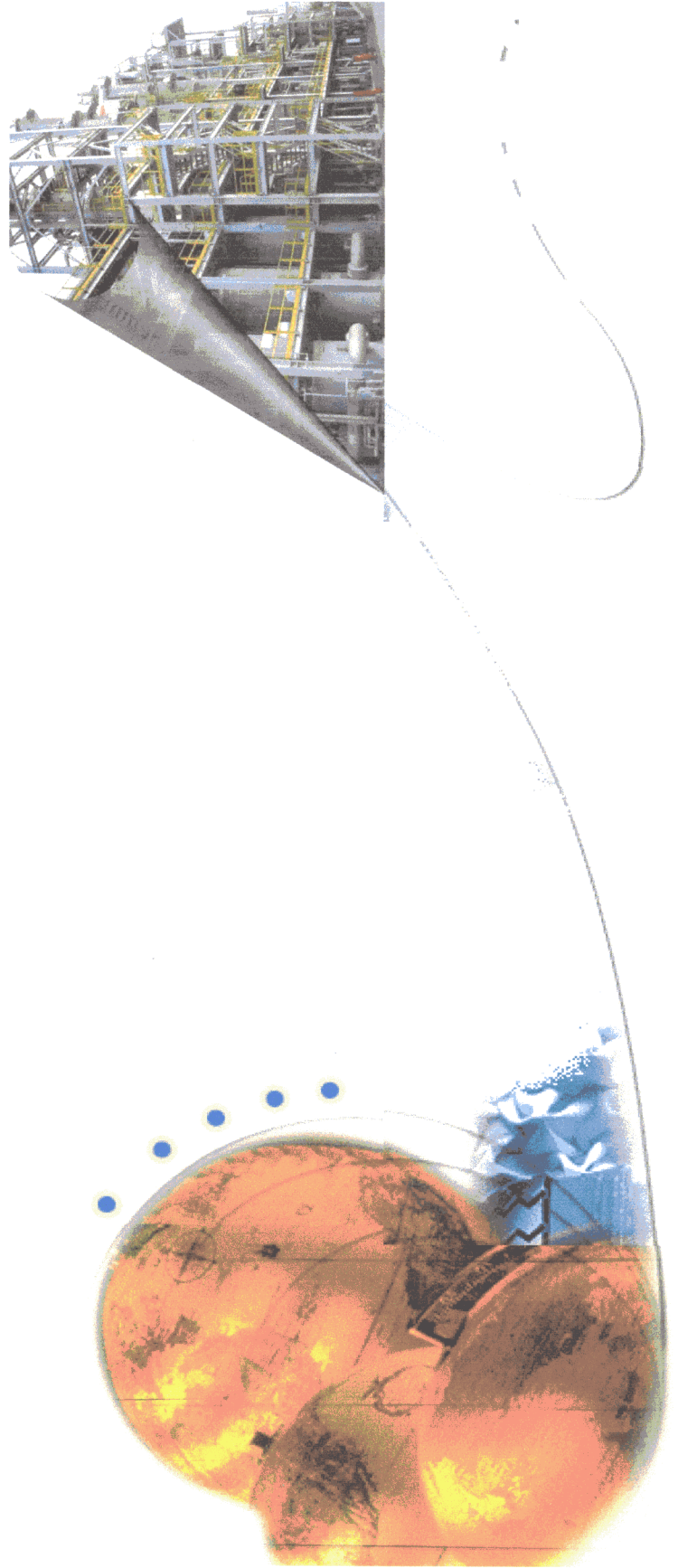




# PTMEG Introduction



# Plant Status

## MAH Unit

- Licensor : Alusuisse Process(LONZA), Italy
- Basic Design : ABB Lummus Crest Inc.
- Production : 80 Ton/Day (28,000 MTA)
- Purity, wt % : Min. 99.5 (Present 99.9)

## BDO Unit

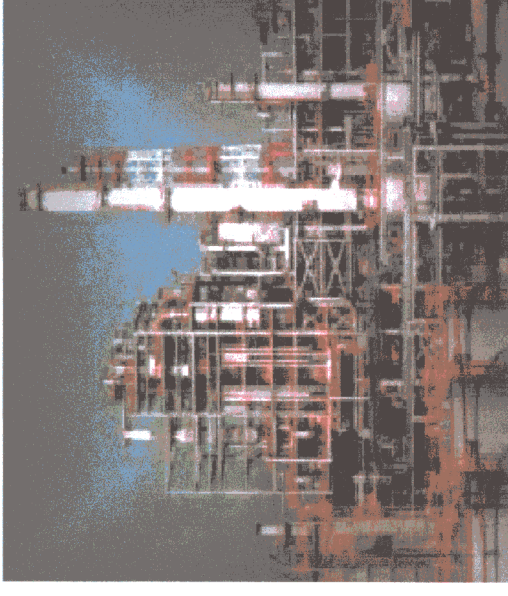
- Licensor : Davy McKee (currently Kvaerner Process)
- Basic Design : Davy McKee (currently Kvaerner Process)
- Production : 80 Ton/Day (28,000 MTA)
- Purity, wt % : Min. 99.5 (Present 99.9)

