BENCHMARKING
WITH COMMERCIAL PAINTS

TESTS WITH DIFFERENTS CAPSTONE ®

BENCHMARKING STUDY WITH

15 COMMERCIAL PAINTS

REFERENCE	MARQUE / GROUPE	CATEGORIE	TYPE	APPLICATION	LABELS	RESINES	CODE EMB
ONIP Pursoie	ONIP	Batiment intérieur & Extérieur	Brillant	?	Ecolabel	alkyde uréthanne	27666
ONIP L'eaunip satin velours	ONIP	Batiment intérieur & Extérieur	Satin	?	NF Environnement	acrylique	27666
Monocouche	LUXENS (groupe Adéo)	Murs & Plafonds intérieurs	Satin	Monocouche	Ecolabel	acrylique	27666
Lumière & Couleurs	DULUX VALENTINE - ICI PAINTS	Boiseries	Brillant	Monocouche	NF Environnement	Acrylique	?
Couleurs Intérieures Brillant Ultra	LUXENS (groupe Adéo)	Murs & boiseries intérieures	Brillant	Monocouche	Ecolabel EN 71-3	Acrylique	80570
Haute Résistance Murs et boiseries	RIPOLIN	Murs & Boiseries	Brillant	Monocouche	NF Environnement	?	80570
Expression Déco facile	ASTRAL (AKZO NOBEL)	Murs et boiseries	Satin	Monocouche		acrylique	60414
Peinture murale satin	Groupe Adéo	Intérieur	Satin	Bi-couche		acrylique	57630
Architecte	DULUX VALENTINE - ICI PAINTS	Murs & Boiseries intérieures	Satin	Monocouche	Ecolabel	Alkyde émulsion Styrène Acrylique	?
Avis 3000	AVI (PPG AC retail Europe)	Murs et boiseries	Satin	Monocouche	Ecolabel	acrylique	80750
Ultra Resist Cuisine	DULUX VALENTINE - ICI PAINTS	Murs Cuisine	Satin	Monocouche	Ecolabel	acrylique	?
Acrylique Brillant	Meffert France SAS		Brillant	?		acrylique	57630
Supercrème	RIPOLIN	Murs & plafonds	Satin	Monocouche	NF Environnement	? (90% origine naturelle)	80570
Perspective Cuisine & Bains	TOLLENS (MATERIS)	Murs Cuisine	Satin	Monocouche	Ecolabel	acrylique	?
Monocouche 4 en 1	LUXENS (groupe Adéo)	Murs & Boiseries intérieures	Satin	Monocouche	Ecolabel EN 71-3 Teflon ®	acrylique	39199

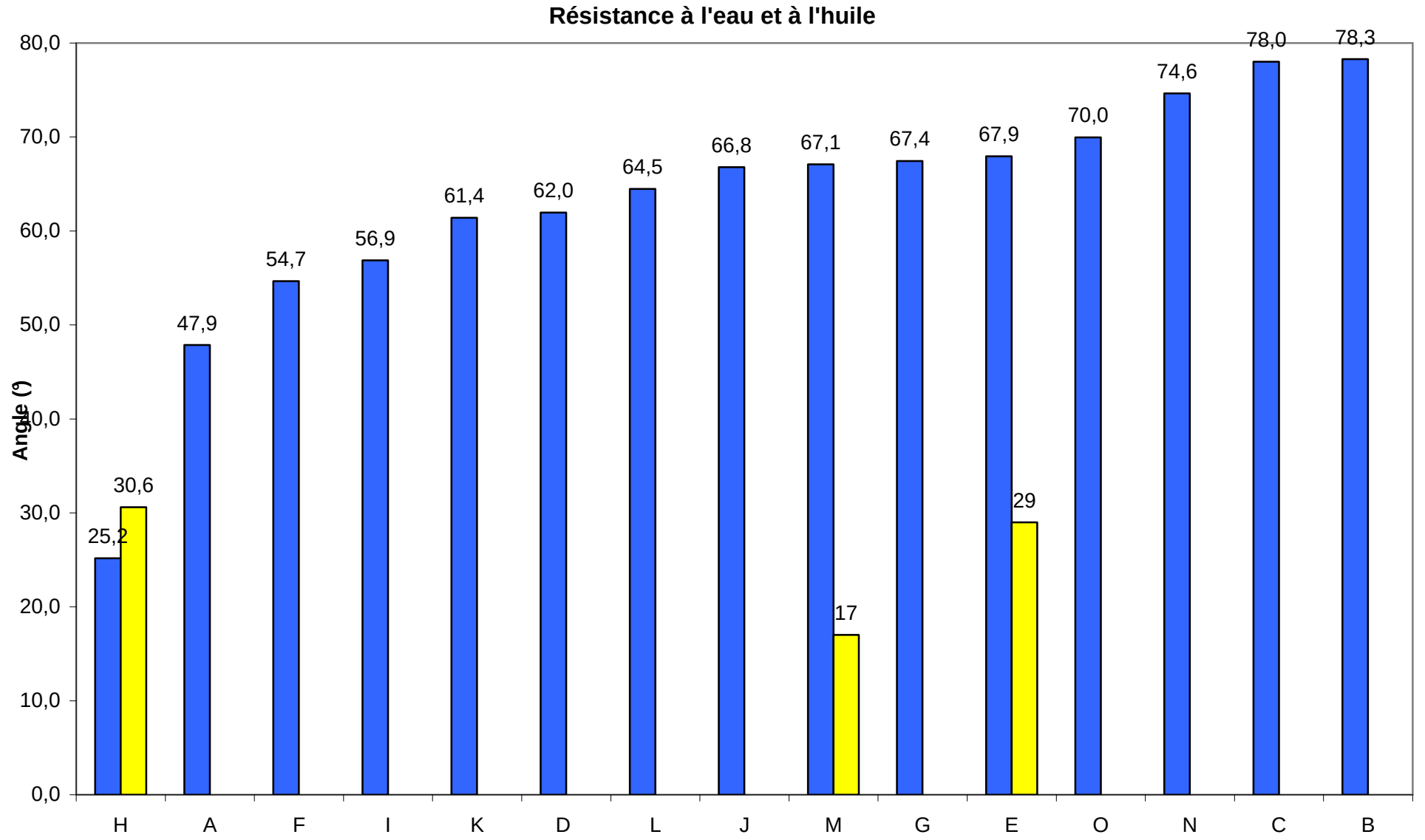
Protocol :

-Application of 200µ of humid paint in 1 layer on Leneta support

-Drying : 7 days

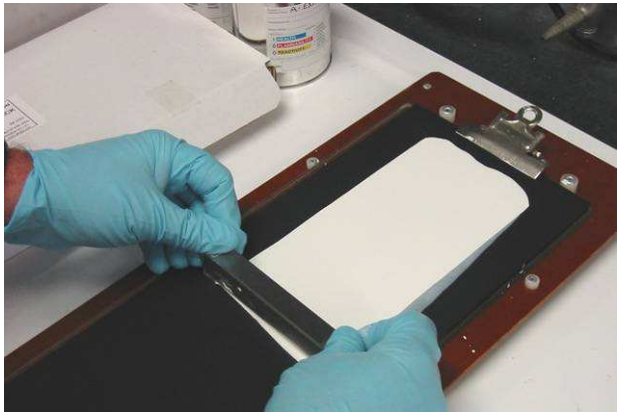
Tests done :

- Contact angle with water & oil after 1 minut
- Blocking 4h and 24h
- Gloss at 60°
- Dirt Pick-up Resistance (DPR)
- Cleanability and stain resistance

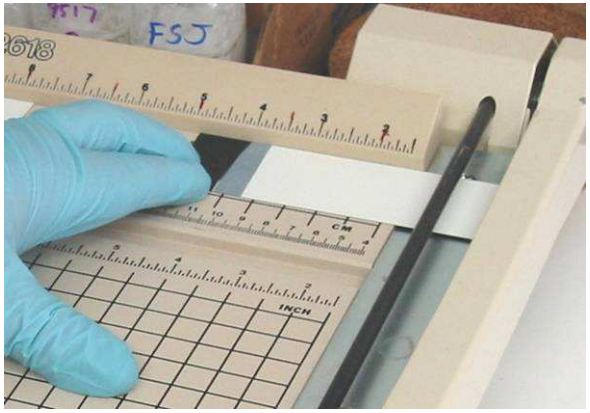


Water & Oil contact angle

Blocking Test (ASTM D- 4946 modified)

