

Annex B

Specification of Reference detergent A*

Reference detergent A* is defined in Table B.1. The reference detergent is **distributed as three separate components**:

- base powder with enzyme and foam inhibitor;
- sodium perborate tetrahydrate;
- bleach activator tetra-acetythylenediamine.

The proportions of components of the reference detergent used in tests are as follows:

- 77 % base powder with enzyme and foam inhibitor;
- 20 % sodium perborate tetrahydrate;
- 3 % bleach activator tetra-acetythylenediamine (TAED).

Table B.1 – Composition of the reference detergent A*

Ingredient	%	Tolerance (±)
Linear sodium alkyl benzene sulfonate	8,8	0,5
Ethoxylated fatty alcohol C _{12/14} (7 EO)	4,7	0,3
Sodium soap (tallow soap)	3,2	0,2
Foam inhibitor concentrate (12 % silicon on inorganic carrier)	3,9	0,3
Sodium aluminium silicate zeolite 4 A (80 % active substance)	28,3	1,0
Sodium carbonate	11,6	1,0
Sodium salt of a copolymer from acrylic and maleic acid (granulate)	2,4	0,2
Sodium silicate (SiO ₂ :Na ₂ O = 3,3:1)	3,0	0,2
Carboxymethylcellulose	1,2	0,1
Phosphonate (DEQUEST 2066, 25 % active acid)	2,8	0,2
Optical whitener for cotton (stilbene type)	0,2	0,02
Sodium sulfate	6,5	0,5
Protease (Savinase 8.0)	0,4	0,04
Sodium perborate tetrahydrate (active oxygen 10,00 % – 10,40 %)	20,0	
Tetra-acetythylenediamine (active content 90,0 % – 94,0 %)	3,0	
NOTE 1 It is recommended that the detergent manufacturer should indicate the pH of the product supplied. Further product specifications are under consideration.		

The base powder with enzyme and foam inhibitor shall fulfil the following solubility requirements:
Solubility residues (see note below):

Insoluble residue at 20 °C: ≤ 39 % after 2 min
 ≤ 37 % after 5 min.

NOTE The solubility residues are determined using the following procedure:

This operating procedure covers the IEC-A* solubility test which is used to determine the low temperature solubility of IEC-A* reference base detergent.

Equipment:

- 1000 ml glass beaker
- Magnetic stirrer
- Vacuum pump with trap
- 3 Piece Glass Buchner funnel 9 cm diameter
- 500 ml Pyrex side arm conical flask

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- knitted black cotton filter fabric circles, 9 cm diameter (e.g. fabric style EW-442 supplied by wfk Testmaterials or EMPA Testmaterials, see Annex U; EW-442 is 100% cotton, swiss pique knit, circular, yarn count 37 tex; dyed direct black 22).

Procedure:

Carry out 3 replications and record the results as an average of the 3 replicates.

Fill beaker with 800 ml of deionised water and allow the temperature to equilibrate to 20 °C. Place beaker on the magnetic stirrer and set stirrer speed to 200 r/min. Sample IEC-A* base detergent to approximately 10 g and accurately weigh out 2 g. Add the product to the beaker, start stopwatch and stir for the specified time (2 min or 5 min, see solubility specifications below). Connect vacuum pump to conical flask and switch on vacuum pump.

Weigh the black fabric circle. Place black fabric into Buchner funnel smooth side up. Pour solution from the beaker onto the black fabric, and leave until all the solution has been sucked through the fabric and the residue remains. Remove black fabric from Buchner funnel, place on a sheet of paper and label sample.

Repeat for the remaining 2 replicates.

Allow black fabric to dry at ambient for 24 h. Re-weigh dried black fabric circles and record the % residue.