



ZELL CHEMING

**The effect, the dosage and the environmental impact
of chemical additives** A Systematic Approach

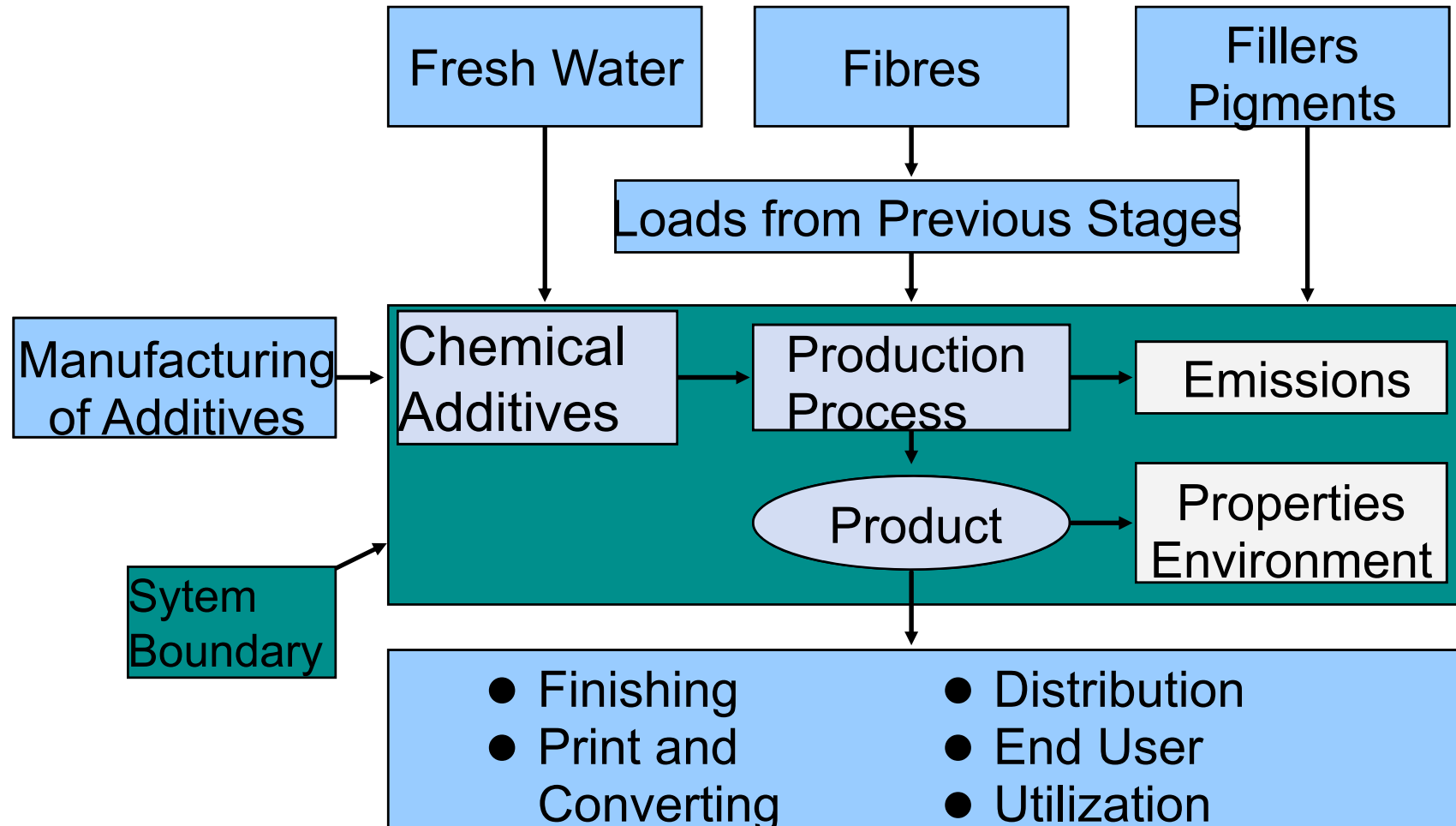
Fachauschuss CHAD

Authors: Belle, J. Götz, B.

