

A Report from

OAKDENE HOLLINS  
RESEARCH & CONSULTING

# Lignin Derivatives – Value Added Chemicals (Annexes)

*Prepared for LBNet by Adrian Chapman on 7 May 2015*



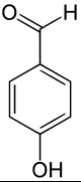
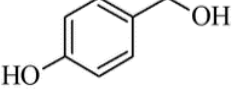
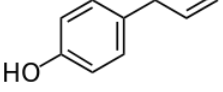
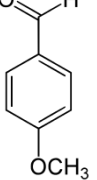
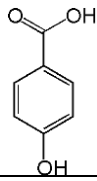
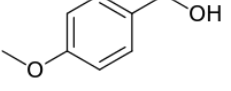
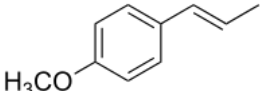
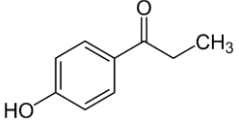
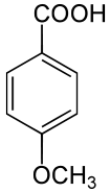
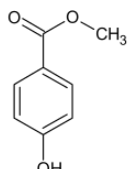
*Value-driven consulting*

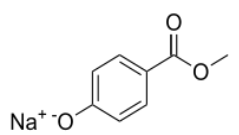
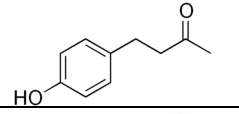
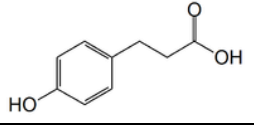
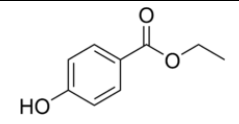
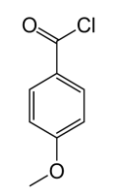
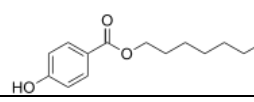
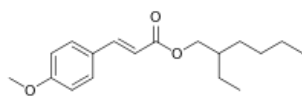
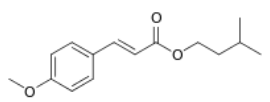
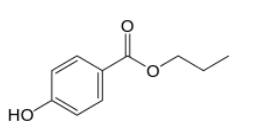
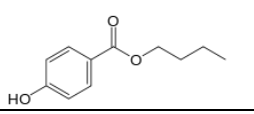
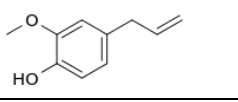
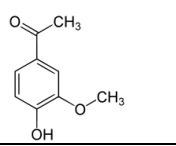
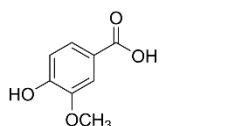
*Science-led research*

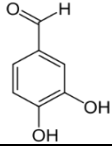
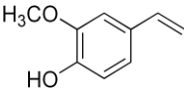
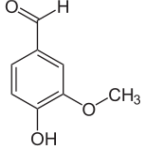
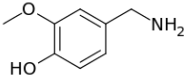
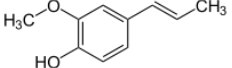
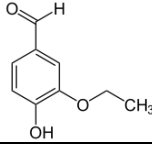
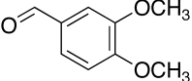
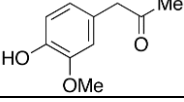
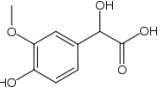
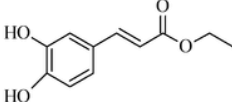
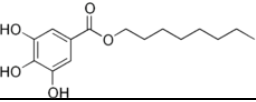
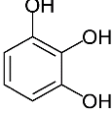
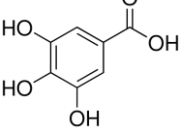
## *Contents*

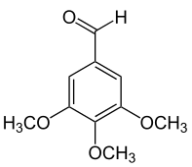
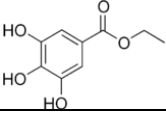
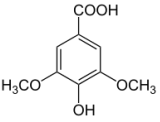
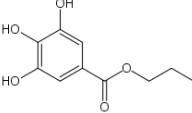
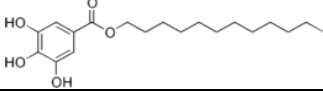
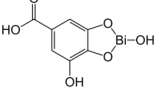
Annexe A: Shortlisted Substances .....	1
Annexe B: Shortlisted Classes.....	5

