

# Carbon nanotube modified aqueous commercial paints for electroconductive coats

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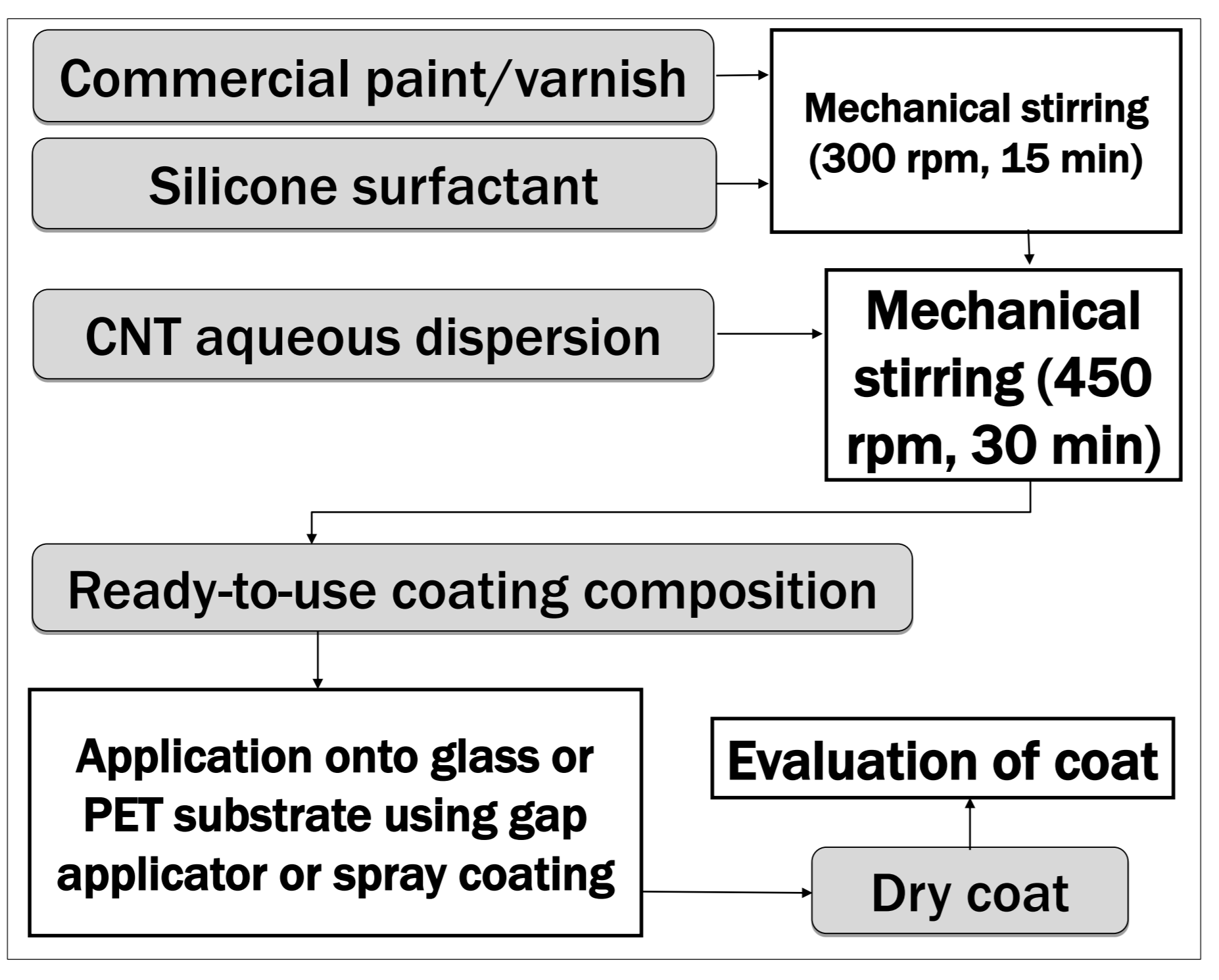
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## INTRODUCTION

Specially prepared aqueous dispersion of carbon nanotube (CNT) was introduced into paints/varnishes in small amounts (0.25-2.5 wt.% dry mass) to improve electrical, mechanical, thermal and other properties of the final dry coats. Falling prices of CNT (<100EUR/kg) make them attractive additive for existing polymer coating materials.