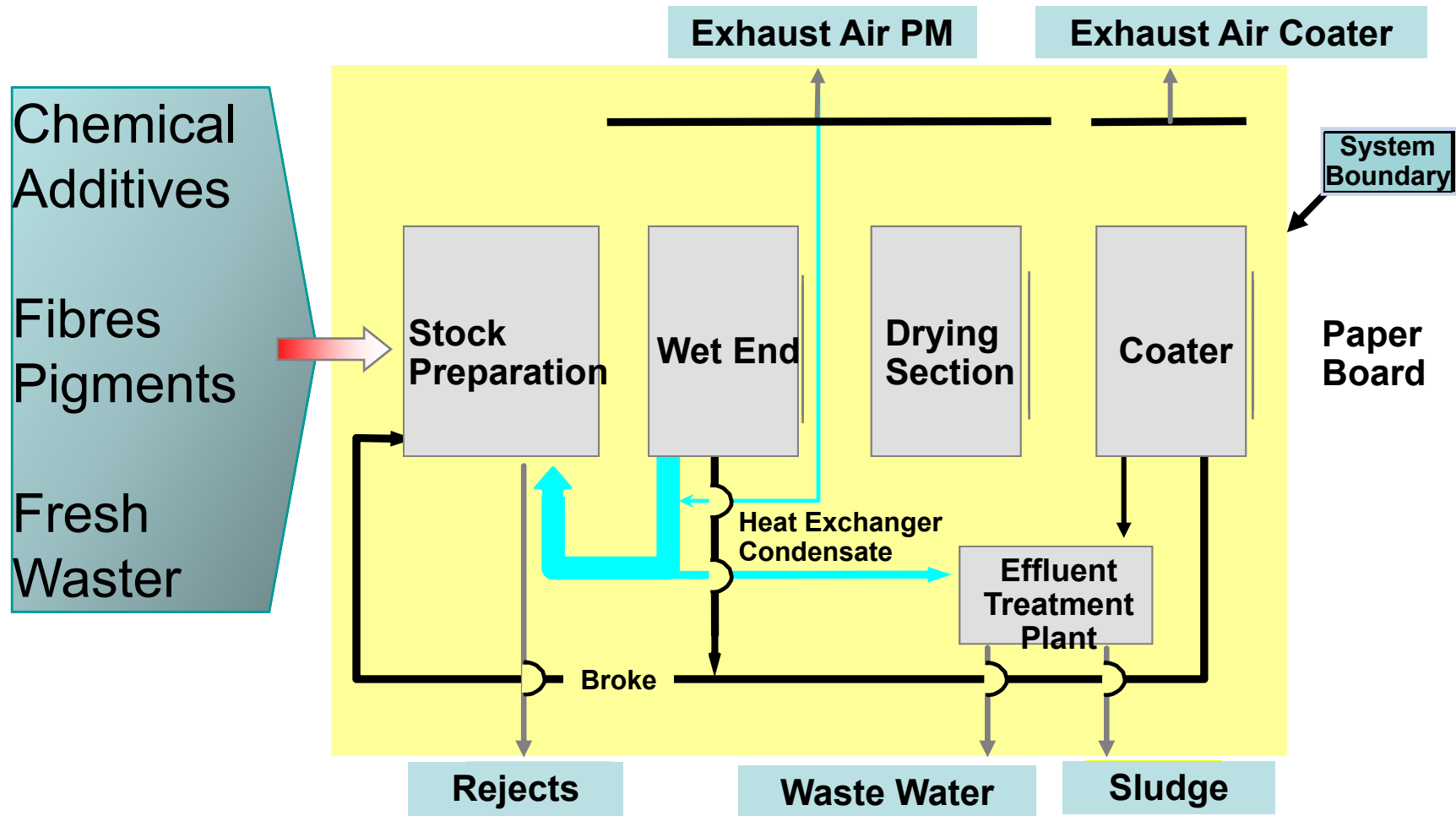
Speaker: Blickenstorfer, Chr.

