ATILH
ASSOCIATION TECHNIQUE DE L'INDUSTRIE DES LIANTS HYDRAULIQUES

Bureau de Normalisation des Liants Hydrauliques

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Reference Material TL-1Ca
Portland Cement (CEM I 52,5)

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I – Participation and execution of tests

Each year the "*Association Technique de l'Industrie des Liants Hydrauliques*" (ATILH) organises an interlaboratory test campaign involving in particular the participation of the cement production industry laboratories, the cement end-user laboratories and Research and Inspection Centers within the construction materials sector. This participation is compulsory for laboratories accredited by COFRAC for cement testing. The tests are carried out in accordance with standardised methods where latter exist, otherwise according to everyday traditional methods.

II – Statistical analysis of the results

Outliers are eliminated via the STUDENT's test with a confidence level of 98 %. A reiteration is set at this threshold in order to keep only those values which are related to the "Normal or Gaussian" distribution, the latter being entirely defined by 2 parameters: mean and standard deviation. The coefficient of variation symbolised by "V" is the ratio between the standard deviation "σ" and the mean value $\overline{X}$.

III – Chemical composition

X-ray fluorescence spectrometry, fused bead (ISO 29581-2)				Chemical Analysis (EN 196-2)		
Elements	Mean $\overline{X}$ (%)	Standard deviation σ (%) reproducibility	Coefficient of variation V (%)	Mean $\overline{X}$ (%)	Standard deviation σ (%) reproducibility	Coefficient of variation V (%)
Loss on ignition	-	-	-	**1,39**	**0,09**	**6,12**
SiO_2	**20,23**	**0,15**	**0,76**	**20,18**	**0,26**	**1,29**
Al_2O_3	**5,24**	**0,09**	**1,72**	**5,32**	**0,1**	**1,79**
Fe_2O_3	**2.00**	**0,04**	**1,77**	**2,03**	**0,09**	**4,21**
CaO	**65,77**	**0,29**	**0,45**	**65,72**	**0,39**	**0,6**
MgO	**1,13**	**0,04**	**3,85**	**1,15**	**0,1**	**8,4**
$SO3^3$	**3,06**	**0,06**	**1,87**	**3,07**	**0,1**	**3,31**
Free CaO^2				**0,83**	**0,22**	**27**
Insoluble[3]				**0,21**	**0,09**	**45**
Na_2O^1	**0,19**	**0,03**	**16,14**	**0,18**	**0,02**	**13**
K_2O^1	**0,28**	**0,01**	**5 ,06**	**0,28**	**0,02**	**8,65**
TiO_2	**0,20**	**0,01**	**4,23**			
P_2O_5	**0,57***					
SrO	**0,05***					

[1] photometric method [2] all methods combined [3] gravimetric method * P_2O_5 ±0,01 % - SrO ±0,004 %

III – Sample conditioning

The sample of this reference material is packaged in 40 g glass bottle, sealed with a secure screw cap. Physico-chemical properties of the sample are stable until the bottle is closed and the cap untouched. After opening the bottle the local conditions of storage of the sample (courtroom with low humidity, maintaining in a drier, close the bottle immediately after use) will allow its potential reuse.