
No. of Baffles	8	
Spray Gun Details		
Gun Type	Devilbiss	
No. of Guns	3	
Nozzle Diameter (mm)	1.2	
Coating Suspension Details		
Solids Content (% w/w)	35	
Solvent	Purified Water	
Stirring Time (minutes)	45	
Coating Process Parameters		
Target Weight Gain (%)	3.0	
Batch Size (kg)	150	
Inlet Temperature (°C)	52-55	
Bed Temperature (°C)	41-43	
Gun to Bed Distance (cm)	15-17	
Atomizing Air Pressure (bar)	4	
Pan Speed (rpm)	3-12	
Pump Speed (rpm)	5-12	
Spray Rate (g/min)	120-170	

RESULTS

The INSTACOAT™ 4G coating trial was successfully carried out at a batch size of 150 kg using a Bectochem Perforated Pan. Coated tablets were evaluated for appearance, color difference, coating defects and disintegration time. All results were found acceptable. The appearance and color uniformity of coated tablets was good. No coating defects were observed.

Table No. 2: Coated Tablet Characteristics

Sampling Intervals (min)	Theoretical Coating Weight Gain (%)	Actual Coating Weight Gain (%)	Parameters Location	L1	L2	L3	L4	L5	L6
				15	0.5	0.22	Colour Difference (dE)	9.922	8.800
			Coating Defects	Nil					
30	1.050	0.58	Colour Difference (dE)	5.580	6.001	6.300	6.400	6.320	5.680
			Coating Defects	Nil					
45	1.5	0.83	Colour Difference (dE)	5.237	5.200	5.400	5.321	5.335	5.380
			Coating Defects	Nil					
*60	2.1	1.012	Colour Difference (dE)	1.180	1.090	1.140	1.200	1.250	1.310
			Disintegration Time (Sec.)	45	46	45	47	45	46
			Coating Defects	Nil					
75	2.6	1.26	Colour Difference (dE)	0.829	0.900	0.858	0.867	0.872	0.880
			Disintegration Time (Sec.)	48	49	47	48	47	49
			Coating Defects	Nil					
90	3.15	1.39	Colour Difference (dE)	0.780	0.778	0.775	0.780	0.700	0.732
			Disintegration Time (Sec.)	50	51	51	50	52	52
			Coating Defects	Nil					
105	3.67	1.67	Colour Difference (dE)	0.700	0.702	0.750	0.760	0.770	0.745
			Disintegration Time (Sec.)	51	52	55	52	50	53
			Coating Defects	Nil					
120	4.2	2.80	Colour Difference (dE)	0.658	0.648	0.659	0.680	0.700	0.712
			Disintegration Time (Sec.)	60	62	61	60	62	62
			Coating Defects	Nil					
135	4.75	2.95	Colour Difference (dE)	0.549	0.600	0.560	0.572	0.576	0.578
			Disintegration Time (Sec.)	65	66	68	68	68	67
			Coating Defects	Nil					

*Tablets achieved acceptable color uniformity after 60 minutes of coating. Uncoated tablet disintegration time: 34 seconds

Table No. 3: Coating Process Evaluation

Parameters	Observations
(A) Process Feasibility	
Ease of Operation	No gun blocking observed.
Sprayability	Agglomerate free, readily sprayable coating suspension
(B) Coating Defects	
Coating Defects	No coating defects observed (100 tablets were checked visually)
(C) Tablet Appearance	
Smoothness	Smooth Tablet Surface
Logo Clarity	Good

