




CONFORMITY CERTIFICATE																																										
Ground Granulated Blastfurnace Slag Produced at		Scunthorpe Works																																								
Sample Period		November 2019																																								
Certificate of Conformity of GGBS to EN 15167-1:2006		Certificate of Conformity of Combinations of GGBS and CEM I Portland Cement to Annex A of BS 8500-2:2015																																								
Spot samples of GGBS were taken and tested to determine conformity to the autocontrol requirements of EN 15167-1:2006 "Ground granulated blastfurnace slag for use in concrete, mortar and grout" following the methods given in that standard. The values reported are mean values for the monthly production period.		Portland Cement Source:																																								
Scunthorpe GGBS Only		Rugby																																								
For combinations of GGBS supplied from the above works with the above CEM I Portland cement the permitted proportions conforming to the requirements given in annex A of BS 8500-2:2015 are:																																										
<table border="1"> <thead> <tr> <th>Results</th> <th>Product</th> <th>EN Limit</th> </tr> </thead> <tbody> <tr> <td>Fineness m²/kg</td> <td>507</td> <td>min. 275</td> </tr> <tr> <td>Magnesium Oxide MgO %</td> <td>8</td> <td>max. 18</td> </tr> <tr> <td>Sulfate SO₃ %</td> <td>0.2</td> <td>max. 2.5</td> </tr> <tr> <td>Sulfide S²⁻ %</td> <td>0.8</td> <td>max. 2.0</td> </tr> <tr> <td>Chloride Content Cl⁻ %</td> <td>0.02</td> <td>max. 0.10</td> </tr> <tr> <td>Moisture Content %</td> <td>0.0</td> <td>max. 1.0</td> </tr> <tr> <td>Corrected Loss on Ignition %</td> <td>1.0</td> <td>max. 3.0</td> </tr> <tr> <td>Aluminium Oxide Al₂O₃ %</td> <td>12.7</td> <td>to 1 d.p.</td> </tr> </tbody> </table>		Results	Product	EN Limit	Fineness m ² /kg	507	min. 275	Magnesium Oxide MgO %	8	max. 18	Sulfate SO ₃ %	0.2	max. 2.5	Sulfide S ²⁻ %	0.8	max. 2.0	Chloride Content Cl ⁻ %	0.02	max. 0.10	Moisture Content %	0.0	max. 1.0	Corrected Loss on Ignition %	1.0	max. 3.0	Aluminium Oxide Al ₂ O ₃ %	12.7	to 1 d.p.	<table border="1"> <thead> <tr> <th>Strength Class</th> <th>Not Less Than**</th> <th>Not More Than**</th> </tr> </thead> <tbody> <tr> <td>52.5L</td> <td>6</td> <td>37</td> </tr> <tr> <td>42.5L</td> <td>6</td> <td>61</td> </tr> <tr> <td>32.5L</td> <td>46</td> <td>77</td> </tr> </tbody> </table>		Strength Class	Not Less Than**	Not More Than**	52.5L	6	37	42.5L	6	61	32.5L	46	77
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Note: If the value of Al ₂ O ₃ is ≥ 14.5% the '+SR' restriction will be exceeded if the C ₃ A of the CEM I is >10%.		Conformity Evaluation Period (if less than 6 months)																																								
<i>Alkalis as Na₂O equ. (acid soluble)</i>		N/A month(s)																																								
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COMBINATION OF 50% LABORATORY STOCK CEM I PORTLAND CEMENT AND 50% GGBS		<table border="1"> <tbody> <tr> <td>CIIA-S</td> <td>6</td> <td>20</td> </tr> <tr> <td>CIIB-S</td> <td>21</td> <td>35</td> </tr> <tr> <td>CIIIA</td> <td>36</td> <td>65</td> </tr> <tr> <td>CIIBB</td> <td>66</td> <td>80</td> </tr> </tbody> </table>		CIIA-S	6	20	CIIB-S	21	35	CIIIA	36	65	CIIBB	66	80																											
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<i>The stock CEM I Portland cement used in these tests was supplied by Hanson Ribblesdale works and the following results were obtained from that sample</i>		<i>The samples of LKAB Minerals GGBS and the CEM I Portland cement were bulk average monthly samples for the works specified</i>																																								
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The GGBS contained no additional materials other than those permitted. The above results and other tests demonstrate the conformity of the material sold during the month to the requirements of EN 15167-1:2006		1333-CPR-00194																																								

Signed: 

L Bontoft - Technical Manager GGBS