Polyurethane –Determining curative Use Level

$$\text{pph} = \frac{\text{Equivalent Weight of Curative} \times \text{NCO of prepolymer}}{42} \times \text{desired stoichiometry}$$

Example:

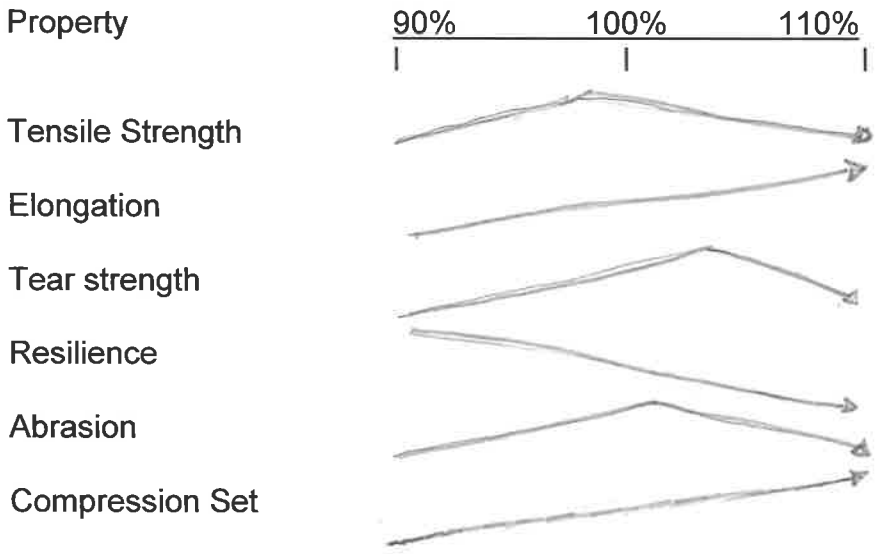
A prepolymer containing 3.1% NCO is to be used with MBOCA curative. The equivalent weight of MBOCA is 133. How much curative is required at 95% stoichiometry?

$$\text{pph} = \frac{133 \times 3.1}{42} \times 0.95$$

$$= 9.33 \text{ parts MBOCA curative per 100 parts prepolymer}$$

Stoichiometry

Maintaining the correct ratio of curative to prepolymer is called stoichiometry. A stoichiometry of 95% means that 95% of the isocyanate propolymer groups are chain extended with the curative, and 5% are left to react with other NCO groups to form chemical crosslinks. A lower stoichiometry increases crosslinks and improves dynamic properties. A higher stoichiometry decreases crosslinks and improves tear strength and flex life.



Recommended TDI stoichiometries 85% - 105%
Recommended MDI stoichiometries 95% - 100%
(control is more critical for MDI performance)

Note: information obtained from Air Products troubleshooting and engineering properties guide