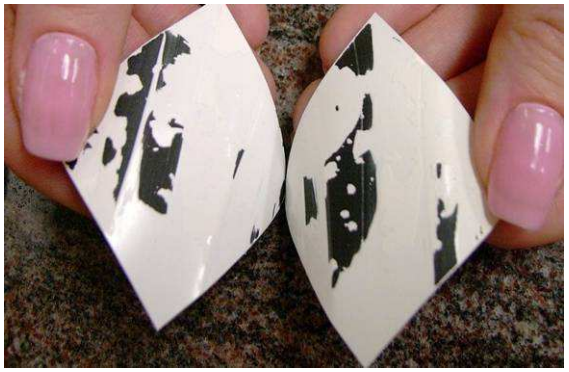


200 µm humid

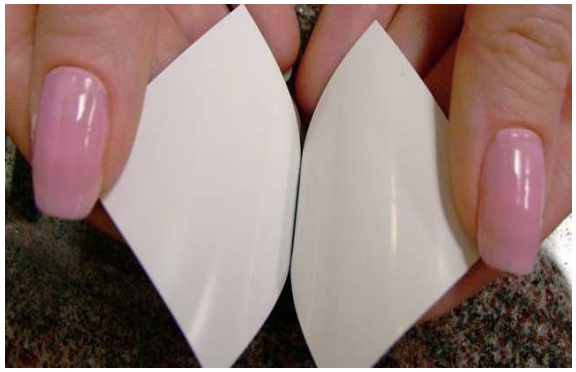


4 or 24 hours at controlled temperature & humidity

30 minuts at 50°C



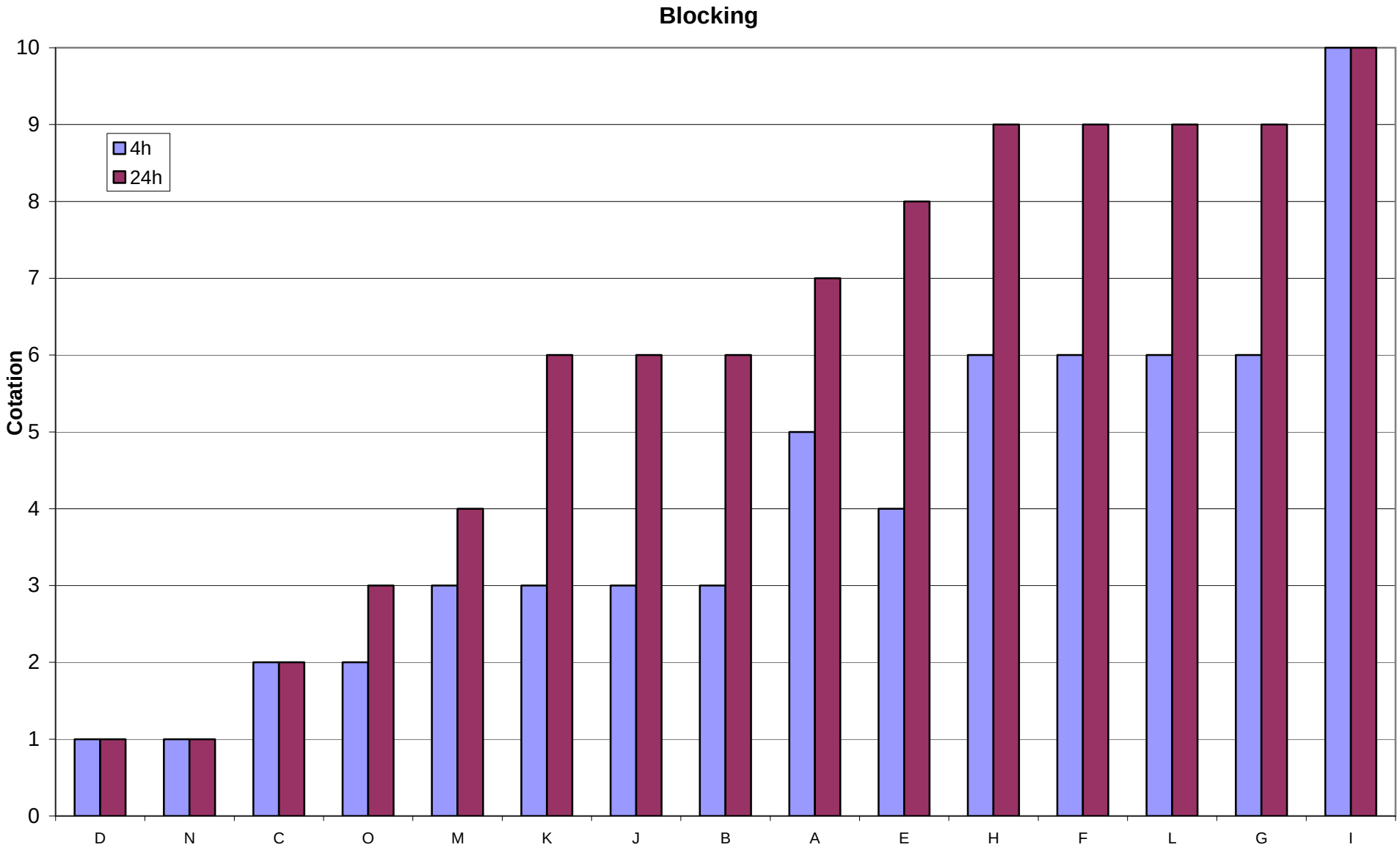
Bad blocking Résistance



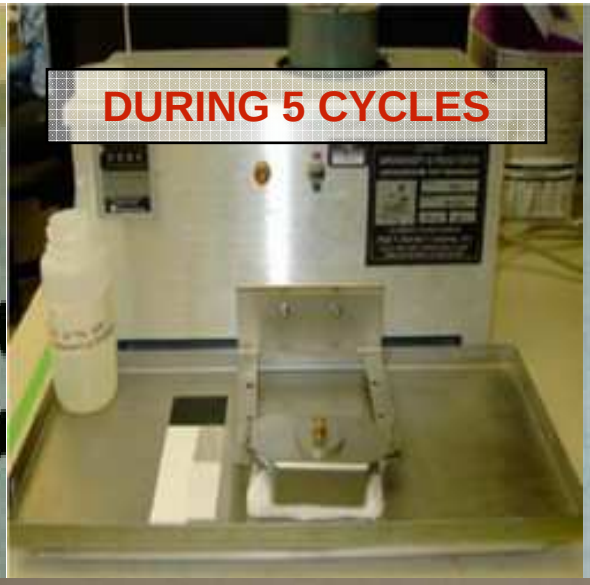
Good blocking Résistance

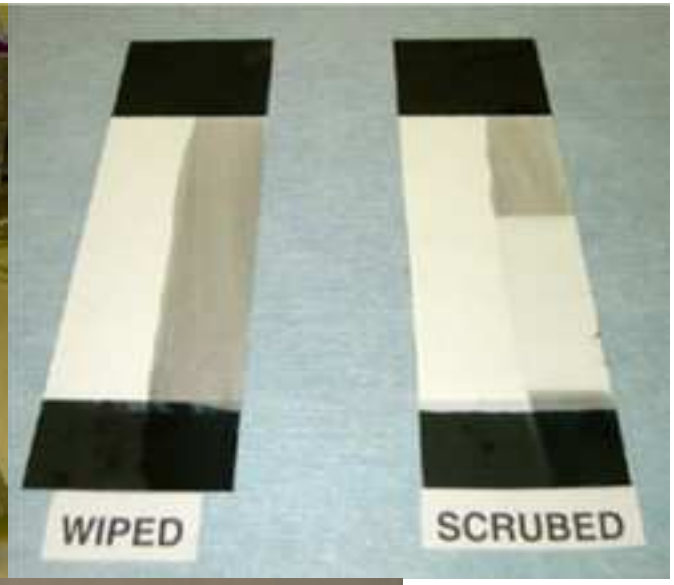
BLOCKING TEST COTATION

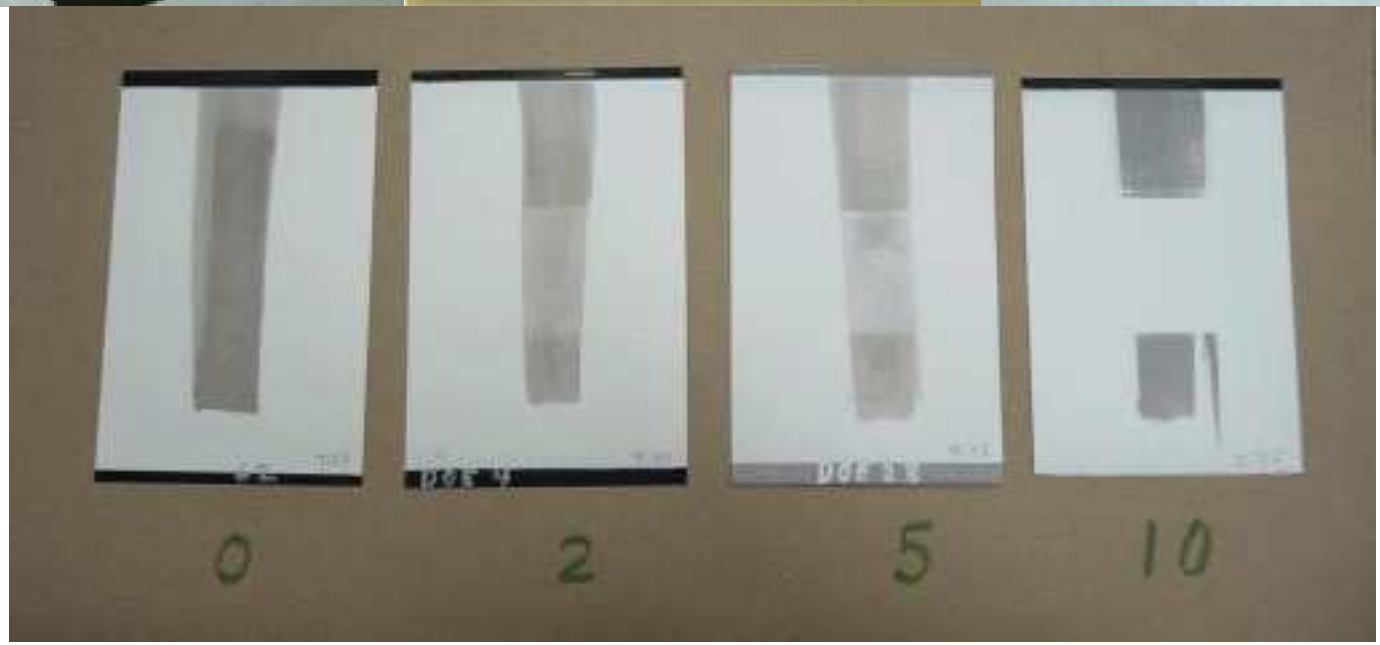
cotation	Description de la sйparation	Performance
10	pas d'adhйrence	parfait
9	trace d'adhйrence	excellent
8	trиs lйgиre adhйrence	trиs bon
7	lйgиre adhйrence	bon/ trиs bon
6	faible adhйrence	bon/ trиs bon
5	collant	assez bon
4	collant sans arrachement	mauvais a assez bon
3	5 a 25% d'arrachement	mauvais a assez bon
2	25 a 50% d'arrachement	mauvais a assez bon
1	50 a 75% d'arrachement	trиs mauvais
0	75 a 100% d'arrachement	trиs mauvais


Blocking
Cotation
4h
24h
0
1
2
3
4
5
6
7
8
9
10
D
N
C
O
M
K
J
B
A
E
H
F
L
G
I

Test ‘’Cleanability’’ (modified ASTM D - 4828)



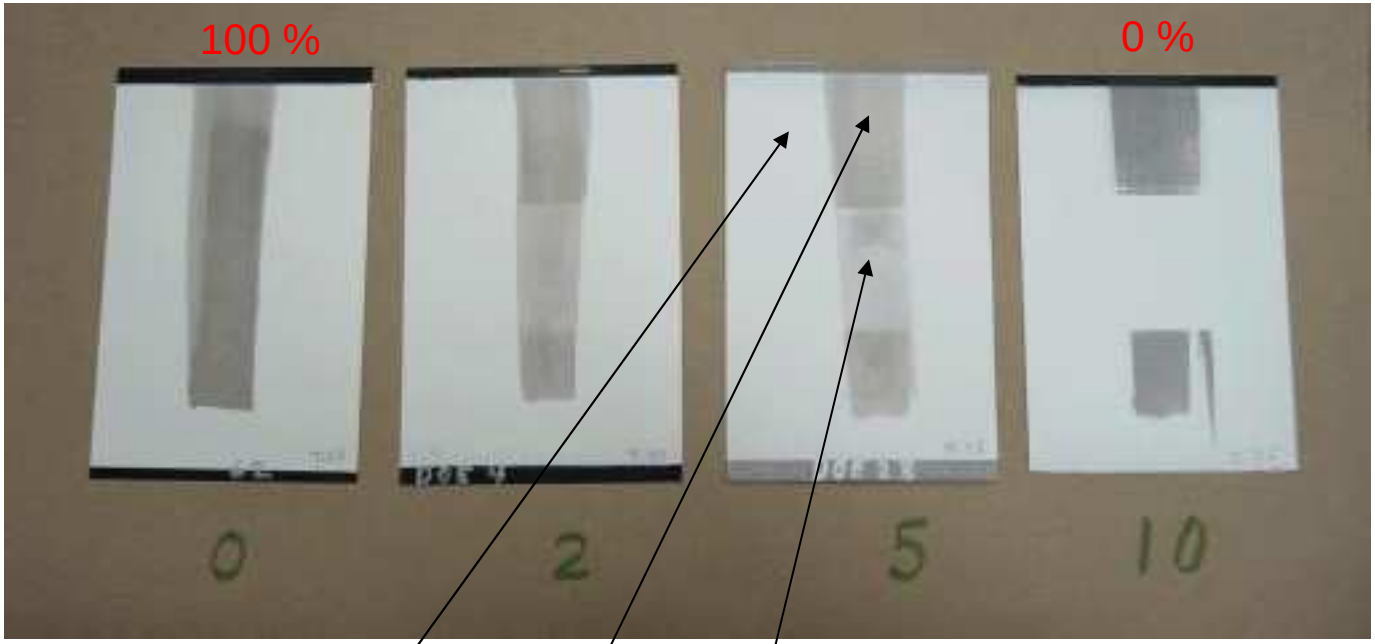




Test ‘’Cleanability’’ (modified ASTM D - 4828)

Stain retention

Lavability



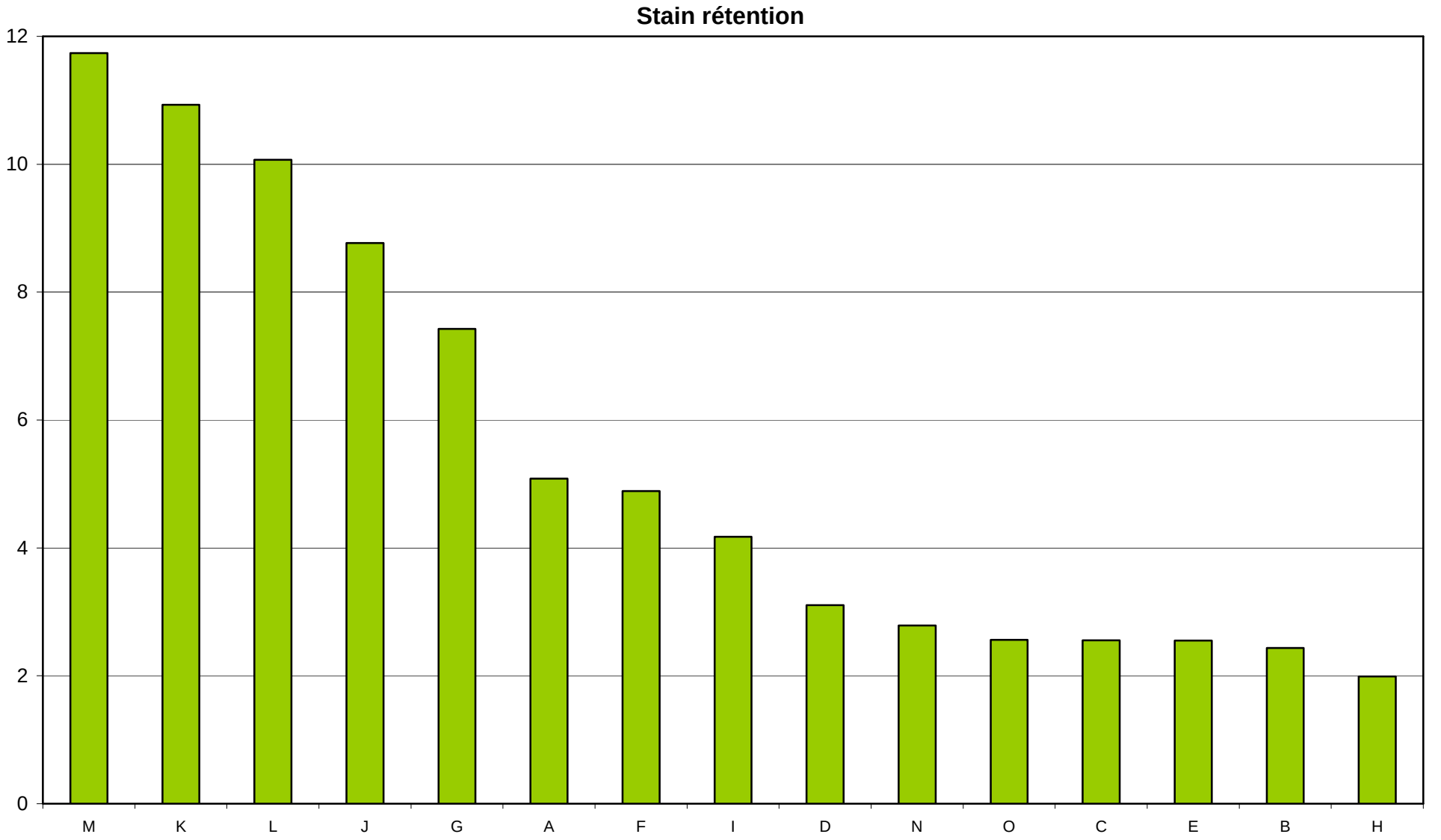
L initial
L after wiping
L after wiping and scrubing

$$\text{Lavability} = \frac{\text{L after wiping and scrubing} - \text{L after wiping}}{\text{L initial} - \text{L after wiping}} \times 10$$

Cotation from 0 to 10

$$\text{Stain retention} = \frac{\text{L initial} - \text{L after wiping and scrubing}}{\text{L initial}} \times 100$$

Result in %


Stain rétention
12
10
8
6
4
2
0
M
K
L
J
G
A
F
I
D
N
O
C
E
B
H

TEST ‘’DIRT PICK UP RESISTANCE’’

Artificial Dirt: Literature showed that dirt is usually composed of

SOOT, DUST and INORGANIC CRYSTALLITES.

DuPont DIRT COMPOSITION :

19.35% SiO_2: silica gel, 5 – 25 µm

19.35% Al_2O_3: aluminum oxide, <10 µm

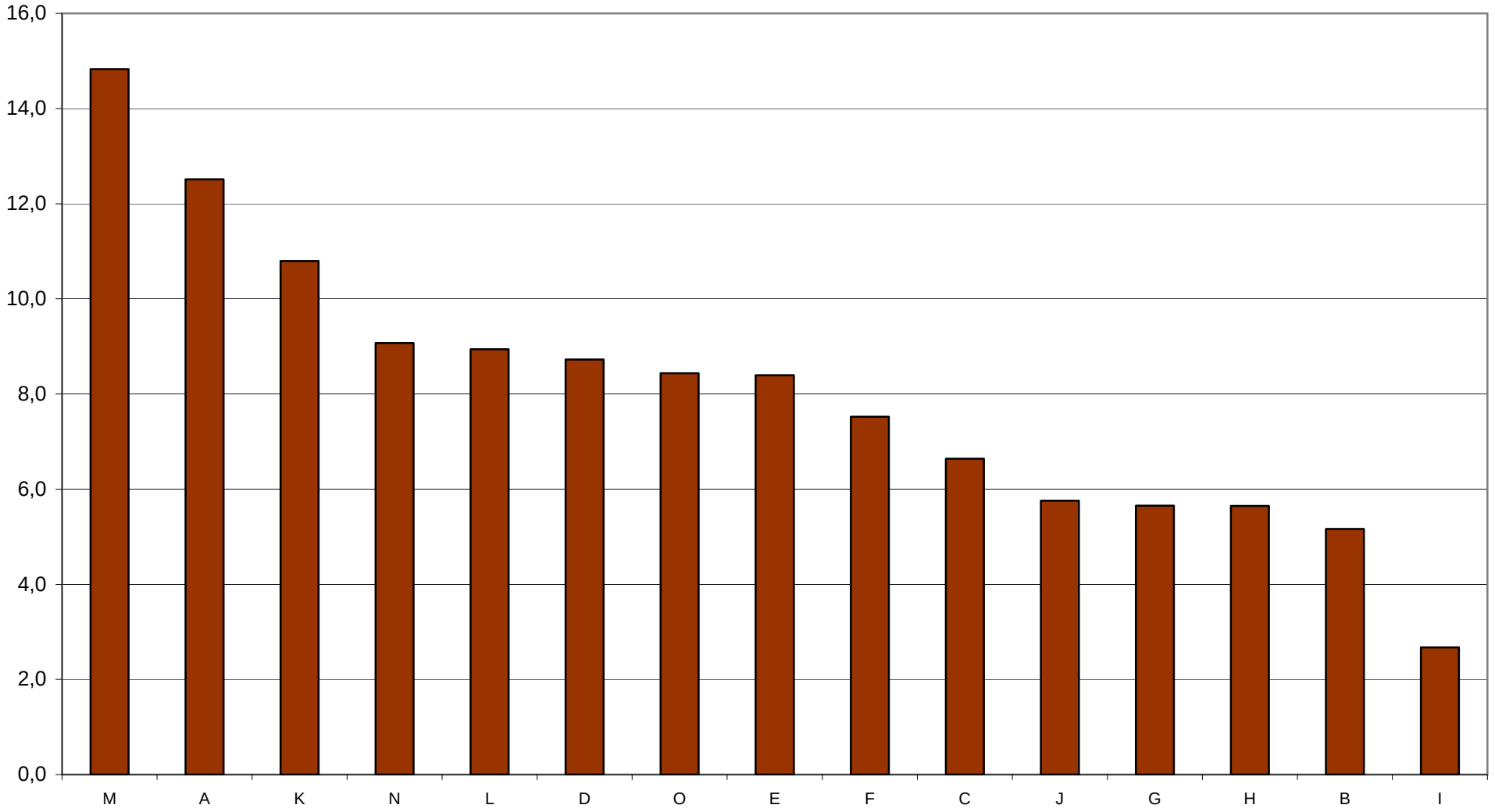
9.7% Fe_3O_4: natural black, <45 µm

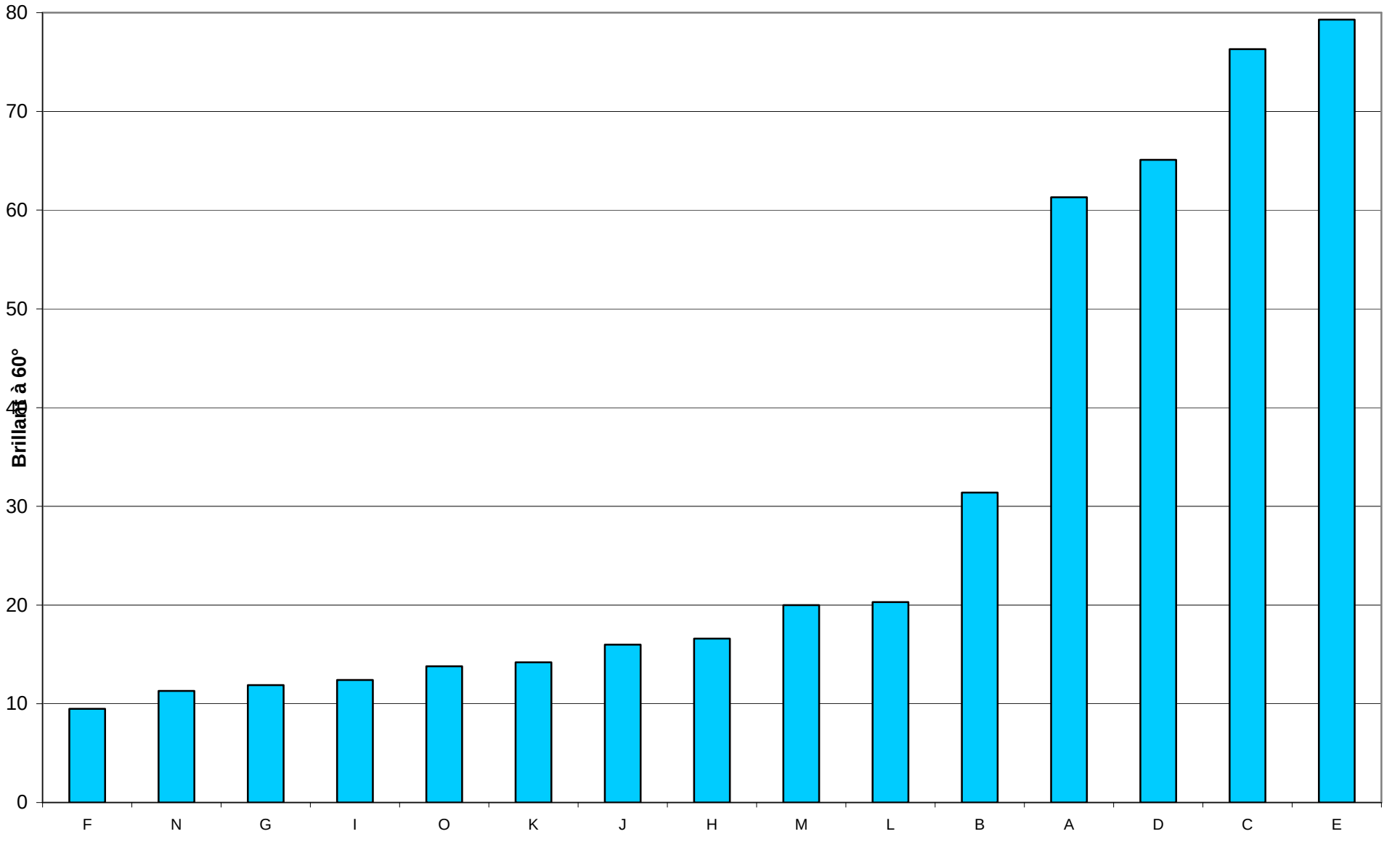
1.6% Lamp Black: 90-120 nm – (SOOT)

