Amine catalysts for the PU-NB process

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

- an aromatic or aliphatic 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

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Polyurethane

Depending on the specific setting times required the following hardeners can be suggested.

Family	Name
Slow	Rapidur 40EE/C
	Rapidur 40E/C
	Rapidur 40/C
Medium	Rapidur 50/C
	Rapidur 60/C
	Rapidur 80/C
	Rapidur 100/C

4-PPP, Phenil Propyl Pyridine, in light aromatic solvent.

Family	Name
Medium	Rapidur M1/C
	Rapidur M2/C
	Rapidur M3/C
	Rapidur M4/C
Fast	Rapidur M5/C
	Rapidur M6/C
	Rapidur M8/C

Based on di Methyl Imidazole in aliphatic solvent.

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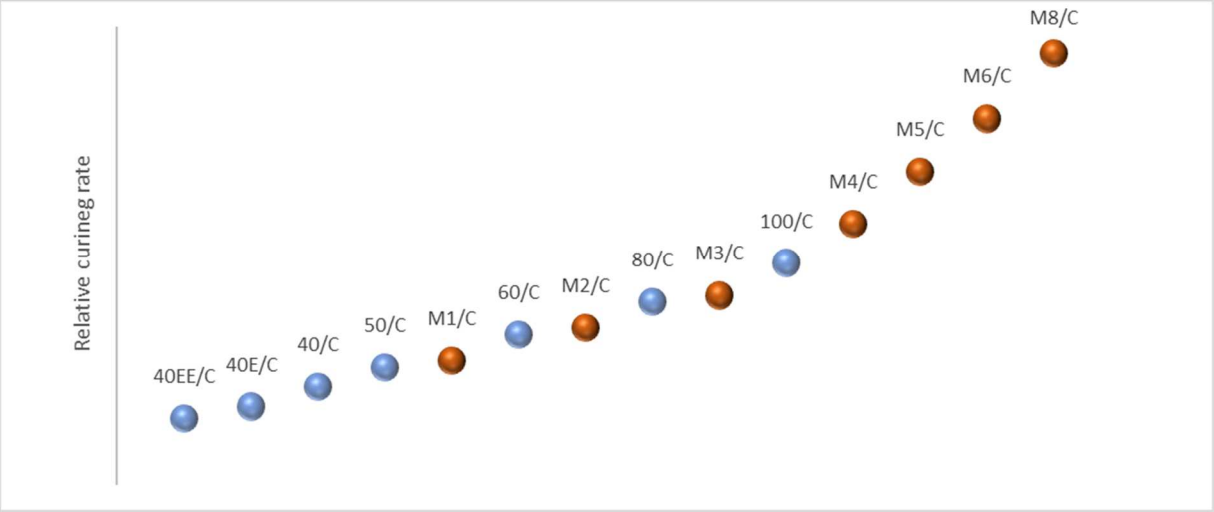
The graph shows an approximate trend of the relative reactivity obtainable with the various catalysts. The setting times depend both on the system and on the conditions used.



Relative curing rate based on Rapidur P8/A-P/B system

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