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*CEEP is the West European phosphate industry's joint research association
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CEEP Press Releases concerning phosphates and detergent wash performance

CEEP Press Release June 1998

*Australia
Magazine tests say P is "Choice"*

Tests on 50 laundry detergents are published in the April 98 issue of "Choice", the Australian Consumers' Association magazine.

Washing performance was tested using a spectrophotometer on artificially soiled fabrics.

The performance results are a plebiscite for phosphates :

- Out of 6 "front loader only" powders, only one is "P-free or low P" and it performs worst of 6.

Within the 44 front or top detergents :

- the best 7 were P-based
- only two of the better detergents (top third) were P-free or low P
- a vast majority, 11 out of 14, of the worst half (bottom third) were P-free or low-P

The magazine underlines the particularly poor performance of four brand detergents which scored 64-66%, compared to 55% for cold water and 92% for the best brand tested. Each of these four poor performers is "P-free or low P".

The "Choice" article also questions whether P-free is really green, indicating that expert opinion "is divided" : some say "the removal of phosphate from detergents on its own is not going to stop eutrophication, as non detergent sources account for the largest proportion of the phosphorus that ends up in Australia's inland waters".

CEEP Press Release September 1998

*Washing performance and
environmental impact studies*

A study carried out in 1997 (due to be published shortly) by Spain's Superior Council for Scientific Investigations (CSIC) confirms that P based detergents offer a better washing performance/environmental load ratio.

12 leading detergent brands purchased in European supermarkets were tested : 6 standard powders and 6 compacts ; 3 of each being P based and 3 P-free.

Each detergent was assessed for washing performance (removal of standard and greasy soils, protein and bleachable stains) and for environmental load (chemical oxygen demand COD, dissolved organic carbon DOC, and total suspended solids TSS). Tests were carried out at the manufacturer's recommended dosage for each detergent.

Results are summarised below. It can be seen that, **at manufacturers recommended dosages, washing performances for P-based detergents tested are better or equivalent** to those of P-free detergents of the same type. Even though the manufacturer's recommended dosages are higher for this sample of P-based detergents, **organic load (COD, DOC) on the environment per wash is either equivalent or lower ; suspended solids are significantly lower.**

The suspended solids content of a detergent is related to the quantities of sludge generated in sewage works.

It is to be noted that if equivalent quantities of each detergent were to be compared (rather than recommended dosages), P-based detergents would offer a significantly lower organic environmental load (COD, DOC) for washing performance equivalent or probably better than that offered by P-free detergents.

CSIC study, Spain, 1997, using 12 leading European detergents.

Type of detergent (average results)	<i>Recommended dosage g/wash</i>	Soil/stain removal efficiency (%)				Environmental load (g/wash)		
		standard	greasy	protein	bleachable	COD	DOC	TSS
P-based standards	282g	42%	66%	60%	41%	78g	13g	3g
P-free standards	221g	28%	54%	47%	41%	78g	14g	50g
P-based compacts	74g	28%	50%	52%	30%	31g	5g	1g
P-free compacts	64g	22%	51%	46%	27%	41g	6g	16g

CEEP Press Release June 2000

*Belgian consumer magazine
detergent performance tests*

The Belgian consumer magazine “Test Achats” published in March (n° 430) a series of wash performance test results for 16 standard powder and 6 tablet laundry detergents.

The magazine used this article as a platform for an attack on phosphates, and the “overall appreciation” of the detergents in the test results tables systematically classed P-based detergents at the bottom.

However, the actual test results and the prices per wash (Nov. 99 prices) in the published table give a different story, where for nearly all criteria for both the standard powders and tablets tested, the P-based detergents offer a generally better wash at a lower price (see table below)

The only wash criteria for which P-based of either format perform less well than P-free detergents is thus mineral deposits on fabric (the five P-based detergents, as did the P-free, gave very mixed performances from very bad to very good). This is surprising as it is a criteria where phosphates generally offer excellent performance, if correctly dosed, because of their high solubility.

	<i>N° brands tested</i>	<i>Wash performance</i>	<i>Fabric wear</i>			<i>Price per wash (BF)</i>
			<i>Chemical</i>	<i>Mineral deposits</i>	<i>Dis-colouring</i>	
<u>Powders</u>						
<i>P-based</i>	5	0,80	1,60	0,40	0,80	11,90 BF
<i>P-free</i>	11	0,73	1,45	0,73	0,18	12,77 BF
<u>Tablets</u>						
<i>P-based</i>	4	0,50	4,00	4,00	1,00	12,25 BF
<i>P-free</i>	2	-0,50	4,00	3,00	0,00	14,25 BF

(performance scores calculated as averages taking : good=2, very good = 4, mediocre = -2, bad = -4.)

CEEP Press Release June 2000

Australia - Phosphates offer low toxicity

A recent study in Australia has assessed the acute toxicity of 26 detergent components, concluding that phosphates offer low toxicity.

EC₅₀ Chronic toxicity of each substance on the cladoceran *C. dubia* was tested by assessing immobilisation of the zooplankton after 48 hours.

Phosphates showed to have “low” acute toxicity with an EC₅₀ value of 277 mg/l.

“Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity”. Ecotoxicology and Env. Safety 44, pages 196-206, 1999. M. Warne, New South Wales Environment Protection Authority and A. Schifko Sydney University of Technology.

*French consumer association wash tests :
P-based detergents perform better*

The French national consumer magazine “**Que Choisir**”, published by France’s largest independent consumer association, the UFC (Federal Union of Consumers), publishes in its n° 363 September 1999 issue a **wash test for 18 laundry detergents (standards, compacts and tablets)**.

P-based detergents clearly come out better in the association’s tests !