50% Soil: dried, grounded soil from lab

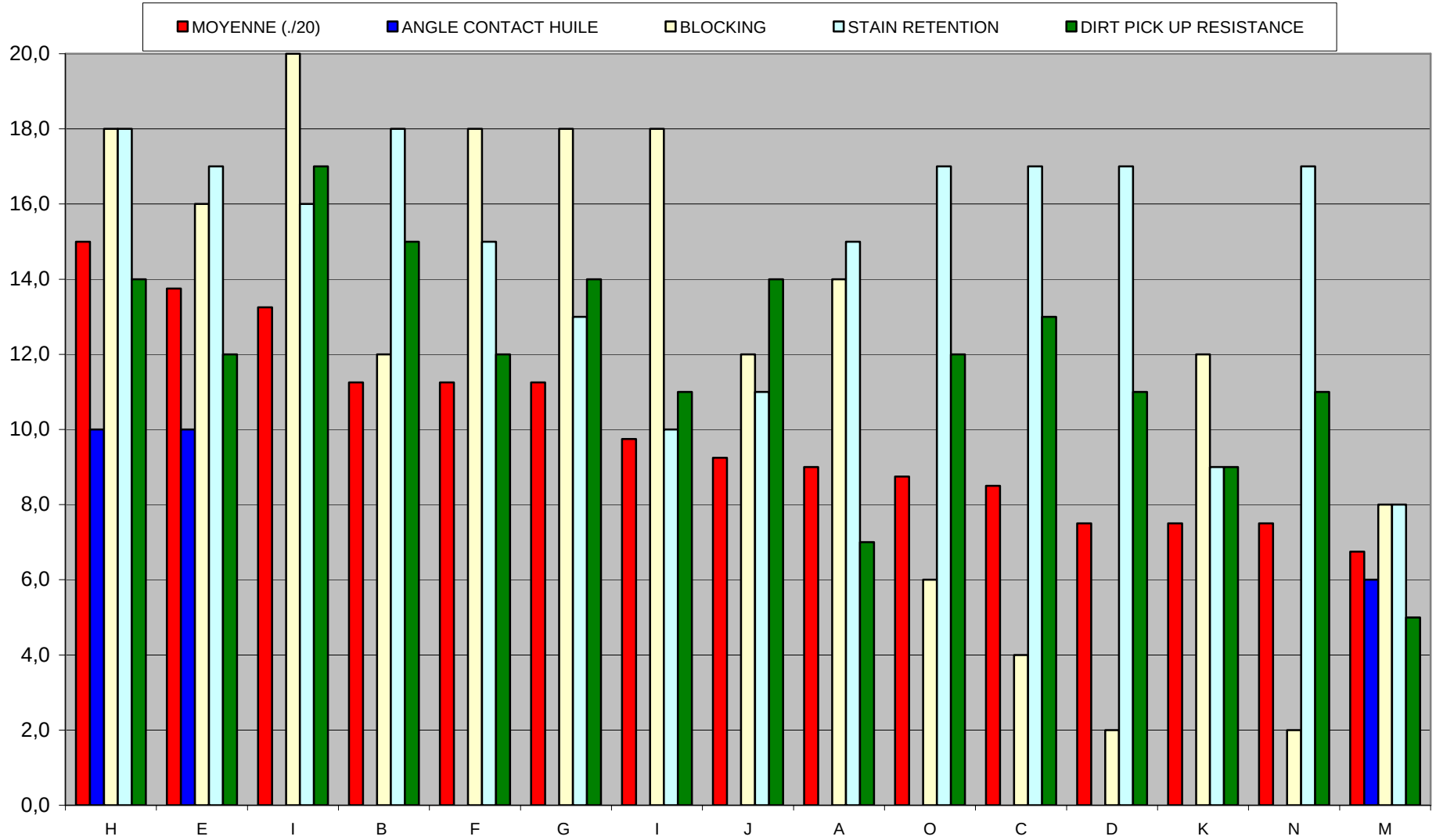
$$DPR = \frac{L\ initial - L\ final}{L\ initial} \times 100$$

Dirt pick up resistance




80
70
60
50
40
30
20
10
0
Brillant à 60°
F
N
G
I
O
K
J
H
M
L
B
A
D
C
E
Gloss at 60°

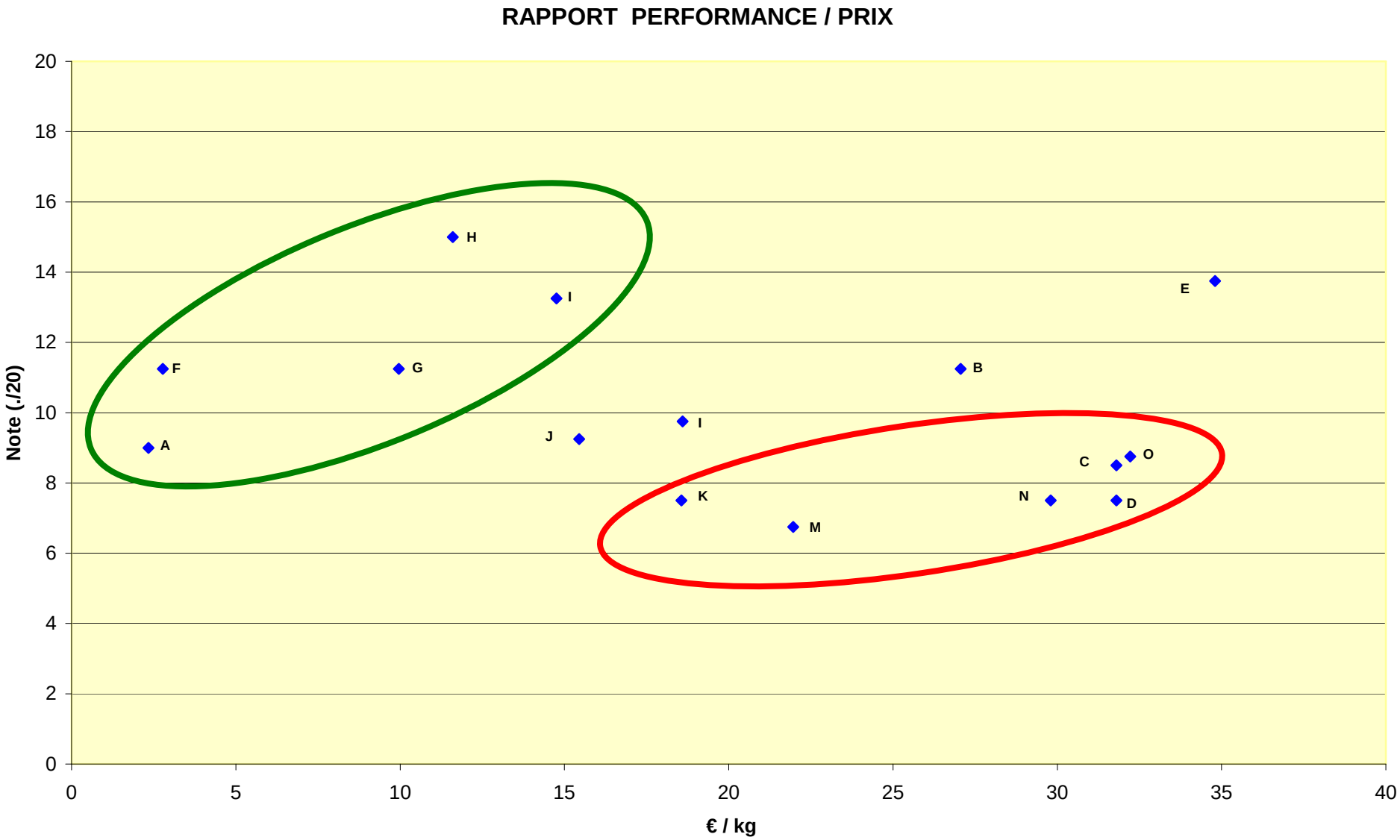
CLASSEMENT


MOYENNE (./20)
ANGLE CONTACT HUILE
BLOCKING
STAIN RETENTION
DIRT PICK UP RESISTANCE
20,0
18,0
16,0
14,0
12,0
10,0
8,0
6,0
4,0
2,0
0,0
H
E
I
B
F
G
I
J
A
O
C
D
K
N
M

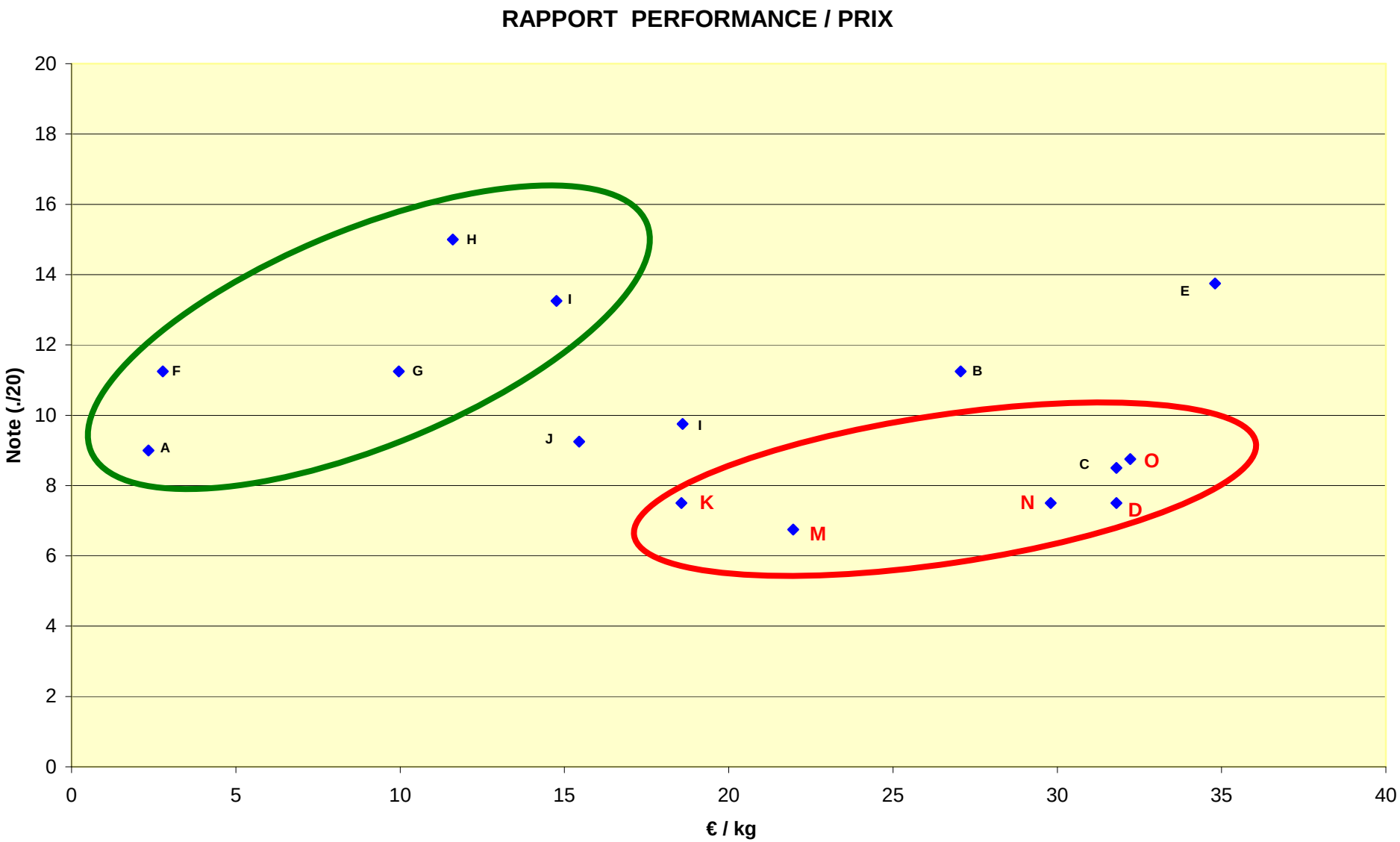
CLASSEMENT

PEINTURES	PRIX (€/kg)	MOYENNE (./20)	ANGLE CONTACT HUILE	BLOCKING	STAIN RETENTION	DIRT PICK UP RESISTANCE
			note (./20) = angle / 3	note (./20) = blocking 24h x 2	note (./20) = 20 - SR	note (./20) = 20 - DPR
H	11,6	**15,0**	10	18	18	14
E	34,8	**13,8**	10	16	17	12
I	14,76	**13,3**	0	20	16	17
B	27,06	**11,3**	0	12	18	15
F	2,78	**11,3**	0	18	15	12
G	9,96	**11,3**	0	18	13	14
I	18,6	**9,8**	0	18	10	11
J	15,45	**9,3**	0	12	11	14
A	2,34	**9,0**	0	14	15	7
O	32,22	**8,8**	0	6	17	12
C	31,8	**8,5**	0	4	17	13
D	31,8	**7,5**	0	2	17	11
K	18,56	**7,5**	0	12	9	9
N	29,8	**7,5**	0	2	17	11
M	21,96	**6,8**	6	8	8	5