## Annexe A: Shortlisted Substances

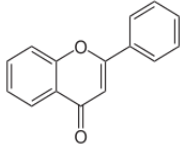
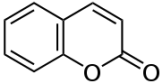

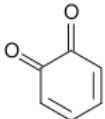
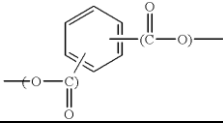
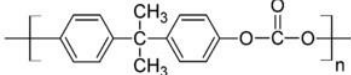
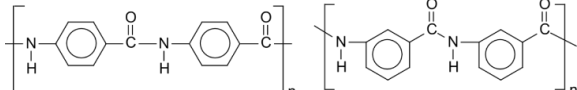
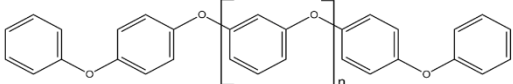
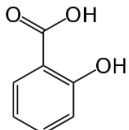
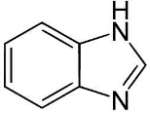
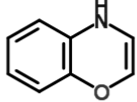
Name	Structure
4-Hydroxybenzaldehyde	
4-(Hydroxymethyl)phenol	
4-Allylphenol	
4-Anisaldehyde	
4-Hydroxybenzoic acid	
4-methoxybenzyl alcohol	
Anethole	
4'-Hydroxypropiophenone	
4-methoxybenzoic acid	
Methylparaben	

Sodium methylparaben	
Raspberry ketone	
Phloretic acid	
Ethylparaben	
4-Methoxybenzoyl chloride	
Heptylparaben	
Octyl methoxycinnamate	
Amiloxate	
Propylparaben	
Butylparaben	
Eugenol	
Apocynin	
Vanillic acid	

Protocatechuic aldehyde	
2-Methoxy-4-vinylphenol	
Vanillin	
Vanillylamine	
Isoeugenol	
Ethylvanillin	
Veratraldehyde	
Vanillylacetone	
Vanillyl mandelic acid	
Ethyl caffeate	
Octyl gallate	
Pyrogallol	
3,4,5-trihydroxybenzoic acid (gallic acid)	

3,4,5-Trimethoxybenzaldehyde	
Ethyl gallate	
Syringic acid	
Propyl gallate	
Dodecyl gallate	
Bismuth subgallate	

## Annexe B: Shortlisted Classes

Class	General Structure
Flavonoid (inc. flavones and flavanols) s	
Coumarins	
Hydroquinones	
Quinones	
Polyesters	
Polycarbonates	
Aramids	 <i>Para-Aramid</i> <i>Meta-Aramid</i>
Polyethers	
Salicylic acid derivatives	
Benzimidazole	
Benzoxazine	

*Value-driven  
consulting*

*Science-led  
research*

Oakdene Hollins provides these services to clients:

- environmental labelling
- programme management and evaluation
- policy and strategy development
- market reports
- carbon footprints & LCA reviews
- materials flow analysis
- Lean manufacturing
- economic analysis & modelling
- statistical analysis
- technology appraisal.

For more information visit [oakdenehollins.co.uk](http://oakdenehollins.co.uk)

Oakdene Hollins is certified to ISO 9001:2008 and ISO 14001:2004



We print our tenders on ecolabel / recycled paper

Oakdene Hollins Ltd  
Ardenham Court  
Oxford Road  
Aylesbury  
Buckinghamshire  
HP19 8HT

+44(0)1296 423915  
[admin@oakdenehollins.co.uk](mailto:admin@oakdenehollins.co.uk)

[www.oakdenehollins.co.uk](http://www.oakdenehollins.co.uk)  
[www.remanufacturing.org.uk](http://www.remanufacturing.org.uk)  
[www.infinifile.org.uk](http://www.infinifile.org.uk)

Registered in England no:  
2937129