Water Friendly Chemistry for Papermaking
| Lyon, March 27-28, 2013

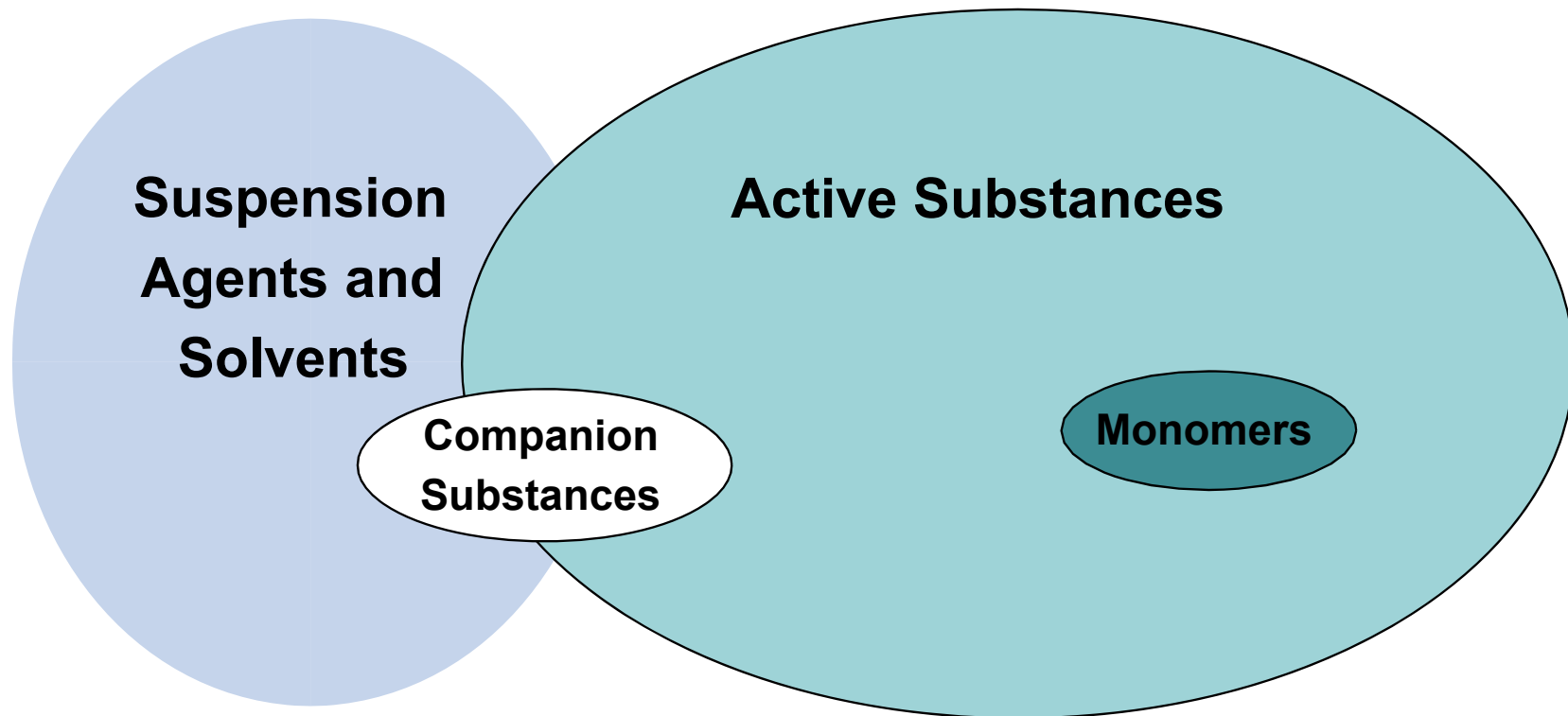
Scope of Activities of the CHAD Committee