GLOBAL COTATION



RATIO PERFORMANCE / PRICE



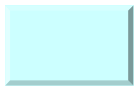
RATIO PERFORMANCE / PRICE

OPTIMISATION STUDY ON 5 COMMERCIAL PAINTS

O 

K 

N 

D 

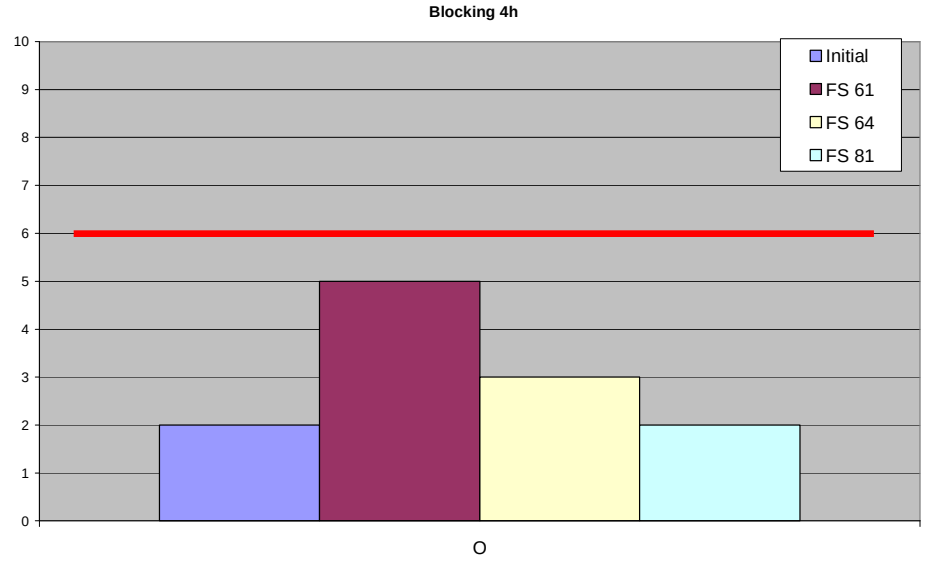
M 

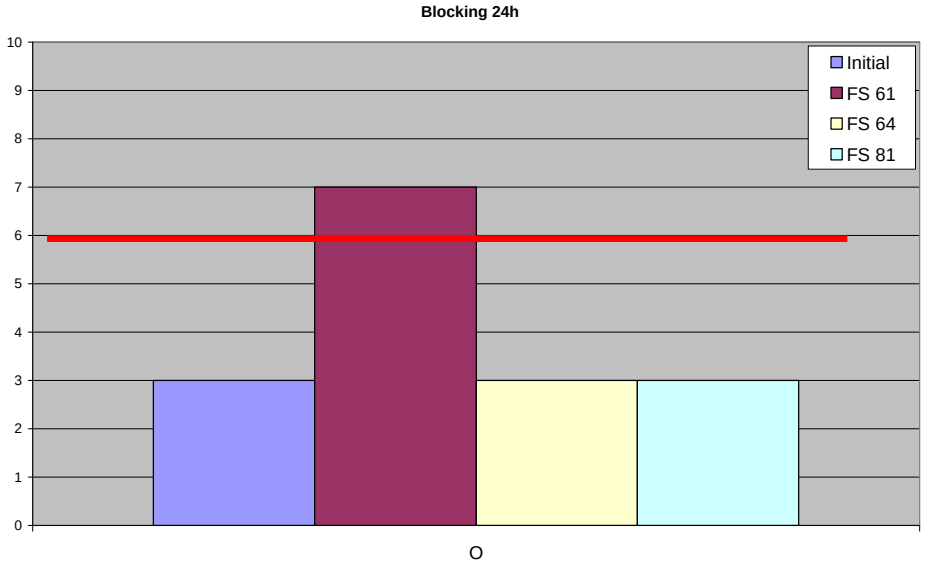
Conclusions 

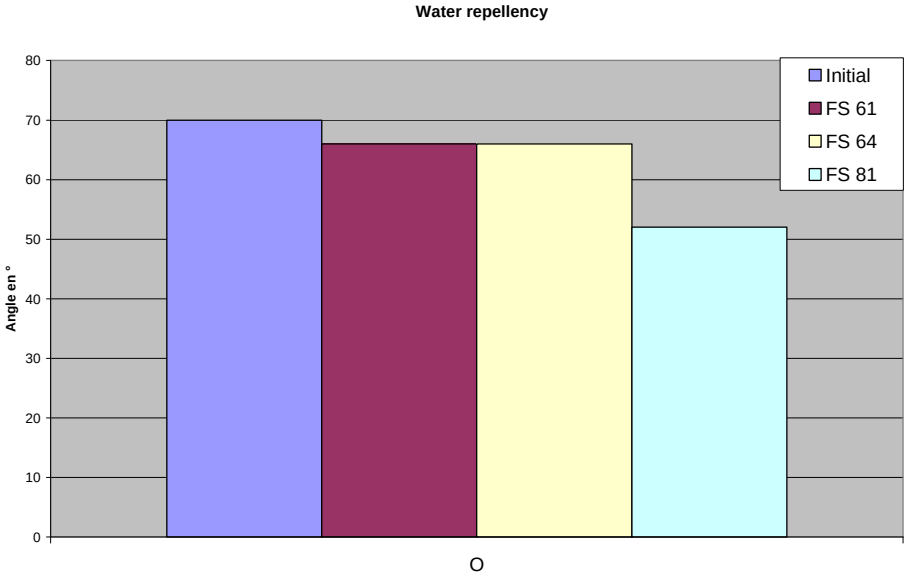
OPTIMISATION STUDY

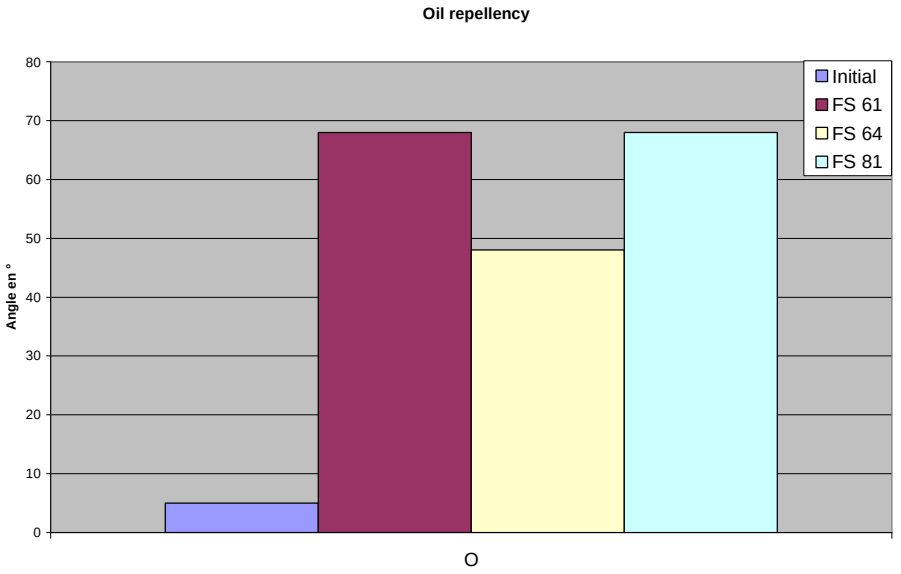
PAINT O

WITH CAPSTONE ® FS-61, FS-64 ET FS-81

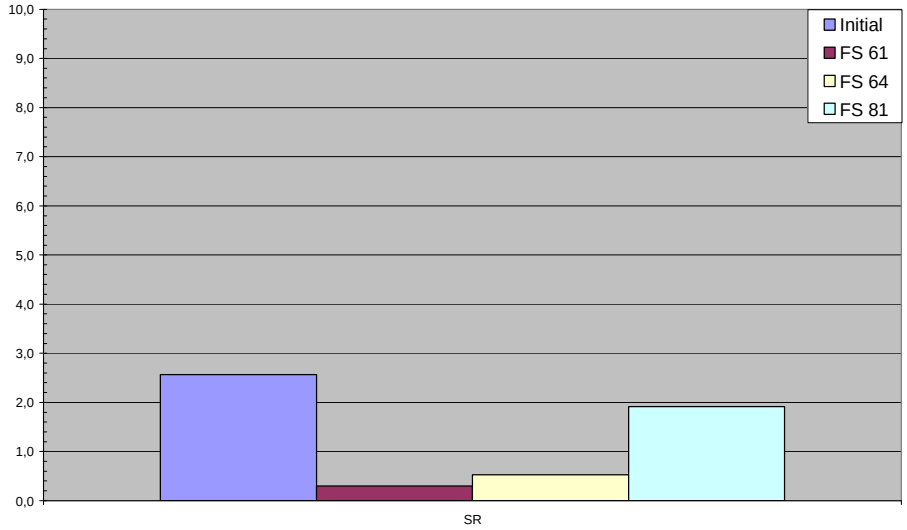

Blocking 4h
10
9
8
7
6
5
4
3
2
1
0
Initial
FS 61
FS 64
FS 81
O


Blocking 24h
10
9
8
7
6
5
4
3
2
1
0
Initial
FS 61
FS 64
FS 81
O

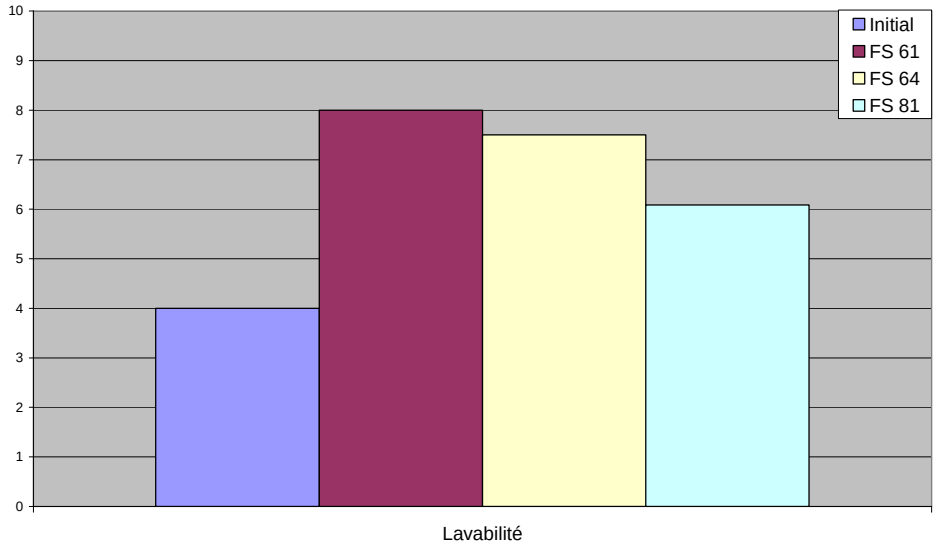

Water repellency
Angle en °
80
70
60
50
40
30
20
10
0
Initial
FS 61
FS 64
FS 81
O


Oil repellency
Angle en °
80
70
60
50
40
30
20
10
0
Initial
FS 61
FS 64
FS 81
O

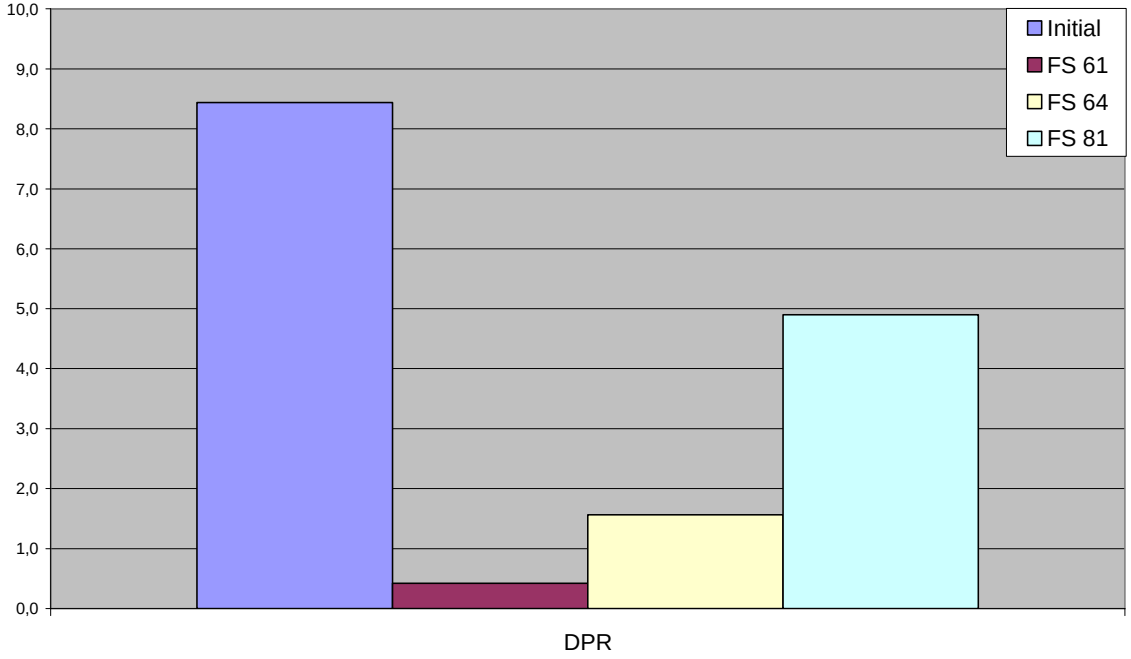
Stain resistance



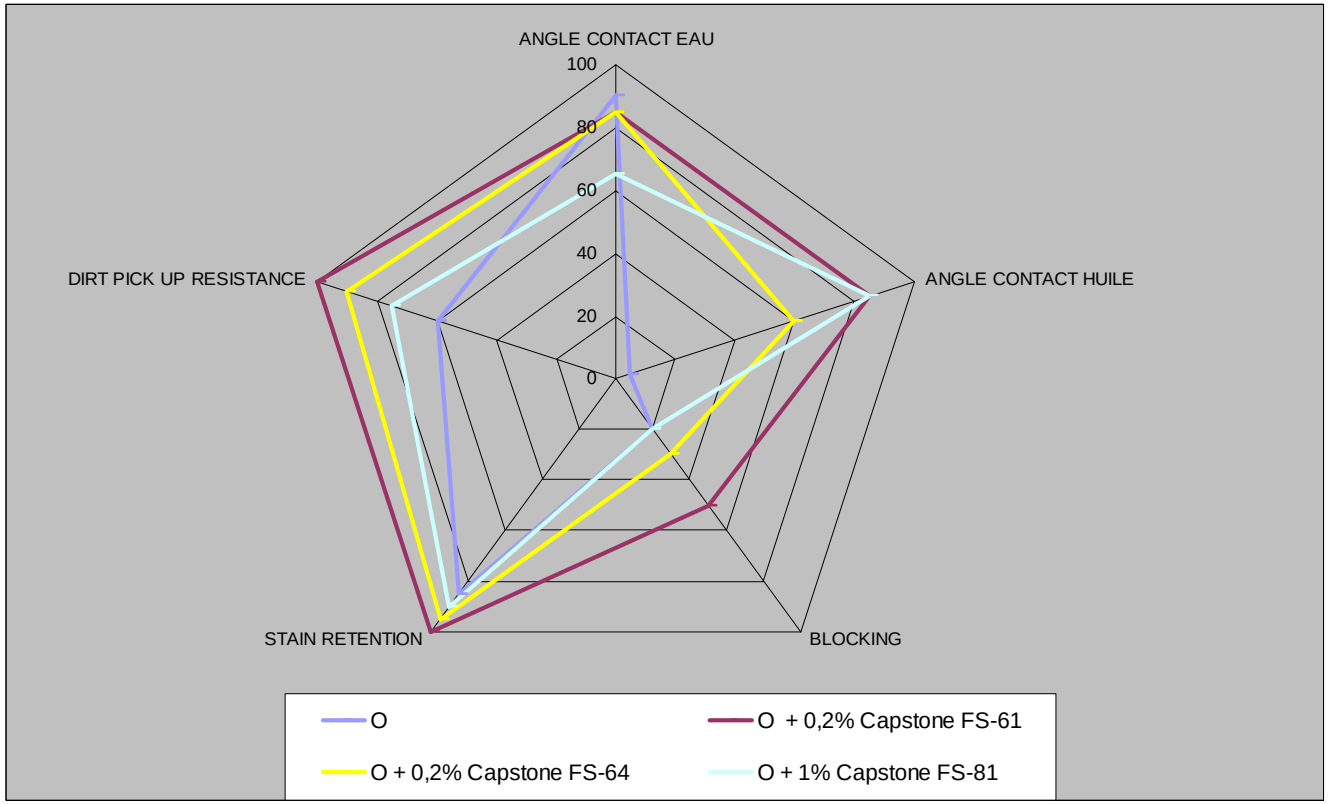
Lavabilité



Dirt pick up resistance



	MOYENNE (./20)	ANGLE CONTACT EAU note (./20) = angle / 4	ANGLE CONTACT HUILE note (./20) = angle / 4	BLOCKING note (./20) = blocking 4h x 2	STAIN RETENTION note (./20) = 20 - SR	DIRT PICK UP RESISTANCE note (./20) = 20 - DPR
O	**10,4**	18	1	4	17	12
O + 0,2% Capstone FS-61	**16,8**	17	17	10	20	20
O + 0,2% Capstone FS-64	**14,4**	17	12	6	19	18
O + 1% Capstone FS-81	**13,4**	13	17	4	18	15