## EXPERIMENTAL

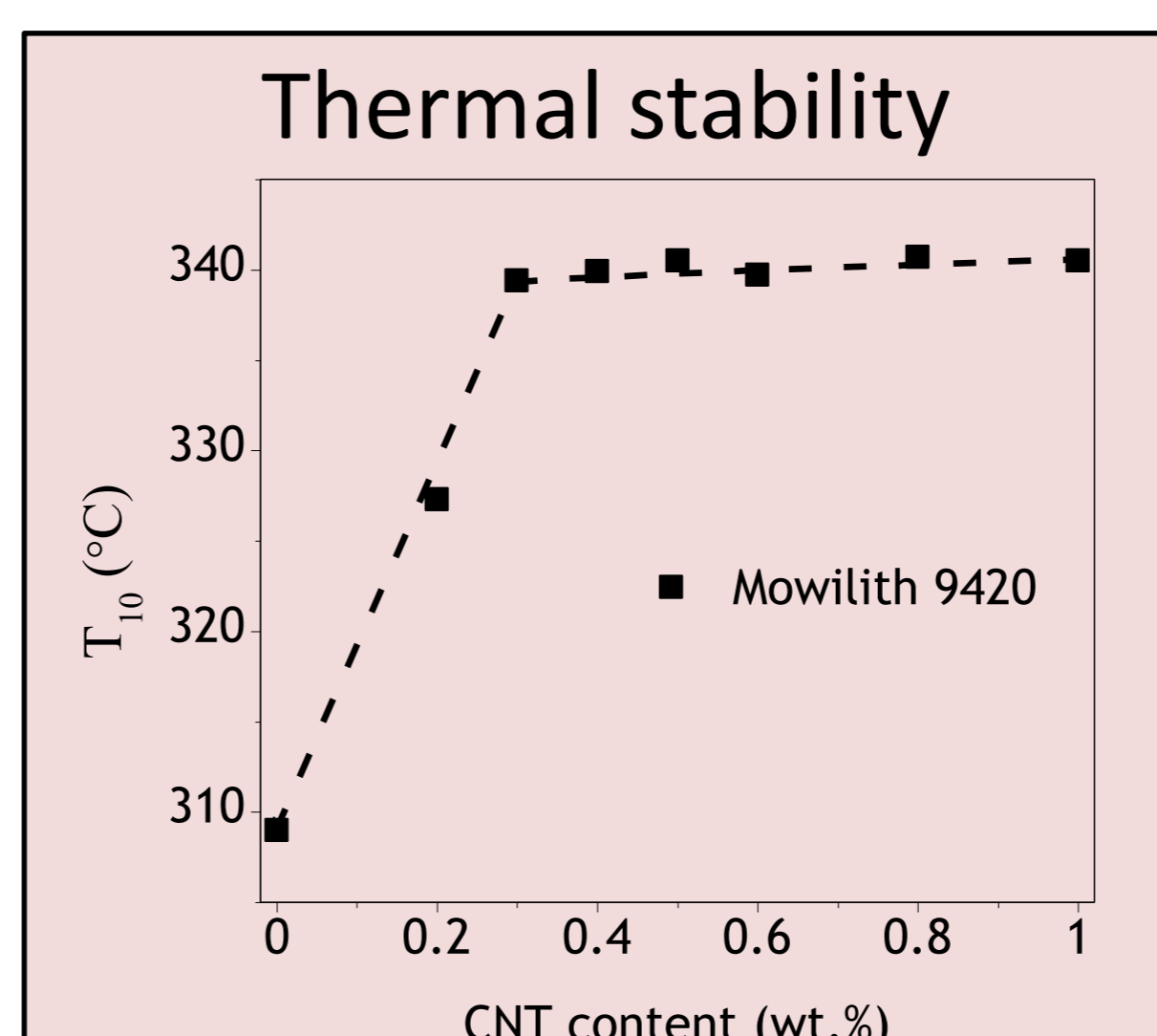
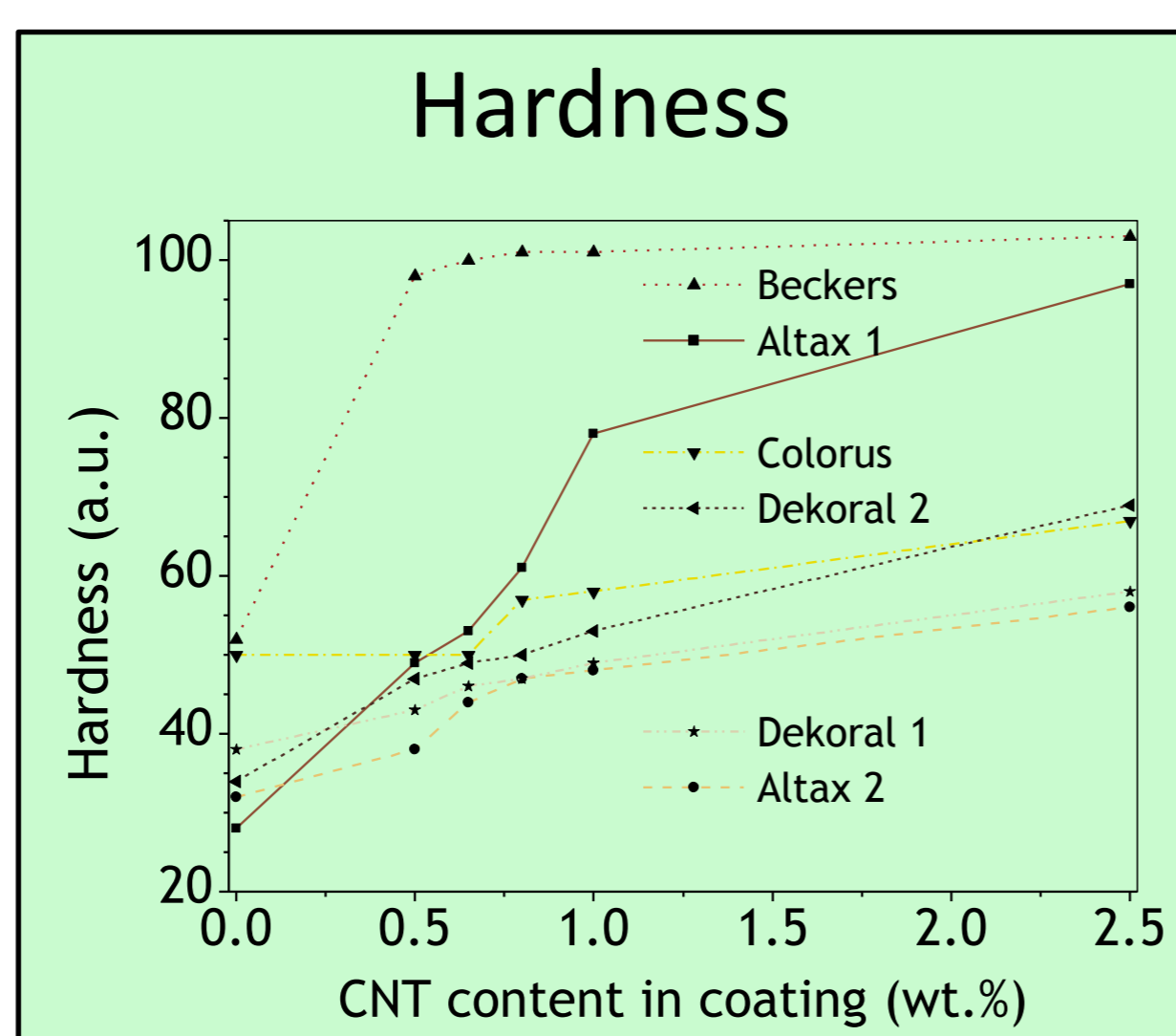
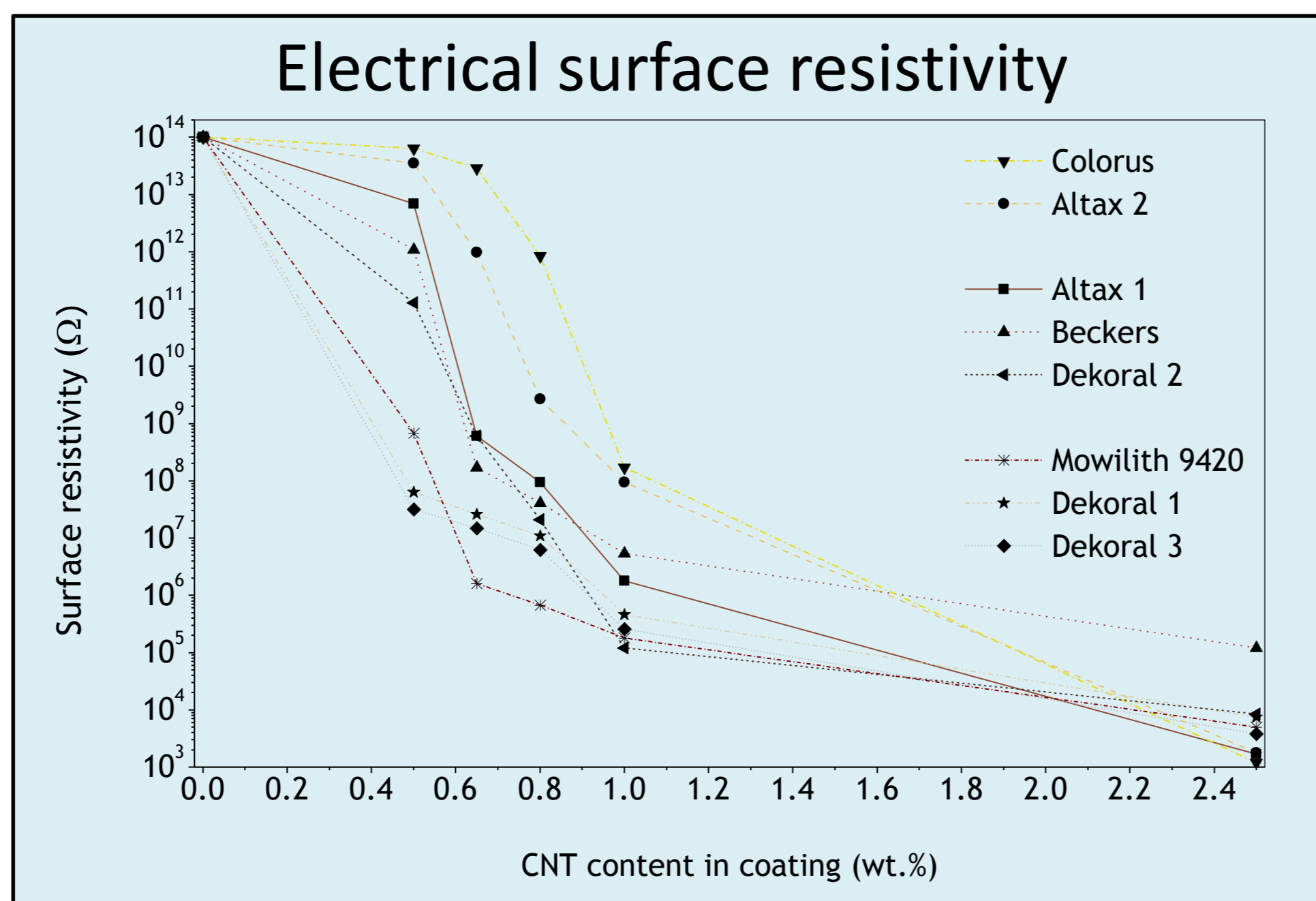
CNT aqueous dispersion was used for modification of a number of commercial water-based polymer binders



