

## SUMMARY 2



Green Foundry LIFE project (LIFE17 ENV/FI/000173)

AGH – University of Science and Technology Faculty of Foundry Engineering

*The new inorganic binder system is based on the sodium silicate (glass water) or aluminosilicate, which reduces the amount of harmful components indoor and in ambient air.*

### Action B1: Emissions of different binder systems during small – scale test casts.

#### Method 2: Tests in foundry plants – small scale chamber

Research on the composition of gases (BTEX and PAHs groups) formed during pouring and cooling of moulds and knocking out of castings were conducted in foundry. The six binders for moulding sands were tested:

- organic binders: furan resin (code MF) and phenol-formaldehyde resin (code MA),
- inorganic binders; 2 binders on water glass base (code MI and code MC) and 1 binder on aluminosilicate base (code MG),
- greensand – activated bentonite (code MB).

Amounts of compounds from BTEX group emitted during pouring, cooling and knock-out.

Test No.	Benzene	Toluene	Ethylbenzene	m+p xylene	o-xylene	SUM
	[g/process]	[g/process]	[g/process]	[g/process]	[g/process]	[g/process]
	[mg/kg] <sup>a</sup>					
	[mg/kg] <sup>b</sup>					
<b>BTEX Test 1 MF</b>	1.2	4.1	0.03	0.14	0.03	<b>5.5</b>
	18	63	0.46	2.1	0.46	<b>84</b>
	52	178	1.3	6.1	1.3	<b>238</b>
<b>BTEX Test 2 MA</b>	1.5	0.47	0.02	0.20	0.03	<b>2.2</b>
	23	7.2	0.31	3.1	0.46	<b>34</b>
	65	20	0.87	8.7	1.3	<b>96</b>
<b>BTEX Test 3 MB</b>	0.17	0.11	0.01	0.03	0.01	<b>0.33</b>
	2.6	1.7	0.15	0.46	0.15	<b>5.1</b>
	7.4	4.8	0.43	1.3	0.43	<b>14</b>
<b>BTEX Test 6 MI</b>	0.07	0.03	0.01	0.02	0.01	<b>0.14</b>
	1.1	0.46	0.15	0.31	0.15	<b>2.2</b>
	<b>3.0</b>	<b>1.3</b>	<b>0.43</b>	<b>0.87</b>	<b>0.43</b>	<b>6.0</b>

(a)-kg of moulding sand, (b)-kg of metal