

Alkyd Synthesis, Processing & Manufacturing with Mono Basic Fatty Acid (Soya Fatty Acid)

Three major categories of chemical intermediates are utilized in the manufacture of alkyd resin.

1. Poly basic organic acid – (i.e) Phthalic anhydride
2. Polyhydric alcohol – (i.e) Glycerin
3. Mono basic fatty acid or Triglyceride. – (i.e)Soya fatty acid

Alkyd coatings are a class of polyester coatings derived from the reaction of an alcohol (alkohol) and an acid or acid anhydride hence the term alk-yl-d from “alcohol and acid or anhydride]” and are the dominant resin or “binder” in most “oil-based” coatings sold to the consumer market. Alkyd coatings today are typically manufactured from acid anhydrides such as phthalic anhydride or maleic anhydride and polyols such as glycerine or pentaerythritol and are modified with unsaturated fatty acids (from plant and vegetable oils Soya oils) to give them air drying properties. The unsaturated oils react with oxygen from the air which cause the oils to polymerize or crosslink with each other.

Alkyd coatings are produced in two processes fatty acid process and the alcoholysis or glyceride process. Higher quality higher performance alkyds are produced in the fatty acid process where the composition of the resulting resin can be more precisely controlled. In this process an acid anhydride, a polyol and an unsaturated fatty acid are combined and cooked together until the final product has achieved a predetermined level of viscosity as suitable for its intended use. More economical alkyd resins are produced from the alcoholysis or glyceride process where end product quality control is not as paramount. In this process raw vegetable oil, high in unsaturated component, is combined with additional polyol and heated to cause trans esterification of the triglycerides into a mixture of mono- and diglyceride oils. To this resulting mixture acid anhydride is added to build molecular weight of the resin into roughly the same product as in the fatty acid process. However the alcoholysis or glyceride process produces a more randomly oriented structure. In both cases the resulting product is a polyester resin to which pendant drying oil groups are attached. At the conclusion of both processes the resin is purified, diluted in solvent and sold to paint and varnish makers.

Typical Specification of Distilled Soya Fatty Acid :
TECHNICAL DATA SHEET – DISTILLED SOYA FATTY ACID


PRODUCT CODE : **DISTILED SOYA FATTY ACID**
CHEMICAL IDENTIFICATION : **CAS NO. 68308-53-2**
APPEARANCE : **Pale Yellow Clear Liquid**

CHEMICAL PROPARTIES	UNIT	SPECIFIC RANGE	ANALYTICAL METHOD
Acid Value	mg KOH/g	197-201	AOCS
Iodine Value	g/100g	128 – 132	AOCS
Saponification Value	mg KOH/g	198 – 202	AOCS
Colour in Gardner Scale 1963		2 – 4	AOCS
Titre	'C	15 – 23	AOCS
Moisture	%	Max. 0.20	AOCS
Fatty Acid composition by GLC			
C16	%	5- 12 %	
C18:0	%	3- 7%	
C18:1	%	25 – 35 %	
C18:2	%	48 – 60 %	
C18:3	%	2 – 7 %	
OTHERS	%	1 – 2 %	

Different Application areas are :

- Soya been Oil Fatty acid is high in Iodine number. It is widely used in Coating Industry as baked finish, Polyurethane paint etc.
- Widely used in Paint Industry, Lubricating grease, Emulsifying agent, Cosmetic, Detergent, Rubber etc.

Packages – 250kgs barrels & ISO Tankers.