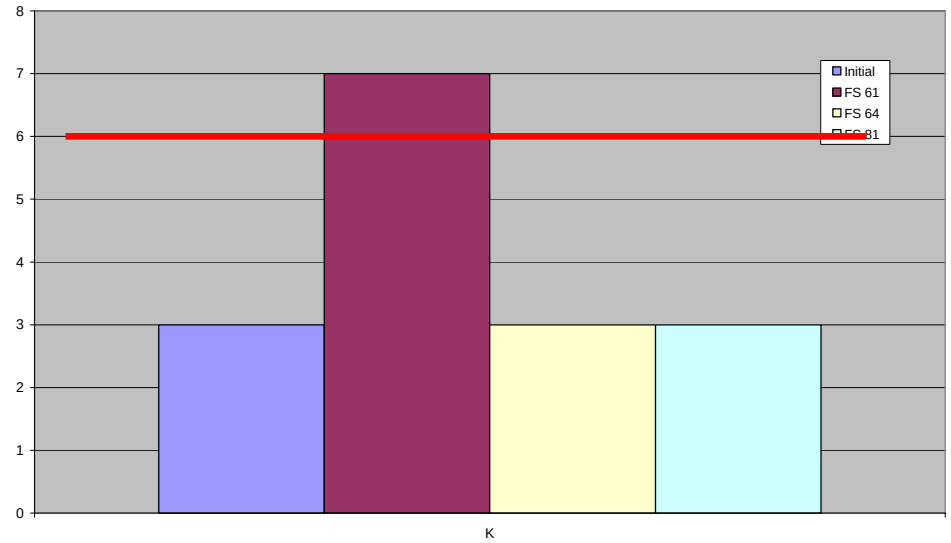


OPTIMISATION

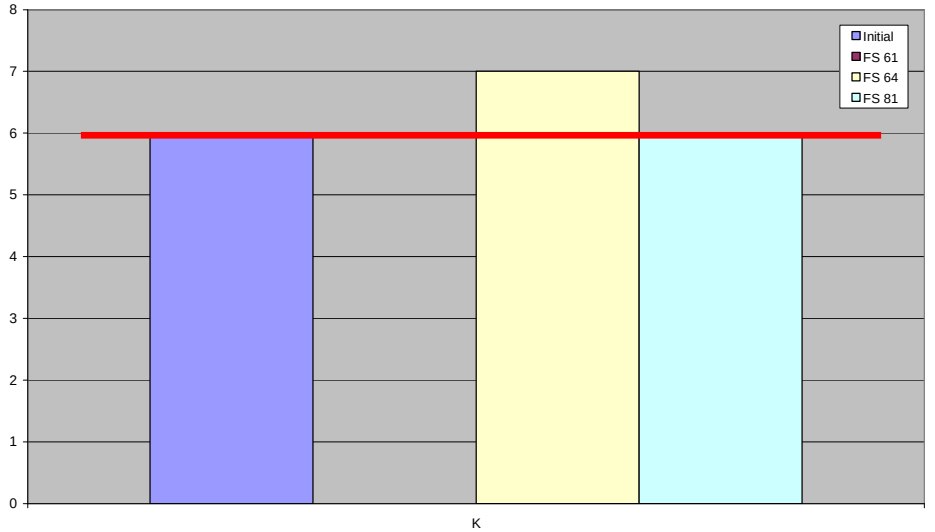
PAINT K

WITH CAPSTONE ® FS-61, FS-64 ET FS-81

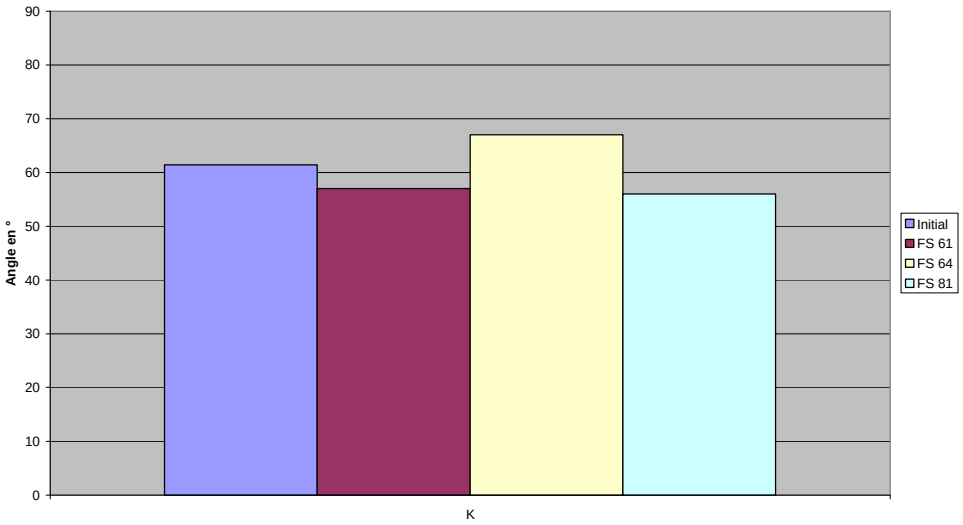
Blocking 4h



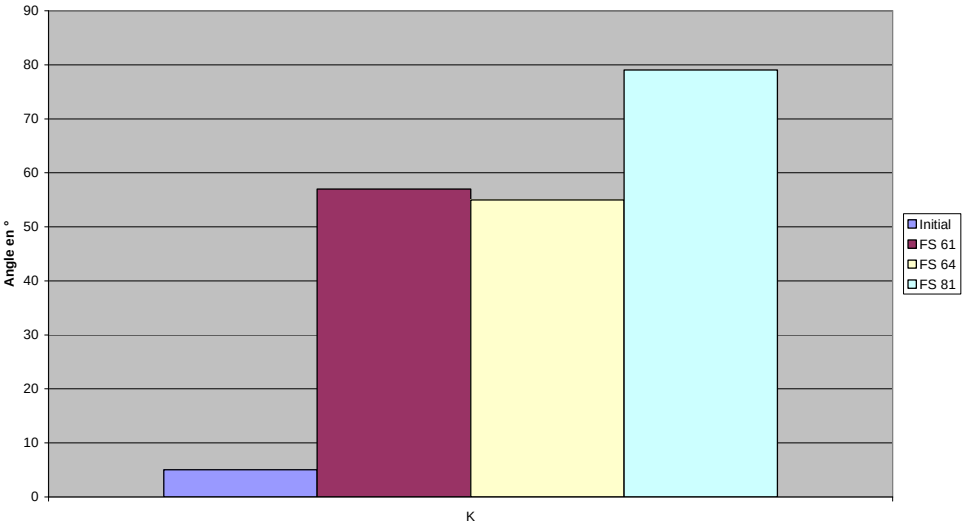
Blocking 24h



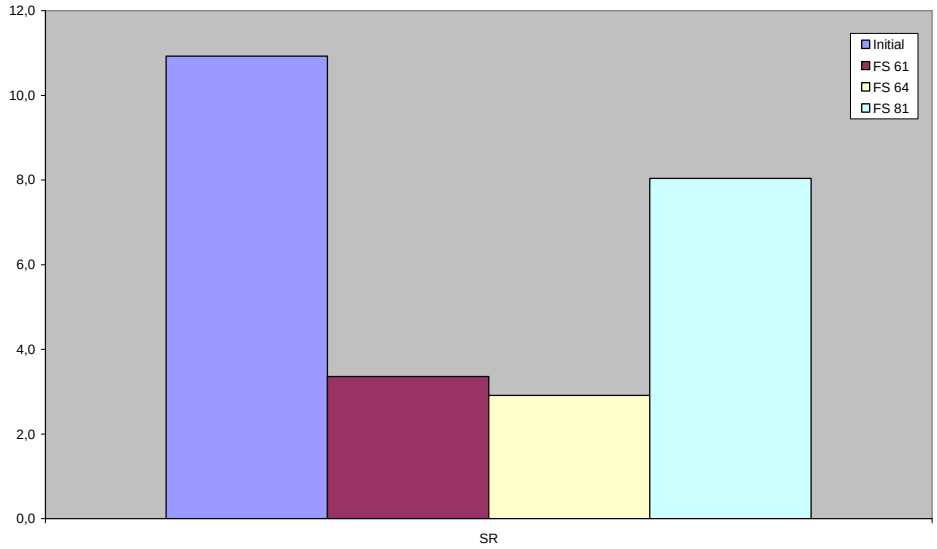
Water repellency



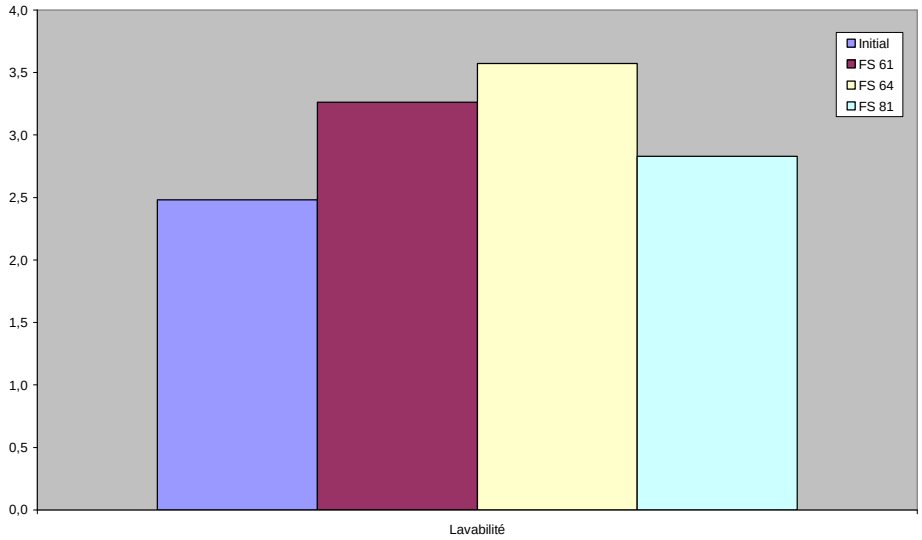
Oil repellency



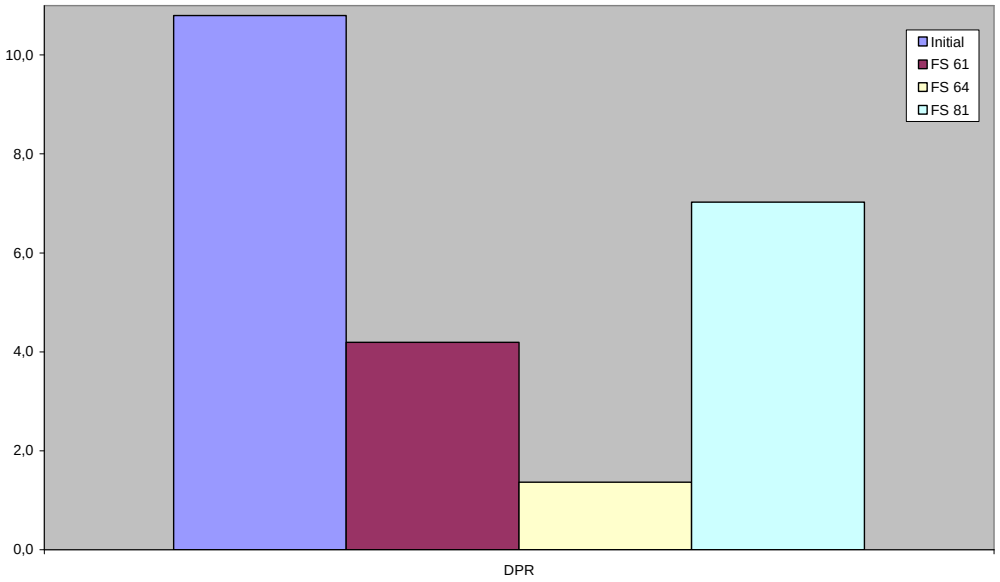
Stain resistance



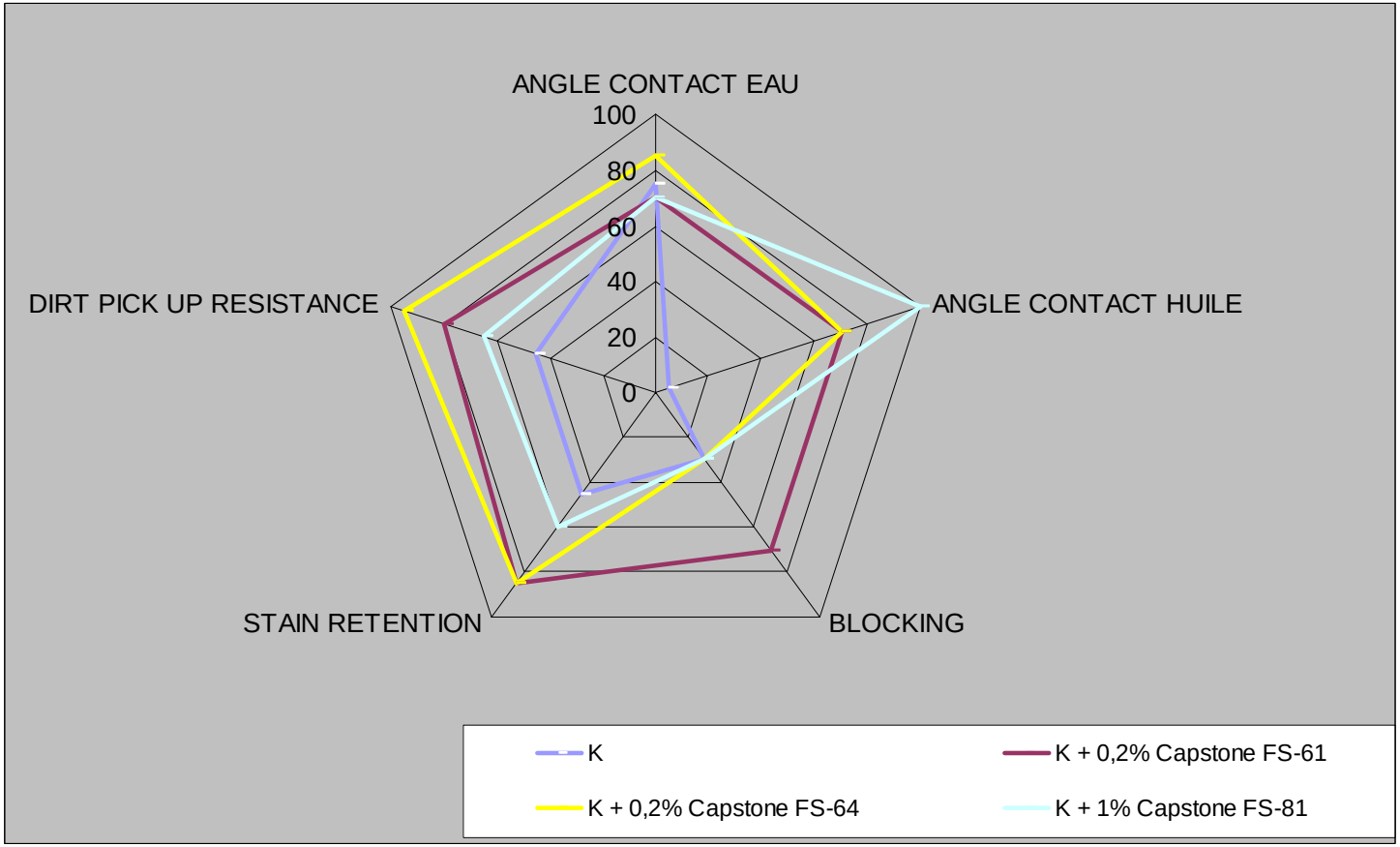
Lavabilité



Dirt pick up resistance



	MOYENNE (./20)	ANGLE CONTACT EAU note (./20) = angle / 4	ANGLE CONTACT HUILE note (./20) = angle / 4	BLOCKING note (./20) = blocking 4h x 2	STAIN RETENTION note (./20) = 20 - SR	DIRT PICK UP RESISTANCE note (./20) = 20 - DPR
K	**8,0**	15,0	1	6	9	9
K + 0,2% Capstone FS-61	**15,0**	14,0	14	14	17	16
K + 0,2% Capstone FS-64	**14,6**	17,0	14	6	17	19
K + 1% Capstone FS-81	**13,0**	14,0	20	6	12	13

