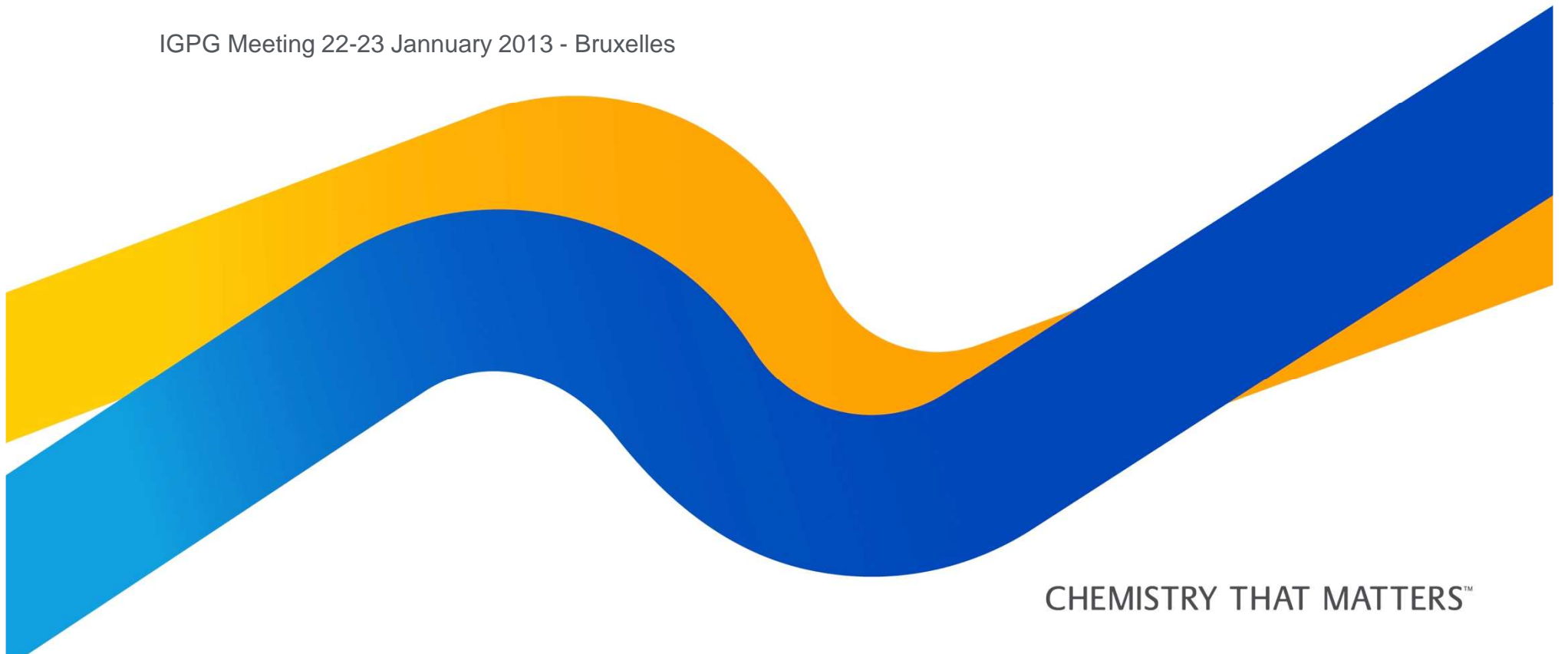


# IGPG SG2 – Accelerated Wiper Testing

November 2012 SG2 meeting update

IGPG Meeting 22-23 January 2013 - Bruxelles



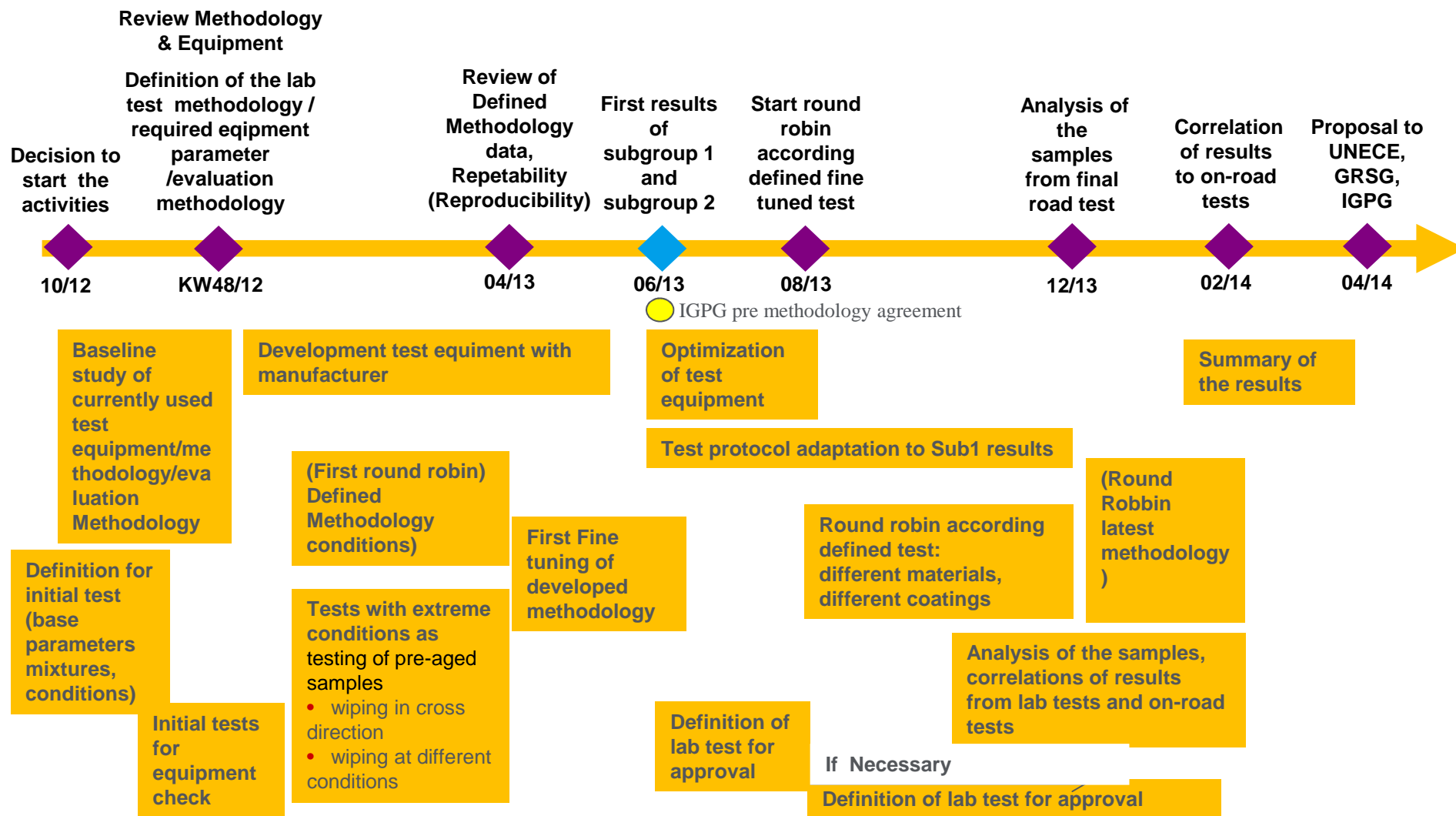
# IGPG-SG2 ACCELERATED WIPER TESTING

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## **SG2 TARGET:**

1. Define principle test setup/test machine
2. Define procedure / test protocol
3. Propose an evaluation methodology
4. Check Repeatability and reproducibility
5. Correlate with Subgroup I - onroad results

# IGPG-SG2 ACCELERATED WIPER TESTING



## IGPG-SG2 ACCELERATED WIPER TESTING

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### MEETING HAD IN DARMSTADT W48/2012

- Feed back on preliminary test result carried on some equipment
- Reviewed Methodology & Equipment based on questionnaire feed back from Bayer, Bosch, BYK, Evonik, PSA, Renault, SABIC, Valeo
- Defined wiper lab equipment / wiper test methodology / main protocol /evaluation methodology, with identification of main “extreme condition” protocols
- Reviewed planning from 11/12 to 04/13

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Feed back on preliminary test result carried on some equipments  
 Participating companies: *Audi, Bayer, Bosch, Evonik, Momentive*

Report out from Bayer  
 Summary:



N° Cycle	Substrate	Summary report
1000 dry with dust	Wet Coated PC	- repeatable abrasion - very similar values on different equipment
	Wet Coated PMMA	- repeatable abrasion - very similar values on different equipment
	Glass	- inhomogeneous abrasion on single test samples - quite repeatable abrasion - similar values on different equipment
3000 dry with dust	Wet Coated PC	- Inhomogeneous abrasion on single test samples - quite repeatable abrasion - very similar values on different equipment
	Wet Coated PMMA	- repeatable abrasion - very similar values on different equipment
	Glass	- quite high haze values - inhomogeneous abrasion, especially with one equipment - repeatable abrasion
25000 wet with dust	Wet Coated PC	- very low haze values - repeatable abrasion - similar values on different equipment
	Wet Coated PMMA	- almost no abrasion - repeatable - similar values on different equipment
	Glass	- low haze values - quite repeatable abrasion - similar values on different equipment

