Binder systems for the Phenolic PU-NB process

Rapidur are three-component no-bake phenolic-polyurethane systems containing:

- a phenolic polyol in aromatic or vegetable solvents;
- an isocyanate resin in aromatic or vegetable solvents;
- a liquid amine catalyst in aromatic or vegetable solvents.

Depending on the quality of the new or reclaimed sand used, the two resins are added in percentages each varying from 0.35% to 0.70% based on the sand weight. The catalyst is used in percentages varying from 3% to 10% based on the phenolic resin weight.

Reaction mechanism

Phenolic resin + Isocyanate + Catalyst

Polyurethane

Rapidur systems are unique because of their special benefits:

- the work time of the sand mix can be as high as 50% of the desired strip time, then the strip times can be reduced to few minutes, allowing very high production rates. For very intricate cores or moulds, Rapidur systems are also available with a bench-life of around 15 minutes;
- unlike other no-bake binders, Rapidur bonded cores or moulds are dimensionally precise and stable;
- very high mechanical strengths are achieved at very low binder levels;
- sand mix remains free-flowing and compactable for the full work life;
- most metals and types of castings can be poured even up to around half an hour after moulding.

Rapidur systems produce excellent results in non-ferrous, iron and small or medium size steel castings.

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PU-NB Systems
RAPIDUR

Depending on the specific needs of the foundries, the following grades are available.

Part A		Part B				Main Features
	Solvent		NCO (%)	Nitrogen (%)	Solvent	
Rapidur P-A	aromatic	Rapidur P-B	22	7,3	aromatic	High strength
Rapidur P8-A	aromatic	Rapidur P-B	22	7,3	aromatic	Low free formaldehyde
Rapidur P10-A	aromatic	Rapidur ECO2-B	25	8,4	aliphatic	High productivity
Rapidur P13-A	aromatic	Rapidur P-B	25	8,4	aromatic	Free phenol < 1%
Rapidur ECO3-A	aliphatic	Rapidur ECO-B	22	7,3	aliphatic	Reduced VOC
Rapidur ECO4-A	aliphatic	Rapidur ECO-B	22	7,3	aliphatic	Low free formaldehyde
Rapidur ECO5-A	aliphatic	Rapidur ECO-B	22	7,3	aliphatic	Very low free formaldehyde emissions

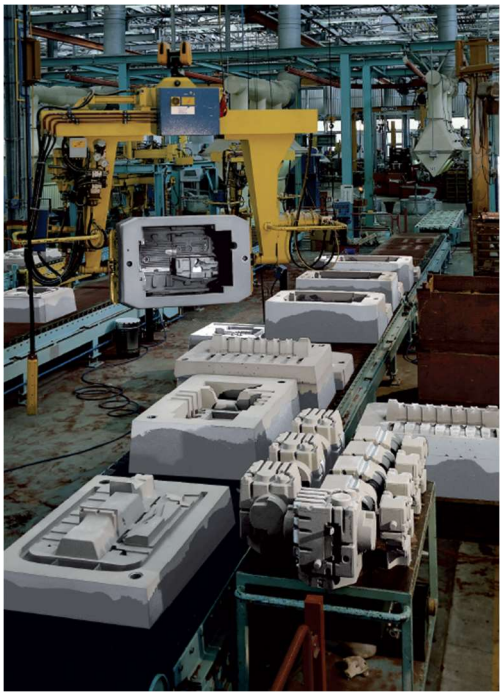

Fig. 1 - Rapidur P8/A and P/B

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