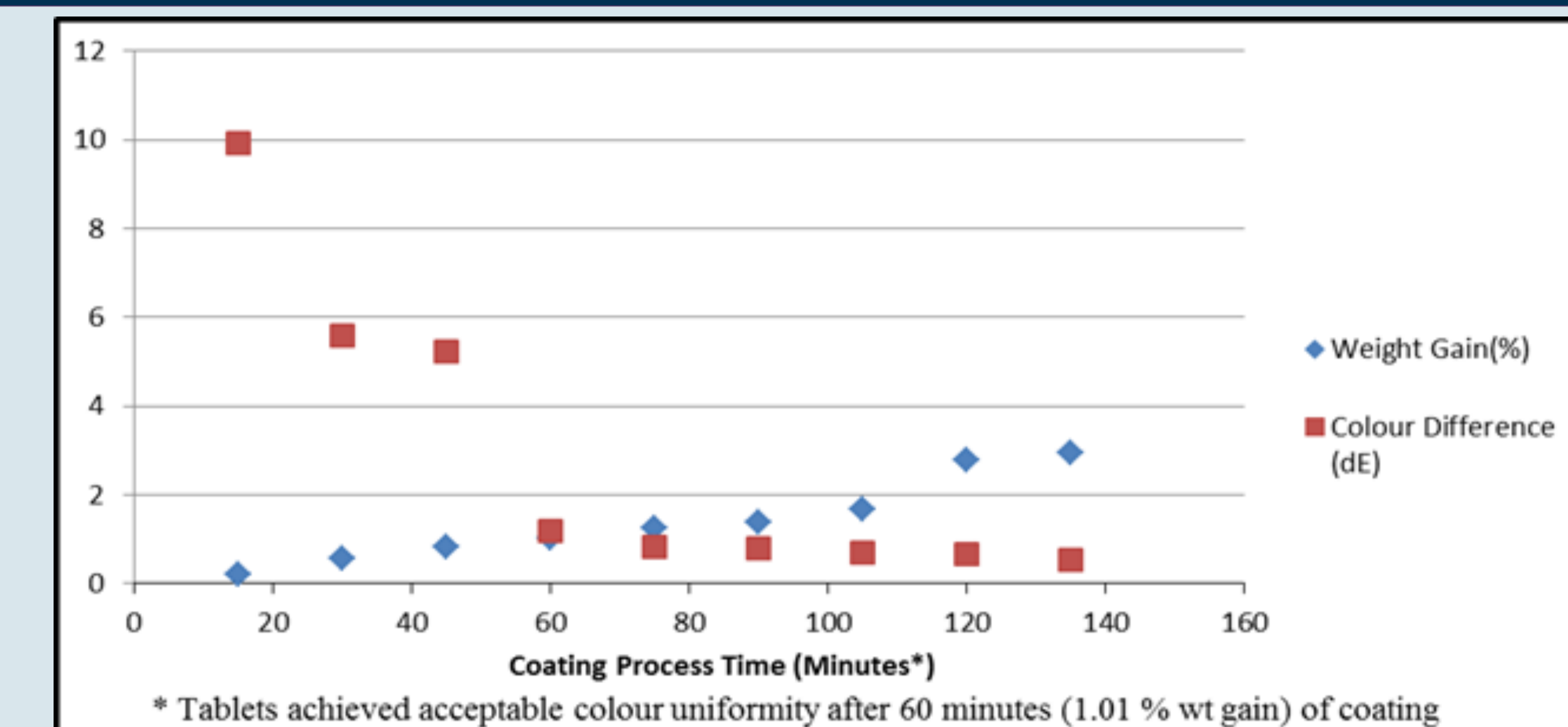


Figure No. 1: Coating Process time versus Color Uniformity

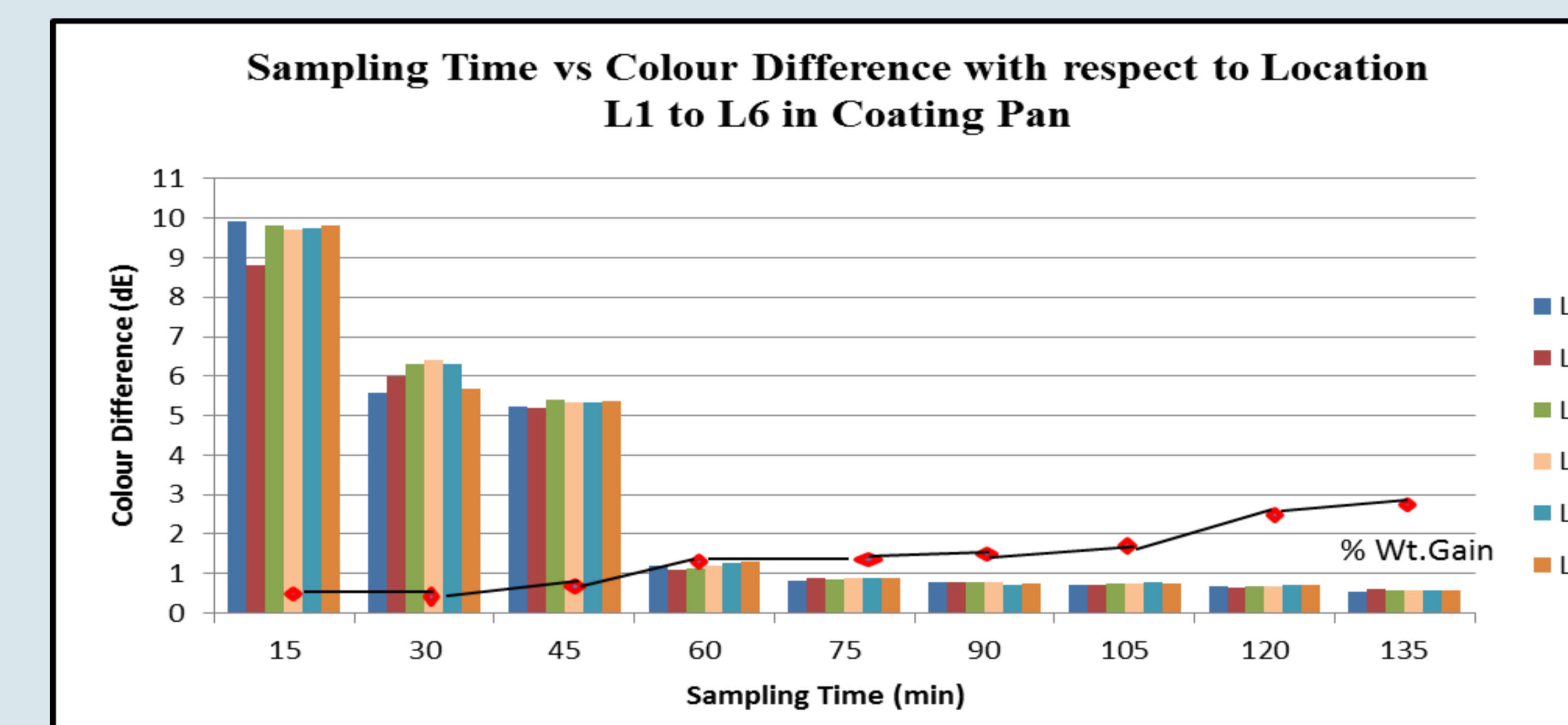


Figure No. 2: Sampling Time vs Color Difference

CONCLUSIONS

The INSTACOAT™ 4G coating trial was successfully performed at a batch size of 150 Kg using a 48 inch Bectochem Autocoater Coated tablets were evaluated for appearance, color difference, coating defects and disintegration time at various intervals throughout the coating process. All results were found acceptable. INSTACOAT™ 4G coating system was successfully applied to placebo tablets, achieving good color uniformity within a short process time.

FUNDING / GRANTS / ENCORE / REFERENCE OR OTHER USE

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INSTACOAT 4G