Brand	P	mark	40°C	60°C	wear	incrust
Skip standard	P	4	2	2	2	2
Carrefour own brand compact	Z	3,5	1	3	3	2
Skip tablets	P	3,5	2	2	3	3
Persavon supermarket brand	P	3,5	1	2	3	3
Clair supermarket brand	P	3,5	2	2	2	2
Ariel standard	Z	3,5	2	2	2	2
Axion compact	P	3,5	1	2	3	2
Omo tablets	P	3	1	2	3	3
Ariel compact	Z	2,5	1	2	2	2
Leader Price own brand compact	Z	2,5	2	2	1	2
Le Chat Henkel tablets	Z	2	1	2	2	2
Vizir standard	P	1,5	1	2	2	-1
Gamma standard	P	1,5	1	1	3	-1
Apta supermarket brand	Z	1,5	1	2	1	-1
Maison Verte compact	Z	1	1	2	1	2
Super Croix Henkel	Z	0,5	1	2	1	2
Dash	Z	0,5	-1	1	2	2
Xtra Henkel	Z	0	-1	1	1	2
Average P-based		3,0	1,4	1,9	2,6	1,6
Average Z-based		1,8	0,8	1,9	1,6	1,7

In the table above :

“**mark**” corresponds to the overall appreciation of the detergent’s performance (no account being taken of price). In the magazine, marks ranged from 10.5 – 14.5, I have corrected these to the difference from 10.5 (the lowest mark obtained in the test) in order to clarify results.

“40°C” and “60°C” correspond to the appreciation for washing at these temperatures, as given in the magazine, on the basis of **grey dirt, grease stain, protein stain, vegetable stain and white cotton** performance. I have converted stars and crosses to numbers, in order to obtain averages.

“wear” corresponds to **deterioration of fabrics** through wear and “incrust” to mineral incrustation.

The overall appreciation of the 16 detergents are given as a mark out of 20, and the detergents are then presented in the order of mark obtained. **6 of the better detergents (top 9) are P-based (3 P-free), whereas only 2 of the poorer detergents are P-based (7 P-free).**

The average appreciation for the 8 P-based detergents (14.5) is very significantly better than for P-free brands (12.3), as is the appreciation of performance at 40°C and of fabric wear and mineral incrustations.

Que Choisir selects the two best-marked detergents as offering optimal washing performance : Skip standard powder and Carrefour compact (supermarket brand). Skip is P-based and Carrefour P-free. The magazine indicates however that **the P-free product obtains lower performance at 40°C and tends to stick together in the packet**. Que Choisir also indicate that the cost per wash for Carrefour is around 1.7 FF compared to 2.9 FF for Skip.

Overall, although the number of detergents tested and variety of types means that results do not offer statistical proof, **this consumer association study clearly shows better general washing performance for P-based detergents, particularly at lower temperatures**. P-free detergents, ainti-ecologically, seem to require higher wash temperatures! **P-based detergents also appear to cause less fabric deterioration.**

*UK "Which" wash tests :
P-based detergents
perform better
and wash more cheaply*

The leading UK independent consumer magazine "**Which**" publishes in its September 1999 issue a **wash test for 27 laundry detergents (standards, compacts, liquids and tablets)**.

The test report gives results for removal of ten different types of stain and an overall washing efficiency test score, as well as the price per wash, based on typical supermarket packet prices and the manufacturer's recommended dosage.

"TOTAL SCORE" above is the total test score given by "Which", averaging performance for each of the ten stains : grass and mud mix, curry, coffee, blackcurrant juice, make-up foundation, motor oil, chocolate ice-cream, mud, pasta sauce, collar dirt.

Of the six detergents highlighted by "Which" as offering best wash and/or value for money, five were phosphate based, and the non-phosphate one is being discontinued. The five P-based, "Which recommended detergents are Persil Performance standard, Asda and Sainsbury's supermarket own brand compacts, Tesco supermarket's colour standard powder and Safeway supermarket's Novon liquid. The only non-phosphate "Which" recommended detergent (Persil Performance compact) is being discontinued in the UK and being replaced with tablets (Persil Performance tablets are currently P-based).

		P	Total score	Price per wash
<u>Powders</u>				
Ariel	standard	Z	9	40
Ariel Futur	compact	Z	8	29
Asda	compact	P	9	25
Bold	compact	Z	8	31
Bold	standard	Z	8	39
Down to Earth	compact	Z	7	22
Persil performance	compact	Z	9	28
Persil performance	standard	P	9	21
Sainsbury	compact	P	9	23
Ariel color	standard	Z	7	29
Persil colour	standard	Z	7	28
Sainsbury colour	standard	P	7	23
Tesco	standard	P	8	24
Average P powders			8,4	23,2
Average Z powders			7,9	30,8
<u>Liquids</u>				
Ariel futur	liquid	Z	7	24
Bold	liquid	Z	7	24
Daz ultra	liquid	Z	7	22
Surf lemon	liquid	P	7	21
Persil performance	liquid	P	7	24
Ariel colour	liquid	Z	7	24
Persil colour	liquid	P	7	25
Safeway cyclon	liquid	P	7	16
Sainsbury	liquid	P	7	18
Average P liquids			7,0	20,8
Average Z liquids			7,0	23,5
<u>Tablets</u>				
Ariel	tablet	Z	8	49
Radion	tablet	P	9	26
Surf soda bright	tablet	P	9	26
Persil colour	tablet	P	7	27
Sainsburys colour	tablet	P	8	25
Average P tablets			8,3	26,0
Average Z tablets			8,0	49,0
Overall average P			7,9	23,1
Overall average Z			7,6	29,9