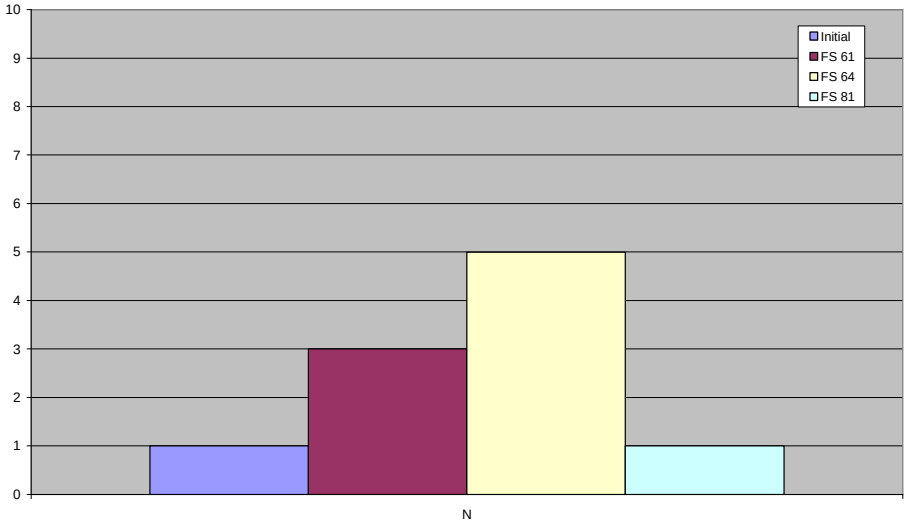


OPTIMISATION

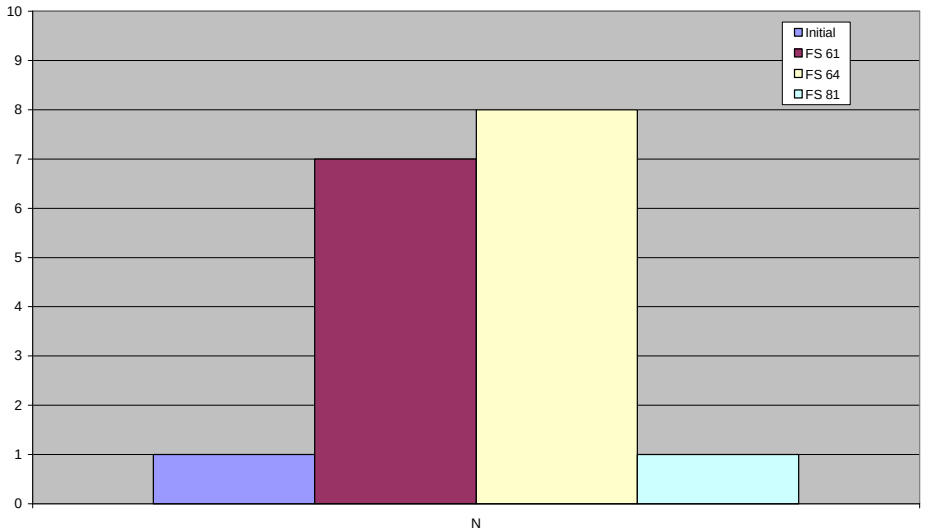
PAINT N

WITH CAPSTONE ® FS-61, FS-64 ET FS-81

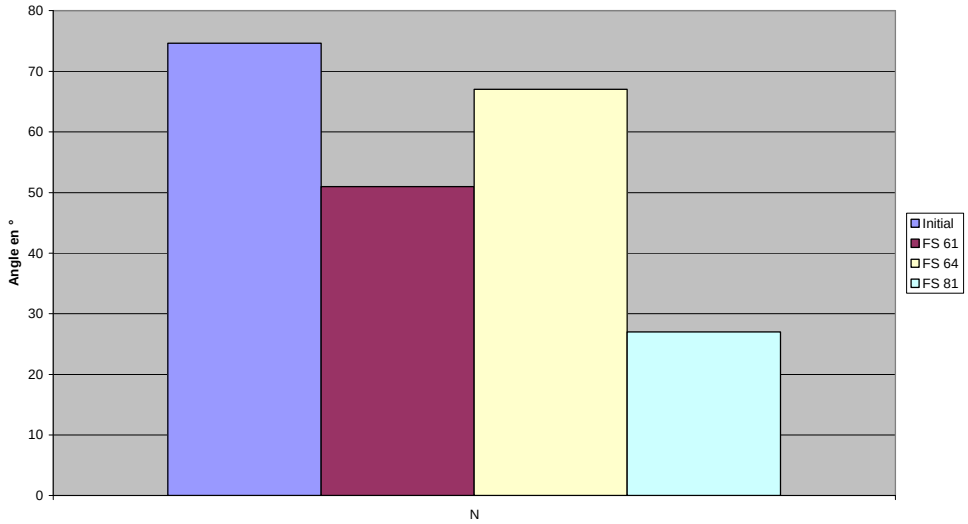
Blocking 4h



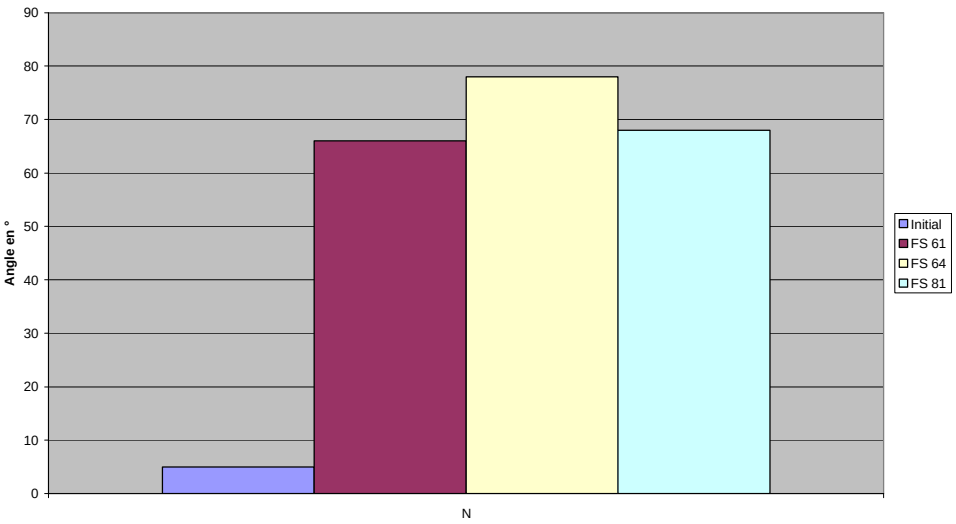
Blocking 24h

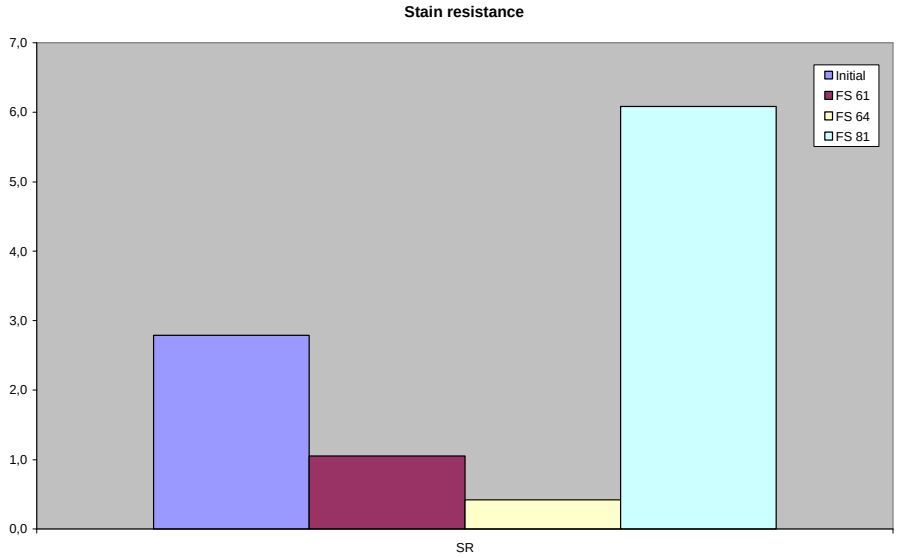


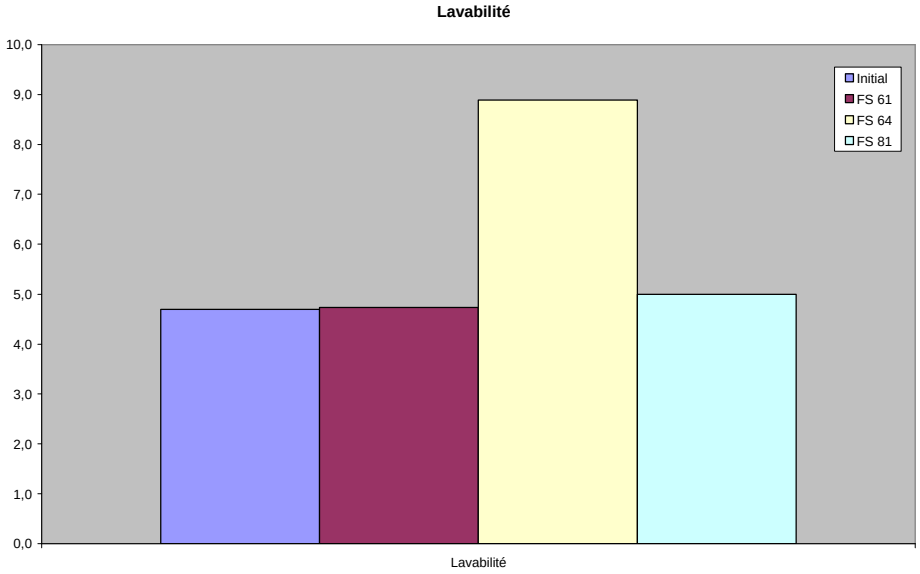
Water repellency

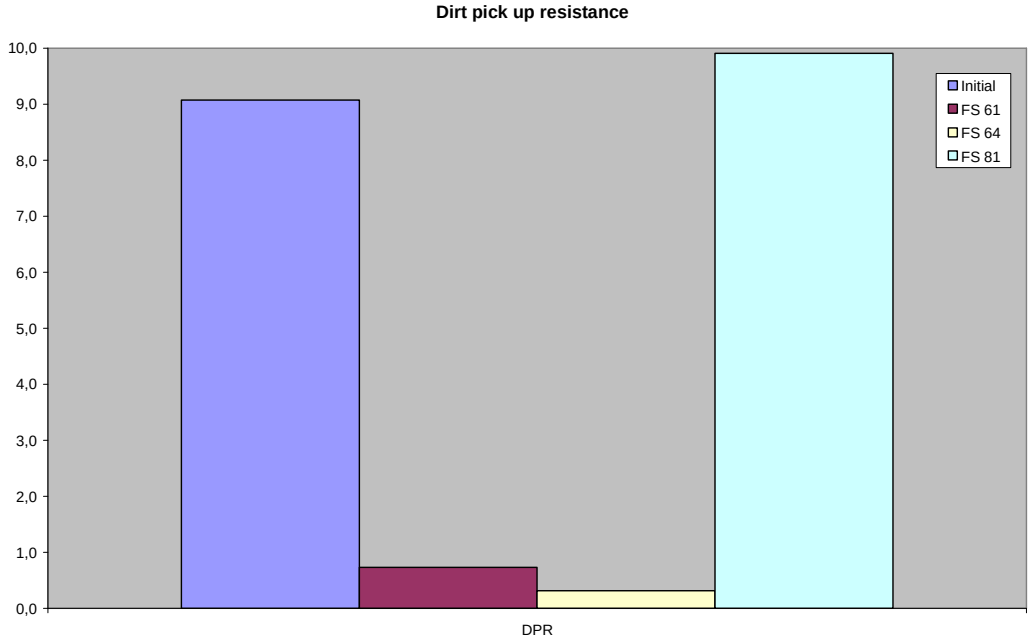


Oil repellency

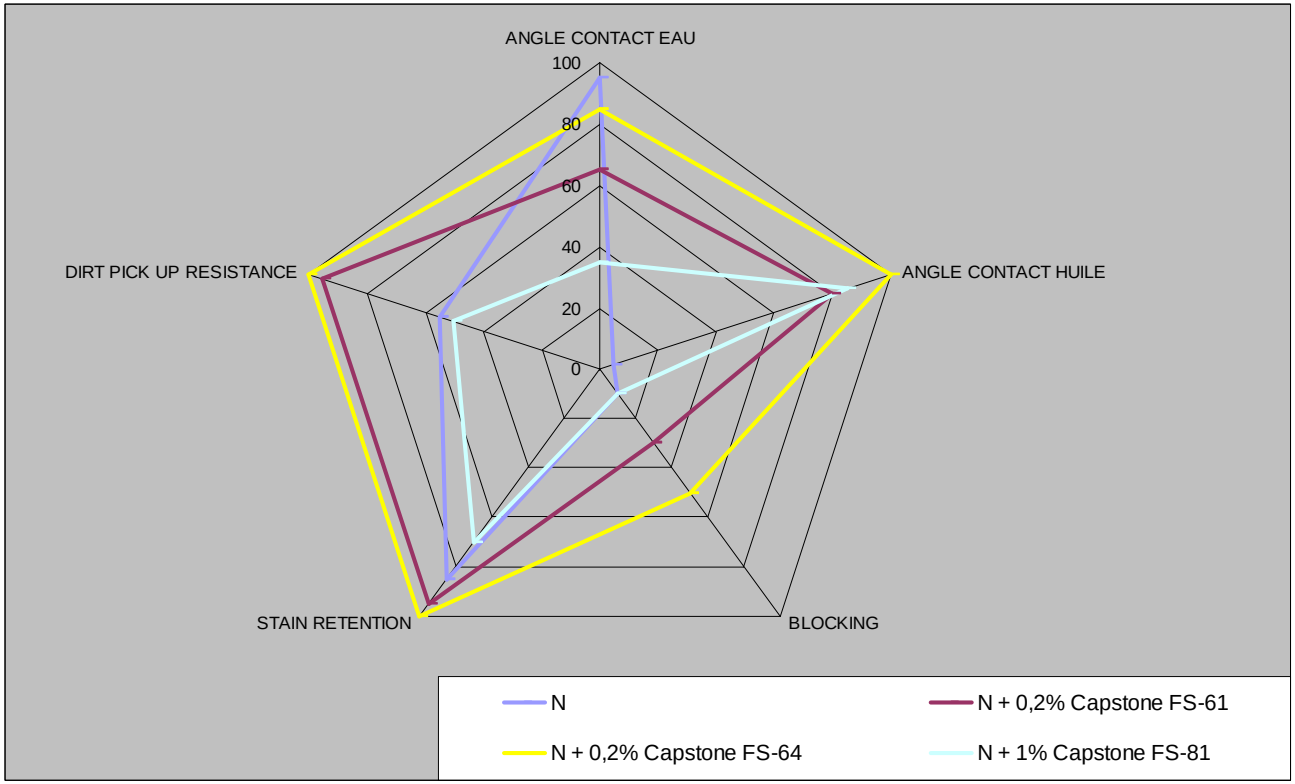



Stain resistance
7,0
6,0
5,0
4,0
3,0
2,0
1,0
0,0
Initial
FS 61
FS 64
FS 81
SR


Lavabilité
10,0
9,0
8,0
7,0
6,0
5,0
4,0
3,0
2,0
1,0
0,0
Initial
FS 61
FS 64
FS 81
Lavabilité


Dirt pick up resistance
10,0
9,0
8,0
7,0
6,0
5,0
4,0
3,0
2,0
1,0
0,0
Initial
FS 61
FS 64
FS 81
DPR

	MOYENNE (./20)	ANGLE CONTACT EAU note (./20) = angle / 4	ANGLE CONTACT HUILE note (./20) = angle / 4	BLOCKING note (./20) = blocking 4h x 2	STAIN RETENTION note (./20) = 20 - SR	DIRT PICK UP RESISTANCE note (./20) = 20 - DPR
N	**10,0**	19,0	1	2	17	11
N + 0,2% Capstone FS-61	**14,6**	13,0	16	6	19	19
N + 0,2% Capstone FS-64	**17,4**	17,0	20	10	20	20
N + 1% Capstone FS-81	**10,0**	7,0	17	2	14	10

