

DOP PLASTICIZER

(Di-Octyl Phthalate)

Introduction

1. Definition of Plasticizer

Plasticizer is material incorporated in a PVC resin to increase its workability, flexibility (lower melt viscosity, temperature of TG or elastic modulus of plastic).

Therefore the selection of optimum plasticizer affects the successful use of PVC in many diverse applications.

Di-Octyl Phthalate(DOP) is the most popular plasticizer in the world and also provide the most desirable combination of performance, characteristics and low cost of any plasticizer family used in Vinyl resins.

2. Function of plasticizer

***Process Aid**

- a. Lower hot melt viscosity
- b. Resin stability
- c. Reduced sticking of resin
- d. Increase internal lubricity
- e. Increase tensile strength
- f. Lower the processing temperature
- g. Reduce sticking in mold

***End-use Plasticizer**

- a. Softening to the resin
- b. Increase elongation
- c. Increase Flexibility
- d. Increase impact resistance
- e. Increase tear strength
- f. Increase the temp. range of usefulness
- g. Increase toughness

3. Application

Calendering

- Sheet
- Film
- Synthetic Leather
- Tarpaulin

Extrusion

- Hose
- Wire & Cable Insulation
- Sandal
- . . .

Injection

- Toy
- Shoe sole
- . . .

Coating

- Industrial Glove
- Wall Paper
- .Vinyl gloves
- . . .

DOP SPECIFICATION

Chemical name: Di-Octyl Phthalate

No	Items	Unit	Specification	Typical	Test method
1	Color	APHA	30 max.	15	JIS K 6751
2	Acid Value	KOH mg/g	0.03 max.	0.012	JIS K 6751
3	Volume Resistivity	$\Omega \cdot \text{cm}(30^{\circ}\text{C})$	$2.0 \cdot 10^{11}$ min	$3.0 \cdot 10^{11}$	JIS K 6751
4	Specific Gravity	$(20/20^{\circ}\text{C})$	0.986 ± 0.003	0.985	JIS K 6751
5	Acid value (after heating)	KOH mg/g	0.2 max	0.07	JIS K 6751
6	Ester value	KOH mg/g	287 ± 3	287	JIS K 6751
7	Refractive index	$\text{Nd}_{20} \cdot 25^{\circ}\text{C}$	1.485 ± 0.003	1.484	JIS K 6751
8	Heating loss	Wt%	0.1 max	0.07	JIS K 6751
9	Water content	Wt%	0.1 max	0.05	ASTM E-203
10	Purity	Wt%	99.5% min	99.7	GC
11	Dynamic Viscosity at 40°C	cP	26 ± 3	26	ASTM D445

Physical properties (*)

No	Items	Unit	Specification	Typical	Test method
1	Molecular Weight		391	/	/
2	Boiling Point	$^{\circ}\text{C}$	385	/	/
3	Freezing Point	$^{\circ}\text{C}$	-55	/	/
4	Flash Point	$^{\circ}\text{C}$	206	/	/

(*): for reference purpose only