CNSL-BASED PU FOAMS GUIDE FORMULATIONS

PUR SPRAY FOAM WITH VARIOUS CNSL POLYOLS AND HIGH LOI

BENEFITS

- Excellent fire protection (LOI > 25%)
- Better fire resistance than petro-based polyol
- Excellent reactivity
- Excellent compatibility with blowing agent
- Good mechanical properties
- Good overall foam formation properties

Guide Formulation

Ingredients	PU1 Parts by wt	PU2 Parts by wt	PU3 Parts by wt
Alkoxylated EDA-based polyol	35		
NX-9001[1]	45		
Brominated polyester polyol TCPP 70/30	20	17	17
GX-9102[1]		40	25
Aromatic polyester polyol		35	
Sorbitol polyether polyol		25	15
Aromatic polyester polyol			60
TCPP	25	25	25
DABCO DC193[2]	2	2	2
DABCO T12[2]	0.1	0.1	0.16
DMCHA	0.8	0.4	0.8
Polycat 9[2]	0.8	0.4	0.8
Water	5.50	5.50	5.50
Solkane 365/227[3]	5	5	5
pMDI Index	125	125	125

[1] Cardolite [2] Evonik [3] Solvay

Typical Properties

Properties	PU1	PU2	PU3
Mix Time (sec)	8	5	5
String Time (sec)	22	18	14
Tack Free Time (sec)	38	34	23
Density (Kg/m3)	27.8	32.3	30.6
Compression strength Parallel (kPa) Perpendicular (kPa)	129 164	124 129	142 148
LOI (%)	25.1	25.3	25.5

PROCESSING

On lab scale, polyurethane formulations are prepared by properly weighing all the Part B components (polyols, catalysts, silicone, flame retardant additives, water) in a paper cup or in a plastic container. The mixture is then stirred for 600 rpm for 1.5 minutes. pMDI (Part A) is weighed in a different container (typically a paper cup). The correct amount of the blowing agent is then added to Part B, mixed for 10-15 seconds till a homogenous mixture is obtained. Part B's weight is then controlled to check whether any blowing agent loss has occurred during mixing. If so, the necessary amount of blowing agent is added. Part A is then poured onto Part B and the resulting mixture stirred at 2000-3000 rpm (depending on mechanical stirrer type) for the proper amount of time (some seconds, depending on systems reactivity). The resulting mixture is then poured in a mold (wood or metal one) to record the reactivity or left freely rising (e.g. for spray systems).

Please refer to each supplier's material safety data sheet (MSDS) for the most current safety and handling information.

DISCLAIMER

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