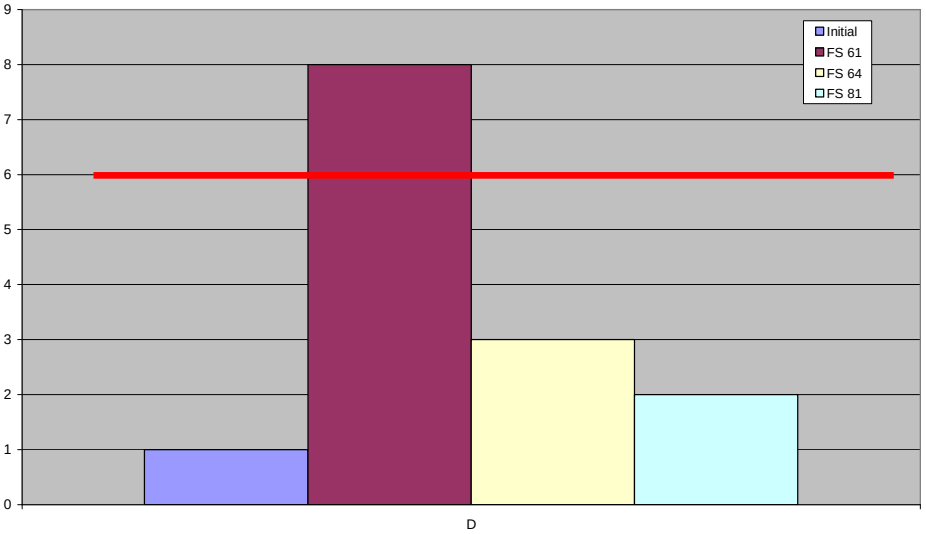


OPTIMISATION

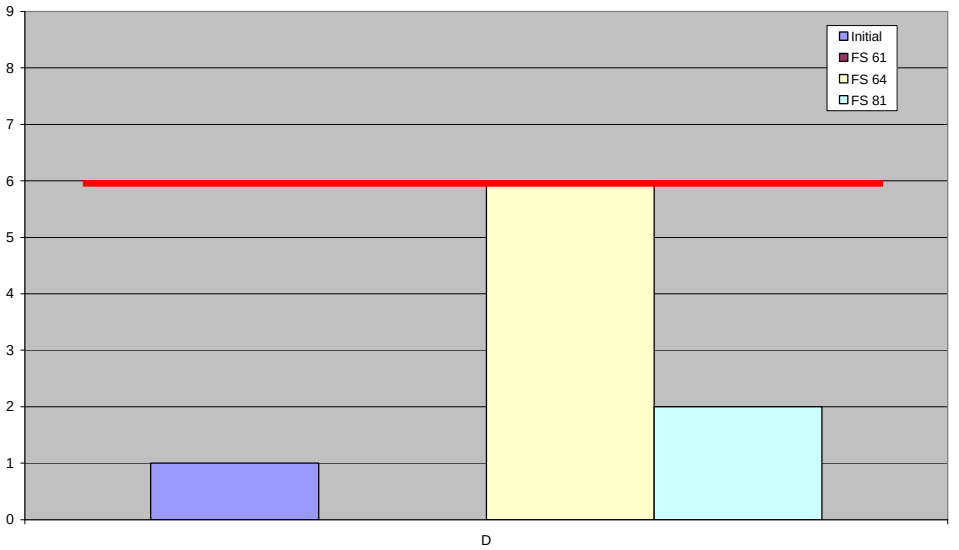
PAINT D

WITH CAPSTONE ® FS-61, FS-64 ET FS-81

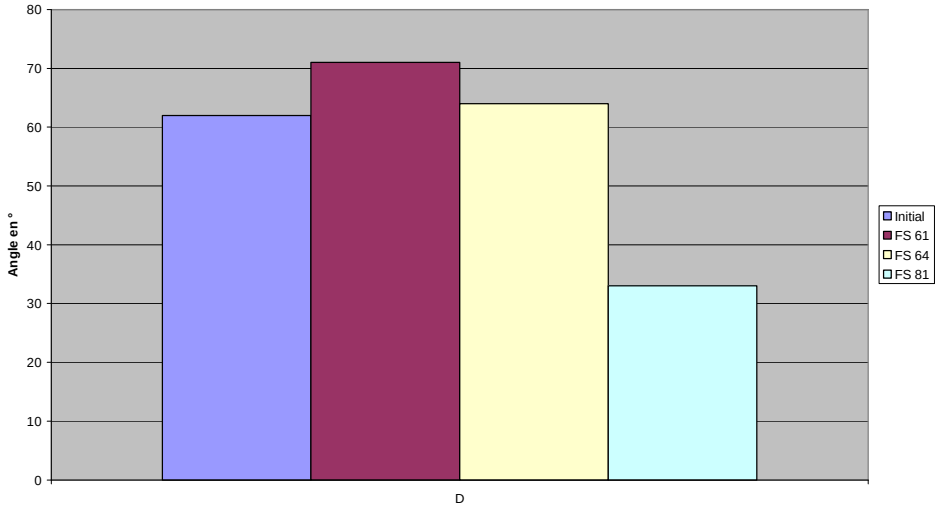
Blocking 4h



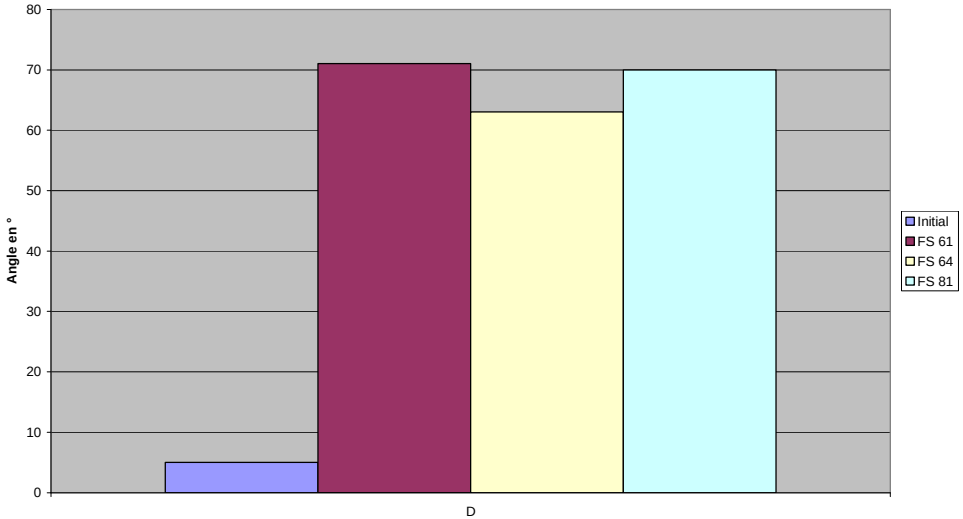
Blocking 24h



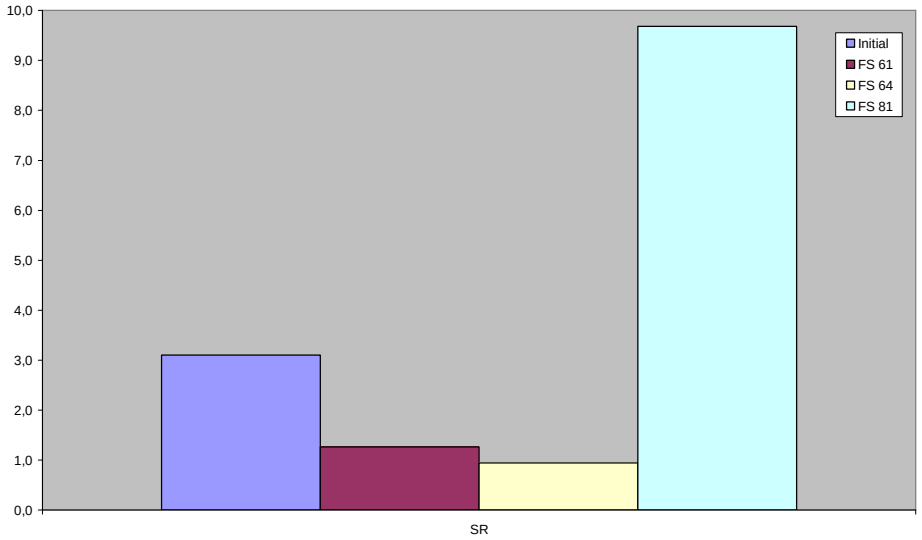
Water repellency



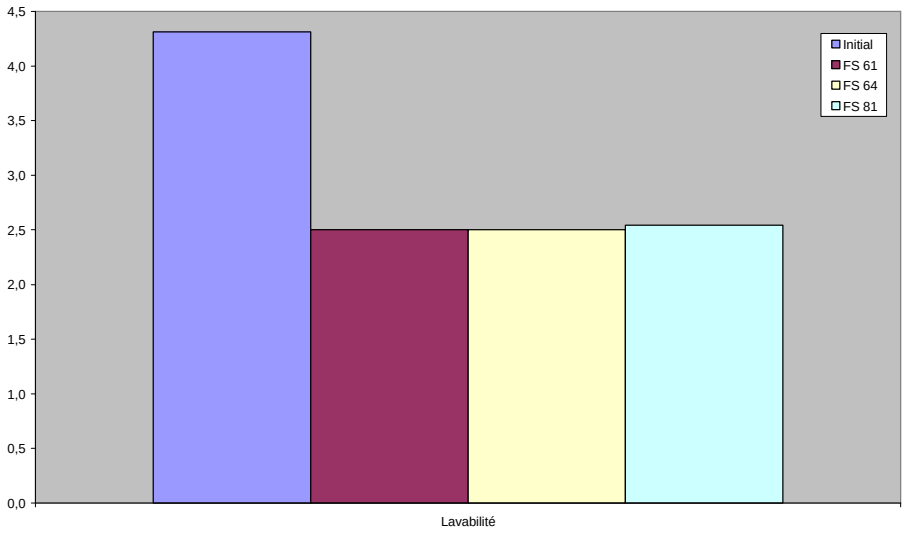
Oil repellency



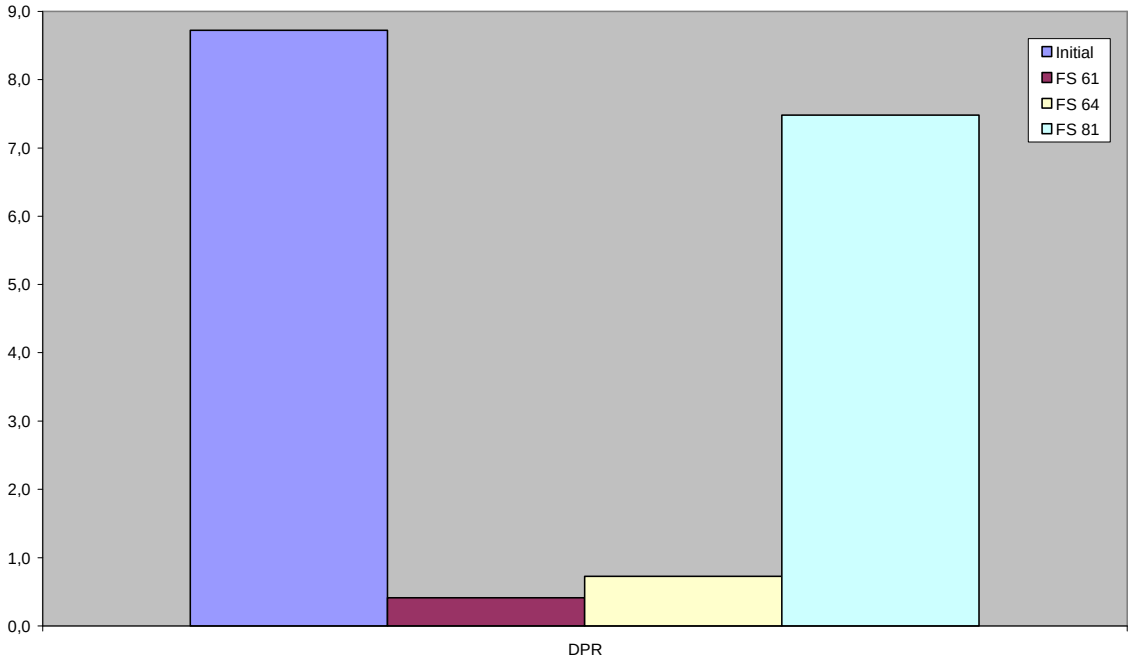
Stain resistance



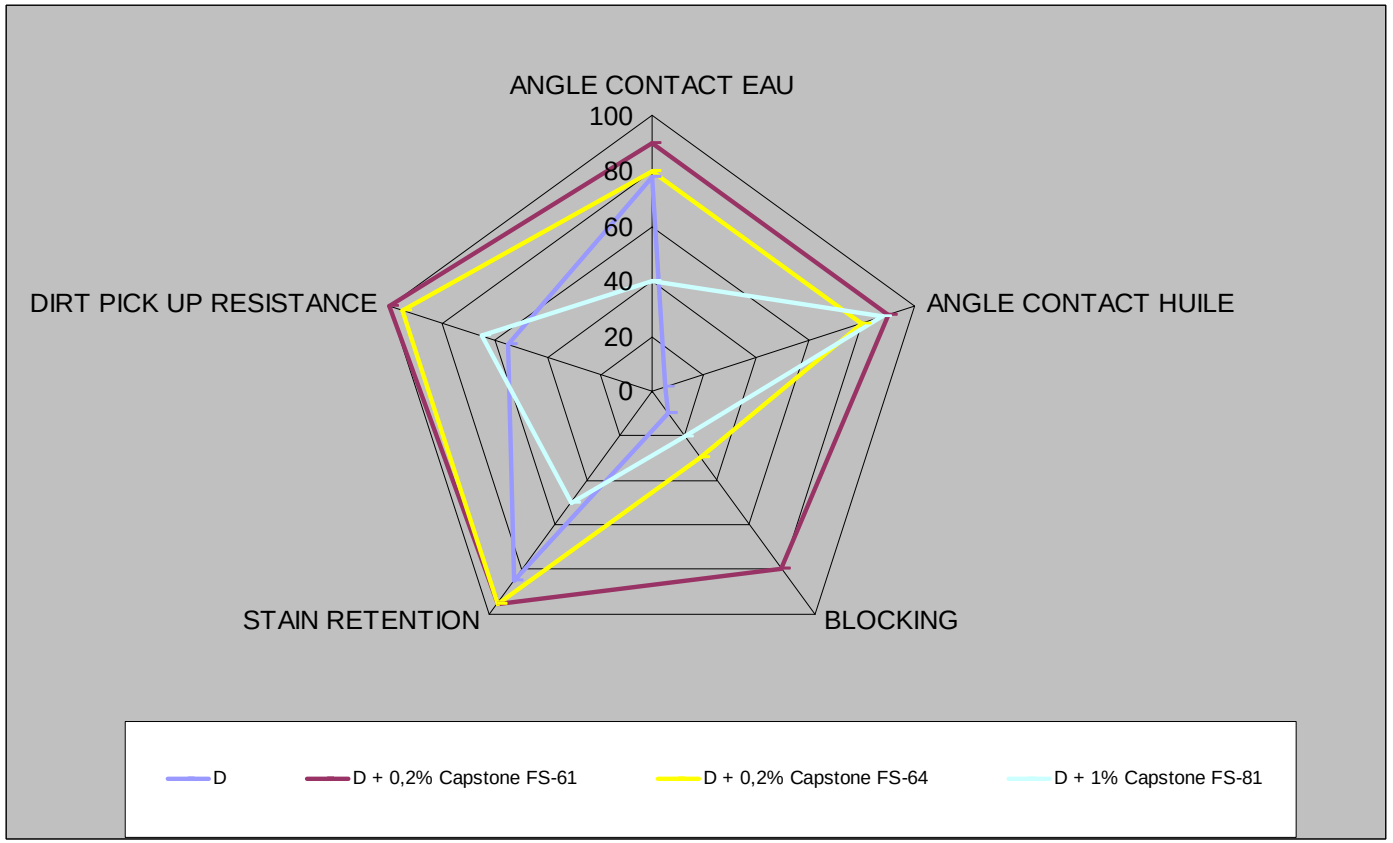
Lavabilité



Dirt pick up resistance



	MOYENNE (./20)	ANGLE CONTACT EAU note (./20) = angle / 4	ANGLE CONTACT HUILE note (./20) = angle / 4	BLOCKING note (./20) = blocking 4h x 2	STAIN RETENTION note (./20) = 20 - SR	DIRT PICK UP RESISTANCE note (./20) = 20 - DPR
D	**9,3**	15,5	1	2	17	11
D + 0,2% Capstone FS-61	**18,2**	18	18	16	19	20
D + 0,2% Capstone FS-64	**15,2**	16	16	6	19	19
D + 1% Capstone FS-81	**10,5**	8	17,5	4	10	13