## IGPG-SG2 ACCELERATED WIPER TESTING

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**Reviewed Methodology & Equipment based on questionnaire feed back from Bayer, Bosch, BYK, Evonik, PSA, Renault, SABIC, Valeo**

Questionnaire feed back on below main topics:

- Available test equipments
- Wiper blades
- Mud/Mixture
- Protocols (Load, velocity, test cycle, flow rate, samples...)
- Evaluation methodology
- Comparison with real data

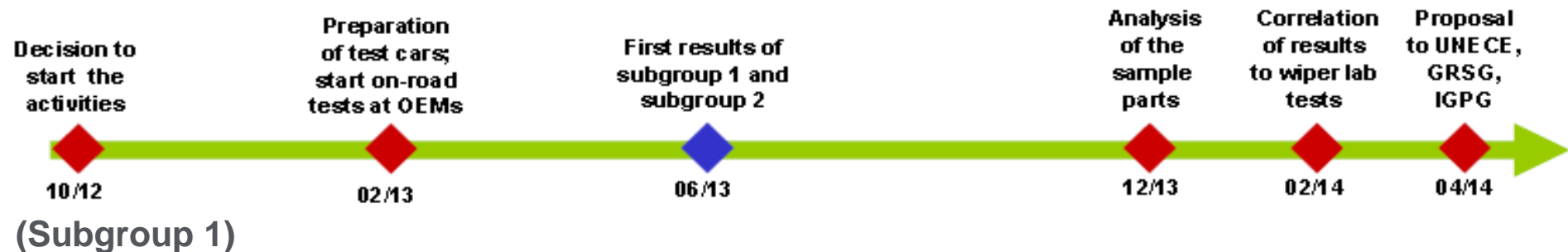
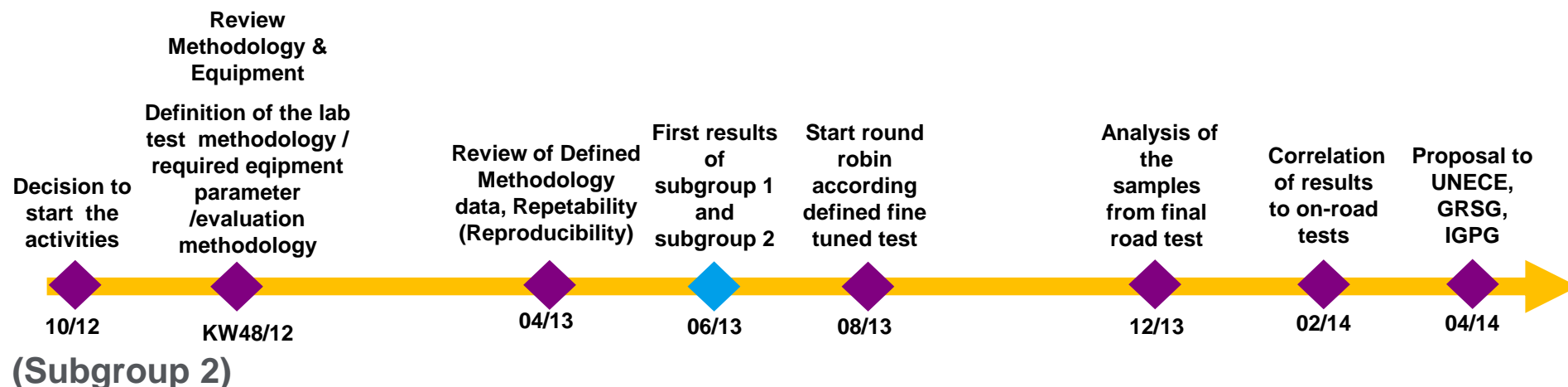


# IGPG-SG2 ACCELERATED WIPER TESTING

Discussed and agreed in the subgroup the detailed protocols that will be used for evaluation based on questionnaire feed back and further discussion:

Test device	AGREED PROTOCOLS TO BE TESTED				
	A	B	C	D	E (on N°1 Sample)
No. cycles / min					
Wipe speed	30	30	30	30	30
Wiper load	15	15	15	15	15
Stroke length, mm					
Slurry flow	Bath	Flow	Bath	Flow	Bath
Type of dust	ISO 12103-1 A4	ISO 12103-1 A4	ISO 12103-1 A4	ISO 12103-1 A4	ISO 12103-1 A4
Solution	Mud solution (92.5% water (with a hardness of less than 205mg/l after evaporation) / 5% aqueous saturated salt (sodium chloride) solution / 2.5% dust)	Mud solution (92.5% water (with a hardness of less than 205mg/l after evaporation) / 5% aqueous saturated salt (sodium chloride) solution / 2.5% dust)	Mud solution (92.5% water (with a hardness of less than 205mg/l after evaporation) / 5% aqueous saturated salt (sodium chloride) solution / 2.5% dust)	Mud solution (92.5% water (with a hardness of less than 205mg/l after evaporation) / 5% aqueous saturated salt (sodium chloride) solution / 2.5% dust)	Mud solution (92.5% water (with a hardness of less than 205mg/l after evaporation) / 5% aqueous saturated salt (sodium chloride) solution / 2.5% dust)
Sample orientation	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Sample curvature	Flat	Flat	Flat	Flat	Flat
Test size sample	Width 100mm Length 300 Bayer, Audi, Momentive Width 100mm Length 150 Evonik, Bosch (Evonic test N 3 plate at 100x300 for correlation)	Width 100mm Length 150, N3 plate 300x100 for correlation	Width 100mm Length 300 Bayer, Audi, Momentive Width 100mm Length 150 Evonik, Bosch	Width 100mm Length 150	Width 100mm Length 300 Bayer, Audi, Momentive Width 100mm Length 150 Evonik, Bosch
Wiper blade type	Bosch H CR type	Bosch H CR type	Bosch H CR type	Bosch H CR type	Bosch H CR type
Profile wiper blade	Bosch H CR type	Bosch H CR type	Bosch H CR type	Bosch H CR type	Bosch H CR type
Length of wiper blade	80	80	80	80	80
No. sample tested	3	3	3	3	3
Temperature condition	20+-5	20+-5	20+-5	20+-5	20+-5
Type of protocol	Wet with Bath	Wet with slurry	Dry	continius protocol 10 dry cycles, 20 wet cycles, 6 sec off; repeated upto the end	Wet with Bath followed dry
Total no of cycles	25000	25000	1000	25000	25000 wet followed 1000 dry
Sample conditioning	24h standard climate (23°C/ 50% r.h.)	24h standard climate (23°C/ 50% r.h.)	24h standard climate (23°C/ 50% r.h.)	24h standard climate (23°C/ 50% r.h.)	24h standard climate (23°C/ 50% r.h.)
Sample cleaning-before	IPA cleaning followed by deionized water cleaning and drying	IPA cleaning followed by deionized water cleaning and drying	IPA cleaning followed by deionized water cleaning and drying	IPA cleaning followed by deionized water cleaning and drying	IPA cleaning followed by deionized water cleaning and drying
Sample cleaning-After	Wash with running water, dry, IPA cleaning followed by deionized water cleaning and drying	Wash with running water, dry, IPA cleaning followed by deionized water cleaning and drying	Wash with running water, dry, IPA cleaning followed by deionized water cleaning and drying	Wash with running water, dry, IPA cleaning followed by deionized water cleaning and drying	Wash with running water, dry, IPA cleaning followed by deionized water cleaning and drying
Frequency blade change	After each test	After each test	After each test	After each test	After each test (change also between wet and dry)
Post wiper Characterization	Haze, Clarity and reading with scratch on the light souce and opposite, visual inspection	Haze, Clarity and reading with scratch on the light souce and opposite, visual inspection	Haze, Clarity and reading with scratch on the light souce and opposite, visual inspection	Haze, Clarity and reading with scratch on the light souce and opposite, visual inspection	Haze, Clarity and reading with scratch on the light souce and opposite, visual inspection
Colour	Clear if possible	Clear if possible	Clear if possible	Clear if possible	Clear if possible
Materials tested	PC Wet Coated, PMMA Wet Coated, Glass, PC UV Coated	PC Wet Coated, PMMA Wet Coated, Glass, PC UV Coated	PC Wet Coated, PMMA Wet Coated, Glass	PC Wet Coated, PMMA Wet Coated, Glass	PC Wet Coated, PMMA Wet Coated, Glass
Test Done by	Bayer, Momentive, Evonik, Bosch, (Audi)	Sabic, (Bayer, Evonik)	Bayer, Momentive, Evonik, Bosch, (Audi)	Sabic	Bayer, Momentive, Evonik, Bosch, (Audi)

# IGPG-SG2 ACCELERATED WIPER TESTING





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