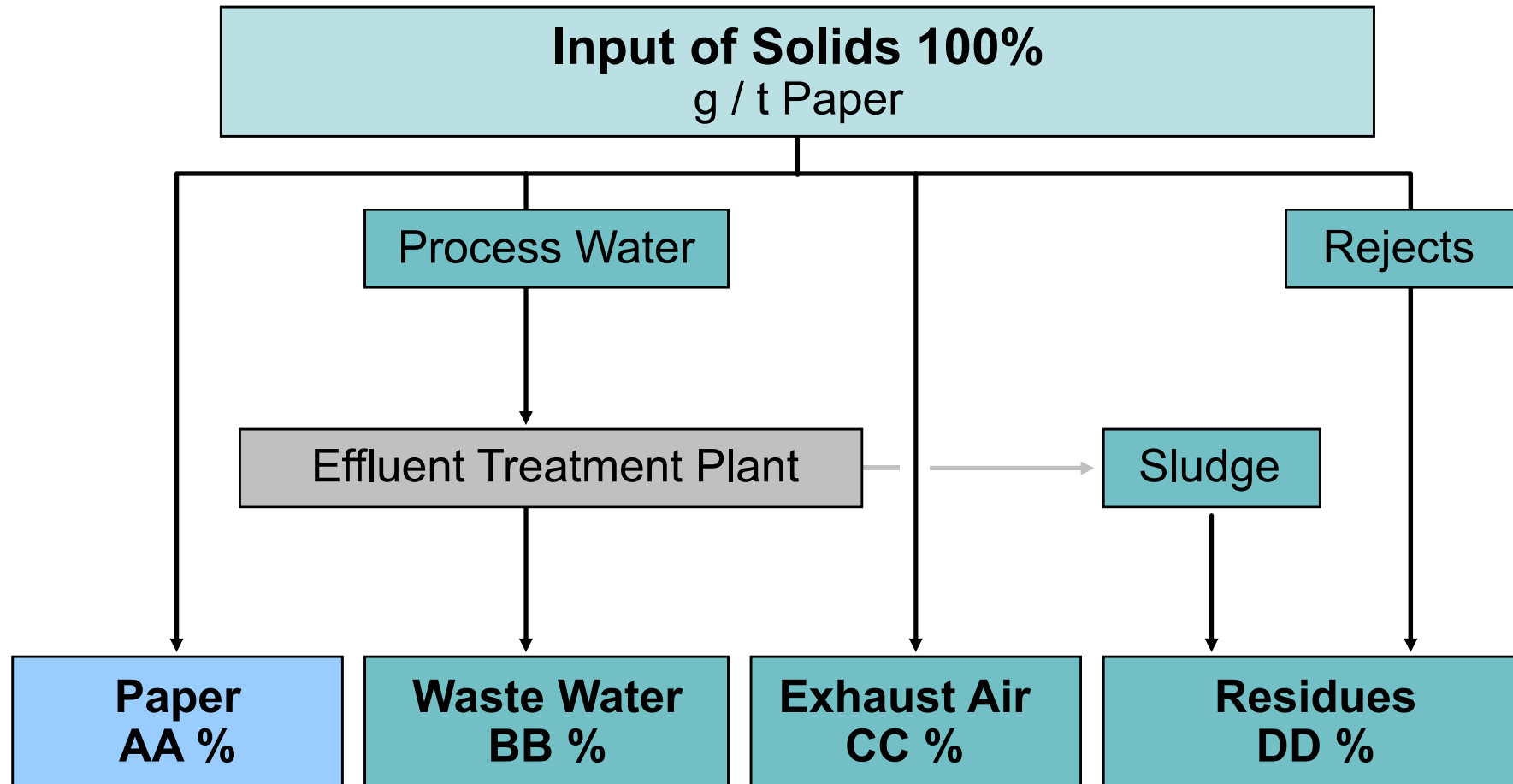
Simplified Block Diagramm of the Paper Mill System



Composition of Chemicals Additives



Mass Balance of Chemical Additives in Ecologically Relevant Sectors



Raw Materials Consumption of Paper & Board (Volume shares, dry)