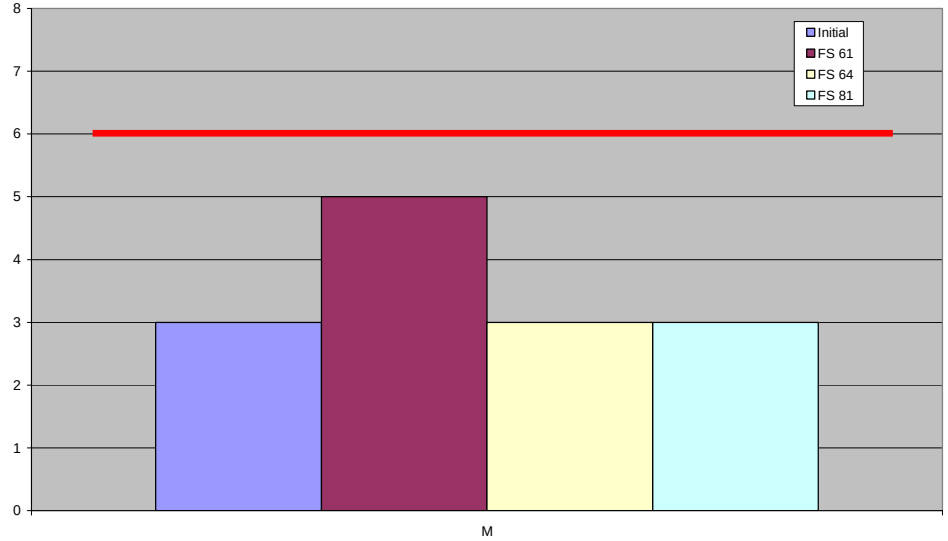


OPTIMISATION

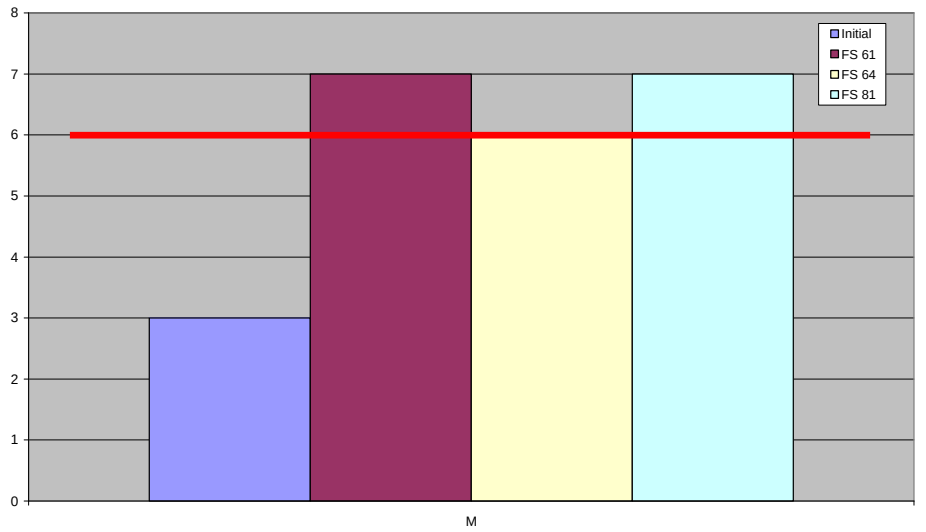
PAINT M

WITH CAPSTONE ® FS-61, FS-64 ET FS-81

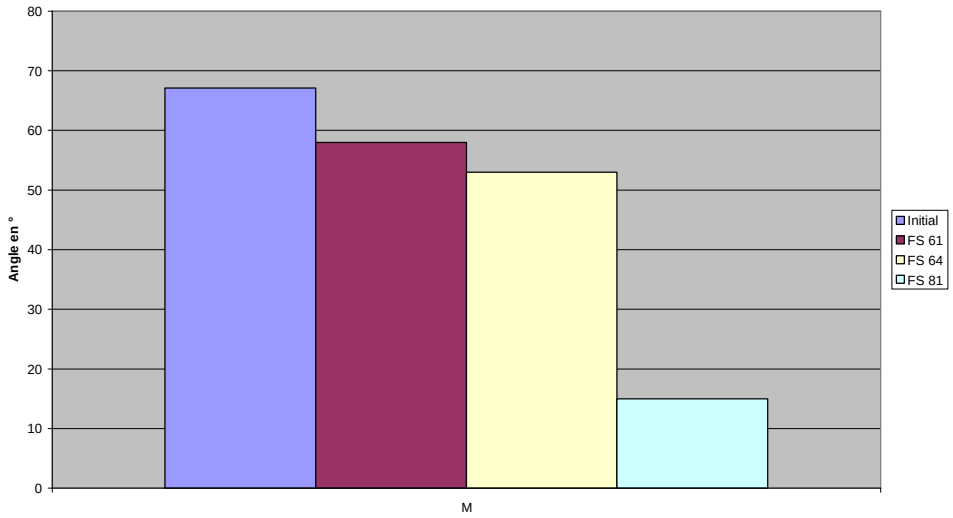
Blocking 4h



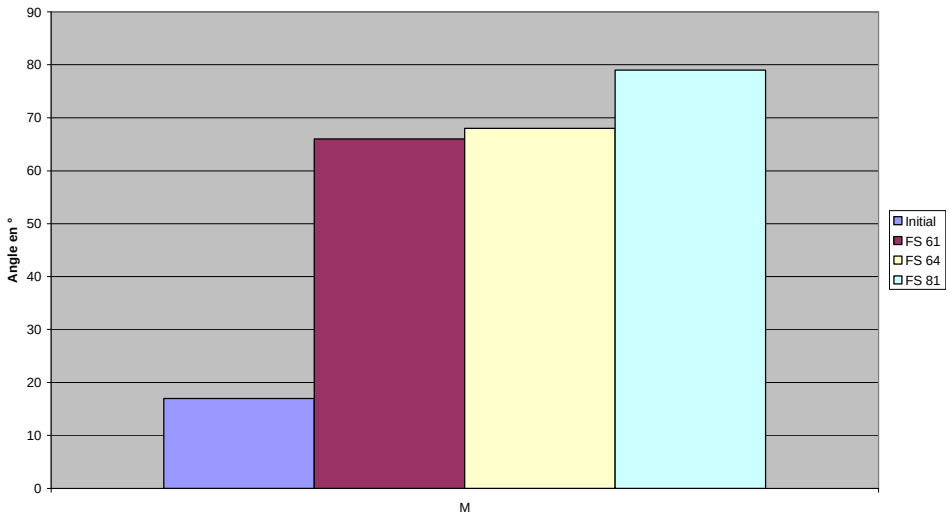
Blocking 24h



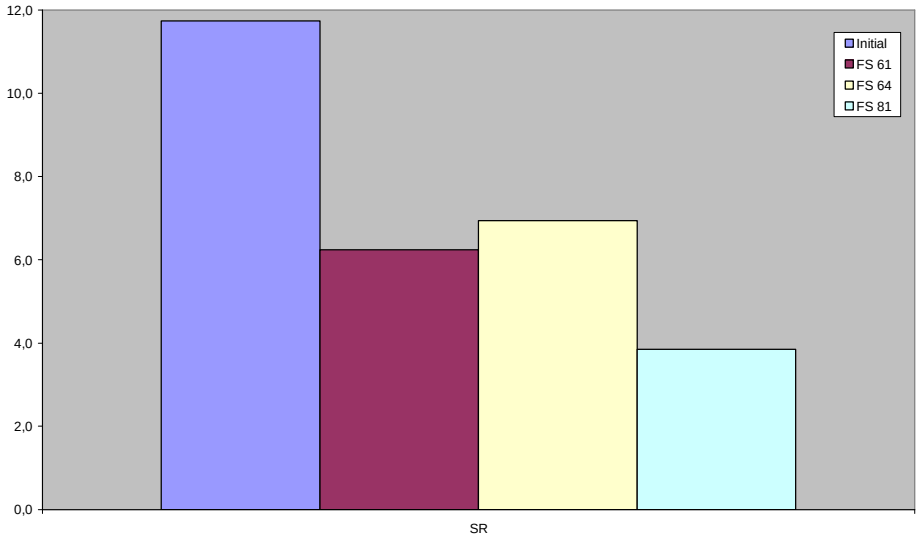
Water repellency



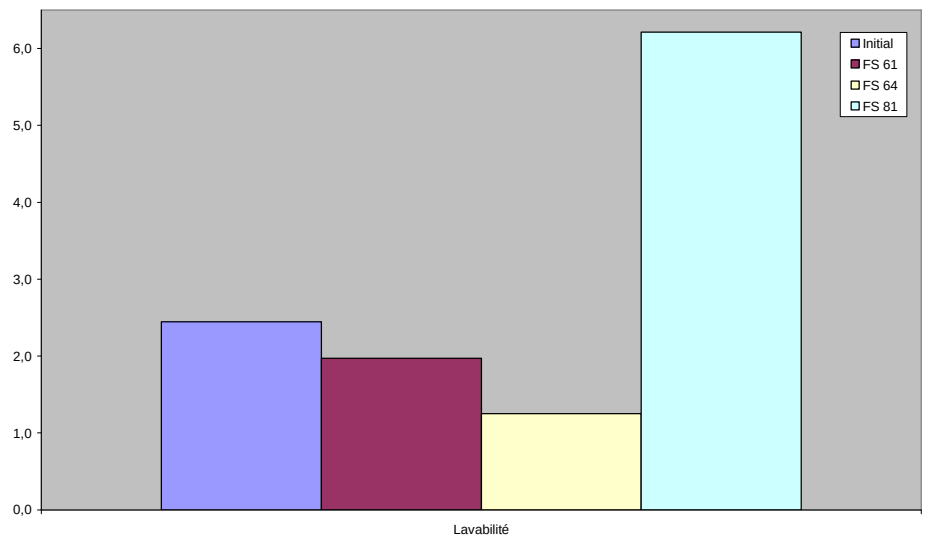
Oil repellency



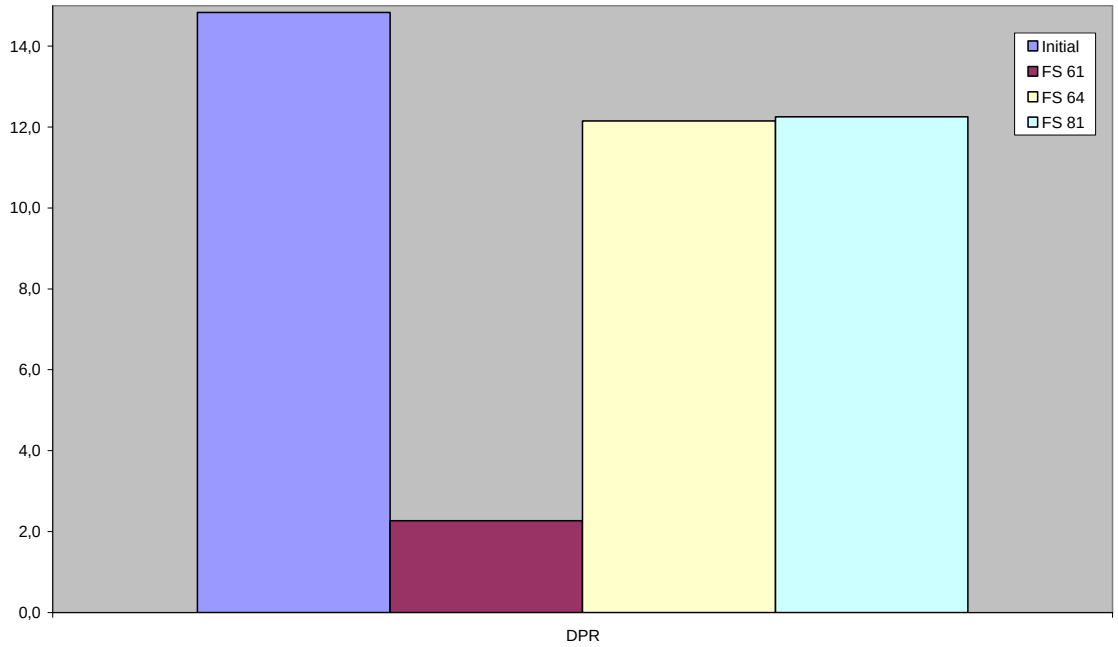
Stain resistance



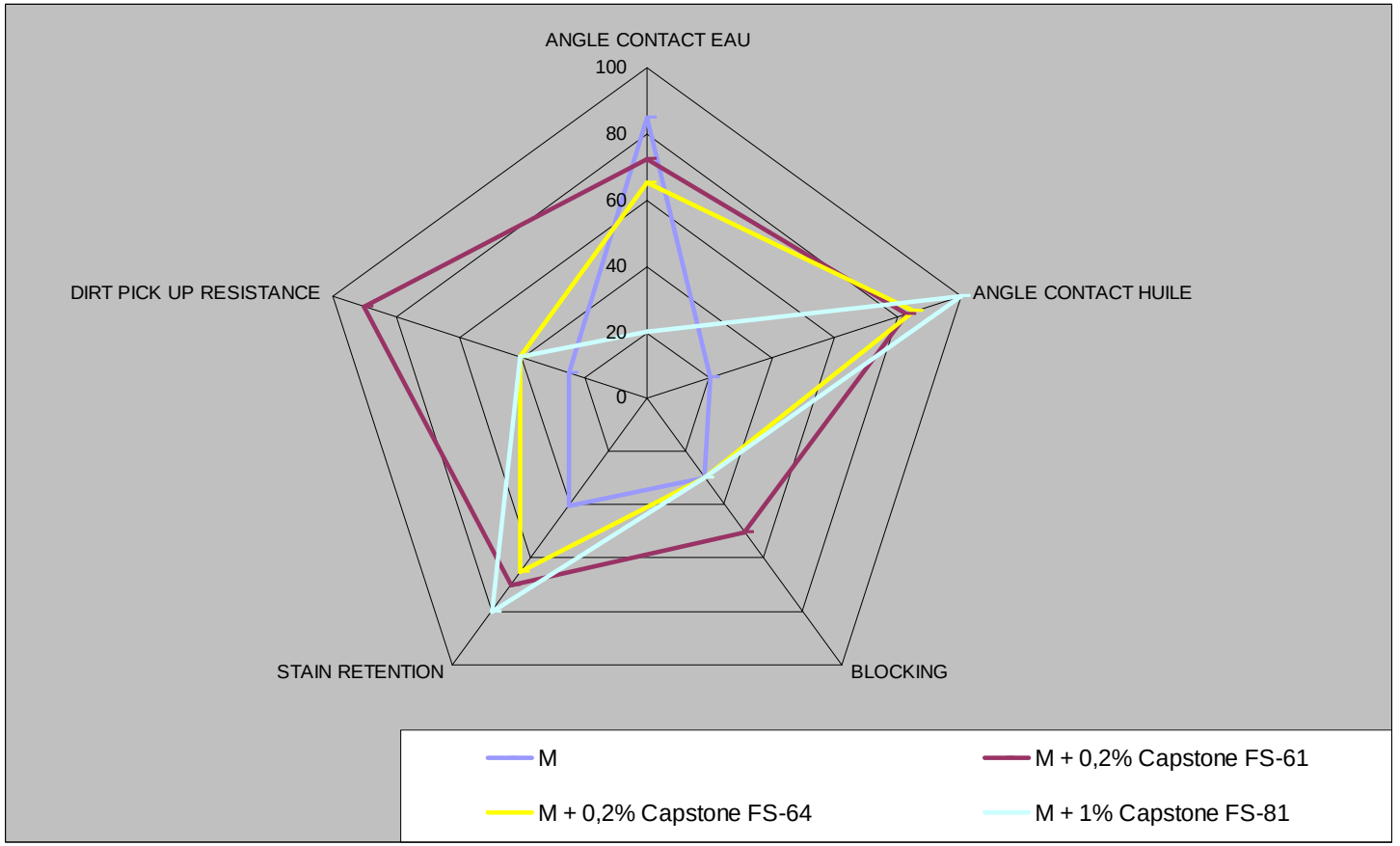
Lavabilité



Dirt pick up resistance



	MOYENNE (./20)	ANGLE CONTACT EAU note (./20) = angle / 4	ANGLE CONTACT HUILE note (./20) = angle / 4	BLOCKING note (./20) = blocking 4h x 2	STAIN RETENTION note (./20) = 20 - SR	DIRT PICK UP RESISTANCE note (./20) = 20 - DPR
M	**8,0**	17,0	4	6	8	5
M + 0,2% Capstone FS-61	**14,6**	14,5	16,5	10	14	18
M + 0,2% Capstone FS-64	**11,4**	13,0	17	6	13	8
M + 1% Capstone FS-81	**10,8**	4,0	20	6	16	8



CONCLUSIONS

O	FS-61
K	FS-61 for blocking or SR FS-64 for SR or DPR
N	FS-64
D	FS-61
M	FS-61