## THF Unit

- Licensor : Davy McKee (currently Kvaerner Process)
- Basic Design : Davy McKee (currently Kvaerner Process)
- Production : 80 Ton/Day (28,000 MTA)
- Purity, wt % : Min. 99.95 (Present 99.9)

## PTG Unit

- Licensor : Korea PTG Co., Ltd.
- Basic Design : Korea PTG Co., Ltd.
- Production : 95 Ton/Day (32,000 MTA)
- Purity, wt % : 100



# Polyurethane Formations

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■ Polyurethanes are made up of two segments: a soft segment and a hard segment. The soft segment is a long chain polyol. The hard segment is made up of polyisocyanates and chain extenders.

## 1) Soft Segment : Long Chain Polymer

- Polyether type polyol : PPG (Poly propylene ether glycol), PEG, PTMEG, Polycarbonate
- Polyester type polyol : 1,4-Butanediol, MEG (Mono ethylene glycol), DEG (Di ethylene glycol)

## 2) Hard Segment : Polyisocyanate & Chain Extender

- Isocyanate : The two most used globally are MDI and TDI, available as mixture of the 2,4 and 2,6 isomers in various proportions. To improve abrasion resistance, temperature resistance have been used specialty isocyanates like PPDI.
- Chain Extender : The only common hydrogen donor used in polyurethane manufacture are amine (diamines) and alcohols (glycols) when the end product is to be elastomer

■ Polyurethanes are made by reacting the isocyanates with polyols to form a prepolymer. Once the prepolymer is made, it is cured with chain extenders.

## Application of PTMEG

■ MW 250	Lowest viscosity and greatest hardness Eg) Car Moldings, Adhesives, Chain Extender for other PU Systems
■ MW650	Lower viscosity and greater hardness Eg) Coatings
■ MW1000	Medium viscosity and hardness Eg) Coatings, Waterborne Emulsions, Polyester Elastomers
■ MW1800 ~ 2000	Best Spectrum of properties in most application Eg) Spandex, Synthetic Fibers and Leathers
■ MW3000	Higher viscosity and lower hardness Eg) Synthetic Fibers and Leathers

# Sales Specification

## Product Description

Waxy and white solid the melt to a clear, colorless, viscous liquid over a wide temperature range near room temperature

	PTMEG #250	PTMEG #650	PTMEG #1000	PTMEG #1400	PTMEG #1800	PTMEG #2000	PTMEG #3000
Molecular Weight (g/mol)	210±25	650±25	1000±50	1400±50	1800±50	2000±50	3000±50
Hydroxyl Number (mgKOH/g)	477.4 ~ 606.5	166.2 ~ 179.5	106.9 ~ 118.1	77.4 ~ 83.1	60.7 ~ 64.1	54.7 ~ 57.5	36.2 ~ 38.7
Color (AHPA, Max)	40	40	40	40	40	40	40
Water (ppm, Max)	300	200	200	200	200	200	200
Acid Number (mgKOH/g, Max)	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Stabilizer (BHT, ppm)	220±50	220±50	220±50	220±50	220±50	220±50	220±50

## Major Industrial Uses

PTMEG react with isocyanates to form a variety of polyurethane, which are used in numerous end use applications, such as Industrial and recreational wheels, hose and tubing, tank and pipe liners, construction floor/roof coating, Spandex fiber and Synthetic leather.

## Physical properties

	PTMEG #250	PTMEG #650	PTMEG #1000	PTMEG #1400	PTMEG #1800	PTMEG #2000	PTMEG #3000
Viscosity (cPs, 40°C)	55±10	250±20	350±30	650±30	1215±50	1350±50	1950±100
Specific Gravity (40/4°C)	0.991	0.984	0.981	0.978	0.976	0.974	0.970
Melting Point (°C)	Under -10	22~23	23~24	24~25	25~26	26~27	28~29
Flash Point (Open cup, °C)	Over 280	Over 280	Over 280	Over 280	Over 280	Over 280	Over 280

### ■ Solubility

Readily soluble in alcohols, esters and ketones, aromatic and chlorinated hydrocarbons. Insoluble in aliphatic hydrocarbons and water. Has a tendency to decrease its solubility as molecular weight increase.

### ■ Hygroscopicity

These PTMEG are all hygroscopic. At room temperature, PTMEG can absorb up to 2wt% water depending on the molecular weight