## Color

Binder	CNT content [wt.%]	RAL code	Color
Altax 1	0	8004	copper brown
	0.5	8016	mahogany brown
	0.65	8016	mahogany brown
	0.8	8017	chocolate brown
	1	8017	chocolate brown
	2.5	8019	grey brown
Altax 2	0	-	pine
	0.5	7003	moss grey
	0.65	7003	moss grey
	0.8	7005	mouse grey
	1	7005	mouse grey
	2.5	7043	traffic grey B
Beckers	0	3000	flame red
	0.5	8015	chestnut brown
	0.65	8015	chestnut brown
	0.8	8015	chestnut brown
	1	8016	mahogany brown
	2.5	8017	chocolate brown
Colorus	0	-	light yellow
	0.5	7042	traffic grey A
	0.65	7042	traffic grey A
	0.8	7042	traffic grey A
	1	7046	telegrey 2
	2.5	7012	basalt grey
Dekoral 1	0	9001	cream
	0.5	7004	signal grey
	0.65	7004	signal grey
	0.8	7040	window grey
	1	7045	telegrey 1
	2.5	7011	iron grey
Dekoral 2	0	8016	mahogany brown
	0.5	8017	chocolate brown
	0.65	8017	chocolate brown
	0.8	8017	chocolate brown
	1	8028	terra brown
	2.5	8022	black brown
Dekoral 3	0	-	platinum grey
	0.5	7040	window grey
	0.65	7040	window grey
	0.8	7045	telegrey 1
	1	7046	telegrey 2
	2.5	7011	iron grey

## RESULTS



## DSC/DMA (Mowilith)

CNT content [wt.%]	DSC	DMA
	T <sub>g</sub> [°C]	T <sub>g</sub> [°C]
0	13.3	10.7
0.2	13.1	11.5
0.3	13.4	11.0
0.4	13.2	11.3
0.5	13.2	11.6
0.6	13.1	12.5
0.8	13.4	11.0
1	13.3	11.5

## CONCLUSIONS

The modification of commercial water-borne coating materials using CNT allows to improve their electroconductive properties, hardness, thermal stability, and does not change their glass transition temperatures.