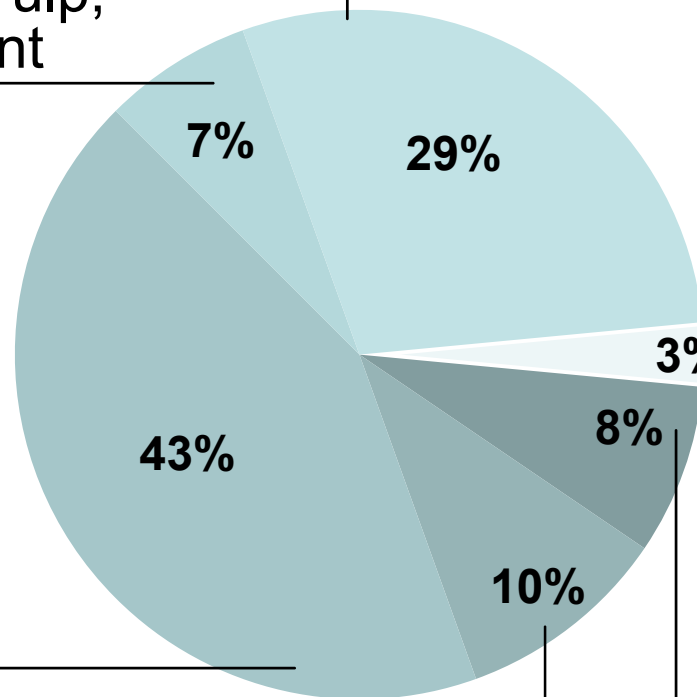
Chemical Pulp, Wood

Chemical Pulp, Annual Plant

Recovered Paper

Mechanical Pulp

Filler / Coating Pigment



Chemical Additives

1.1%

Specialty Chemicals

0.3%

Al-Compounds

1.6%

Starch

1.0%

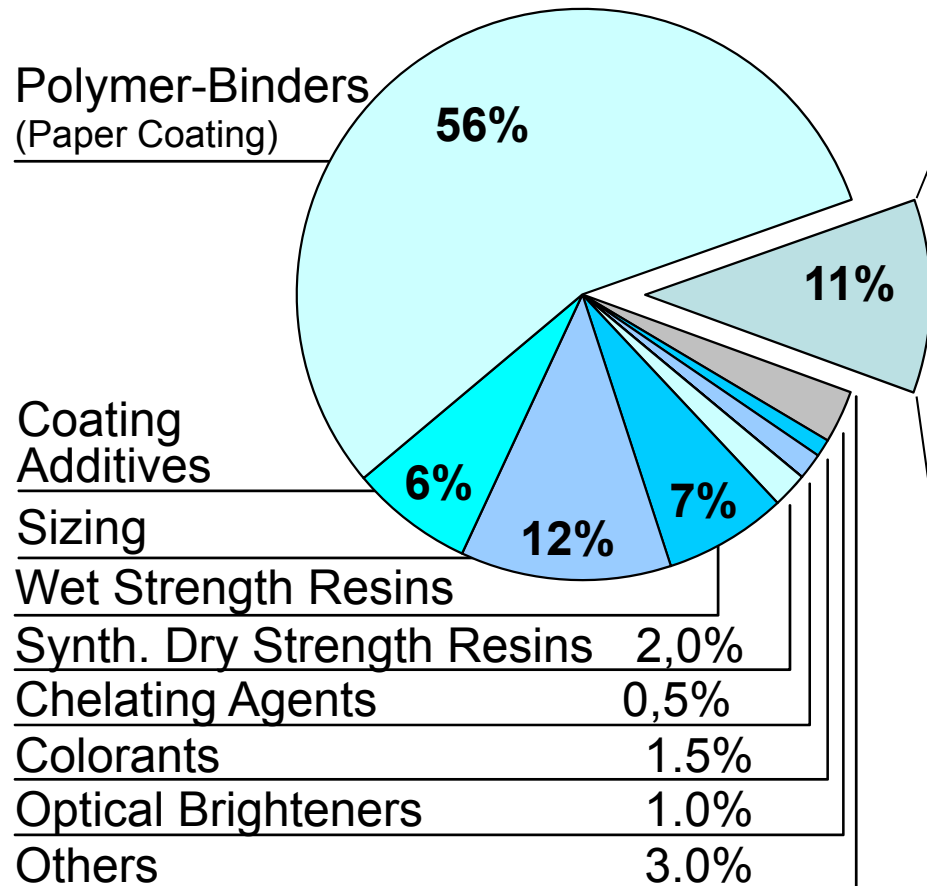
Basic and Bleaching Chemicals

Global P&B Production in 2010: 395 mio t

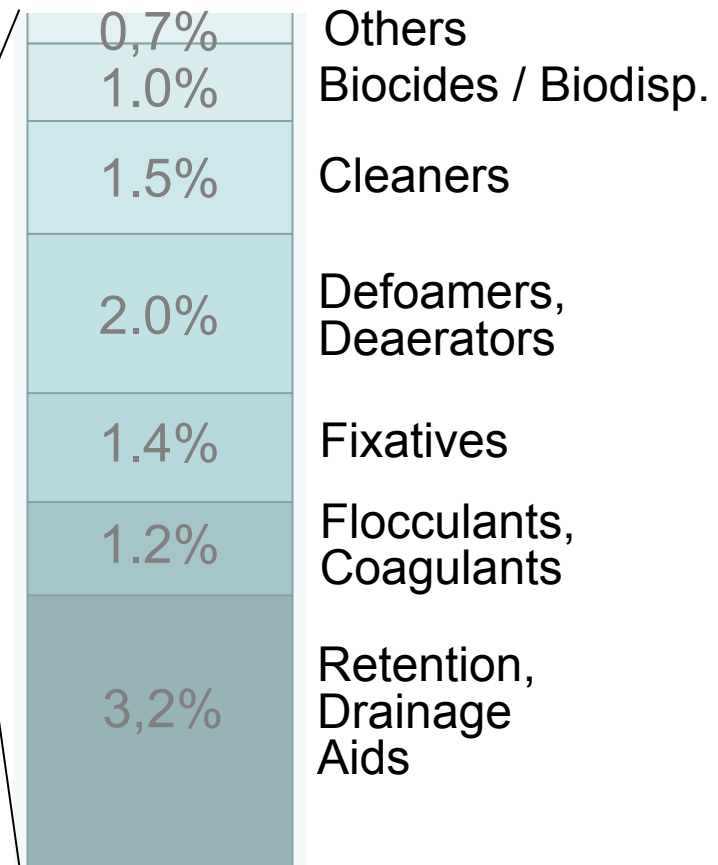


Market Shares of Specialty Chemicals by volume

Functional Chemicals



Process Chemicals



Total Volume 1.1% dry substance based on global P&B production



Systematics of Chemical Additives

| Process Chemicals | Functional Chemicals |
|--|---------------------------------------|
| Retention / Drainage Aids | Sizing Agents |
| Fixing Agents | Wet Strength Resins, Crosslinkers |
| Flocculants, Coagulants | Dry Strength Resins, Starch |
| Deaerators, Defoamers | Dyestuffs, Optical Brighteners |
| Biocides, Bio Dispersants | Coating Binders, Coating Additives |
| Cleaning Agents, Dispersants, Others | Chelating Agents Others |



