

A Flame Retardant For Flexible Polyurethane Foams Used in Automobiles

CR-504L, DAIGUARD-610

Requirement of Flame Retardant for Automobile Seats

- Low Fogging
- Low Scorch
- Non-Bromine, Non-Halogen



Non-Bromine : CR-504L
Non-Halogen : DAIGUARD-610

• Characteristics

	CR-504L	D-610
Appearance	Light yellow liquid	Yellowish brown liquid
Phosphorus Content (%)	10.9	11.1
Chlorine Content (%)	23.0	non
OH Value	non	45
Acidity (KOHmg/g)	< 0.1	<0.2
Water Content (% w/w)	< 0.1	<0.1
Specific Gravity (20° C)	1.33	1.29
Viscosity (mPa.s 25° C)	950	1000
Solubility in Water at 25° C	Insoluble	Insoluble

• Formulation for Polyurethane Foam of d=20g/cm³

Component	pbw
Polyol	100.0
Silicon	1.0
Amine	0.26
Stannous Octoate	0.18 ~ 0.32
Dichloromethane	4.0
Water	4.5
TDI	Index105

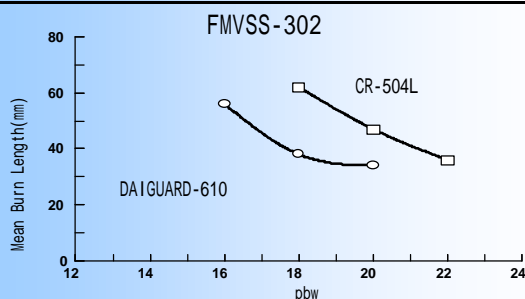
Air Permeability : 170 ~ 220ml/cm²/sec

Foam Density : 22.0 ~ 24.0kg

• Data for Polyurethane Foam of d=20g/cm³

Foams containing CR-504L or D-610 were evaluated according to the test requirements of Motor Vehicle Safety Standard FMVSS-302. CR-504L, D-610 showed excellent low fogging potential and scorch resistance.

< 1 > The Results of Flame Resistance in FMVSS-302



< 2 > Scorching Test

	CR-504L	D-610
Parts	20	20
Yellow Index (YI)	40 - 50	30 - 40

Test Condition

After heating the foam in a microwave for 3 minutes and 30 seconds, it was then kept a heat of 140°C for 3 hours. The center part was evaluated using a color difference meter

< 3 > Fogging Test

a. Test Condition - Nissan Motor's Fogging Test Method

- 110°C over a period of 3 hours

	CR-504L	D-610
Parts By Weight	20	20
Gravimetric (mg)	1.0 - 1.5	< 1.0
Reflectometric (%)	> 85	> 90

b. Test Condition - Toyota Motor's Fogging Test Method

- 80°C over a period of 20 hours

	CR-504L	D-610
Parts By Weight	20	20
Gravimetric (mg)	<1.0	<0.1
Haze (%)	<2.0	<1.5