| | Mechanical Printing Papers | Woodfree Printing Papers | Coated Papers | Hygienic Papers | Packaging Papers | Chemical Pulp |
|---|--|---------------------------|-----------------------------|-----------------|----------------------------------|--------------------|
| Process Chemicals | | | | | | |
| Retention / Drainage Aids, Fixing Agents, Flocculants | Auhorn Künzel, Le, Pelzer, Prinz | Pelzer | Pelzer | Pelzer | Pelzer | |
| Deaerators, Defoamers, Washing Aids | Auhorn | | | | | Auhorn, Niemelä |
| Biocides, Bio-Dispersants | | | | | Kleemann, Schrijver, Wirth | |
| Cleaning Agents | Hamm, Österberg | | | | | |
| Dispersants, Deresination Agents | Gliese | Gliese | Gliese | | | Auhorn, Niemelä |
| Functional Chemicals | | | | | | |
| Sizing Agents | | Gliese, Prinz, Schultz | Prinz, Schultz | | Gliese, Prinz, Schultz | |
| Wet Strength Resins, Crosslinkers | | | Kamutzki, Pelzer, Scholz | Hamm | | |
| Dyestuffs, Optical Brighteners | | Köcher, Roick | | Roick | Auhorn | |
| Chelating Agents | Schultz | Schultz | | | | Schultz |
| Synthetic Coating Binders | | | Gliese, Gürtler | | | |
| Starch | | Gliese | | | Auhorn | |