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UNIPLEX 84
ACETYL TRIBUTYL CITRATE
CAS. NO 77-90-7

UNIPLEX 84 is a safe economical plasticizer approved by the U.S. Food and Drug Administration (FDA) for use in both indirect and direct contact food applications according to Code Federal Regulation 21:

172.515	(Synthetic flavoring substance adjuncts)
175.105	(Adhesives)
175.300	(Resinous and polymeric coatings)
175.320	(Resinous and polymeric coatings for polyolefin films)
175.380	(Xylene formaldehyde resins condensed with 4, 4' isopropylidenediphenyl-epichlorohydrin epoxy resins)
175.390	(Zinc-silicon dioxide matrix coatings)
176.170	(Components of paper and paperboard in contact with aqueous and fatty foods)
176.180	(Components of paper and paperboard in contact with dry foods)
177.1200	(Cellophane)
177.1210	(Closure with sealing gaskets for food containers)
178.3910	(Surface lubricants used in the manufacturing of metallic articles)
181.27	(Specific Prior-Sanctioned Food Ingredients - Plasticizers)

UNIPLEX 84 is used as the milling lubricant for aluminum foil or sheet steel or for use in cans for beverage and food products.

UNIPLEX 84 has been widely formulated in polyvinyl chloride polymers for children's toys as a safe alternative to other widely used plasticizers.

The low odor and excellent color stability of UNIPLEX 84 make it an excellent general purpose plasticizer. Uniplex 84 is a good plasticizer for cellulose acetate films, replacing dibutyl phthalate.



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Other uses of UNIPLEX 84 include:

- 1) Aerosol hair sprays
- 2) Dairy product cartons
- 3) Drink bottle caps
- 4) Food jar caps
- 5) Solution coatings for foil and paper

UNIPLEX 84 is economical both on a cost and a performance basis, while exhibiting excellent compatibility with a wide range of polymers and resins. Resins plasticized with UNIPLEX 84 exhibit excellent heat stability and low toxicity.

SPECIFICATIONS:

Assay, minimum	99.0%
Acidity, (as Citric Acid) maximum	0.02%
Color, maximum	30 APHA
Water, (Karl Fischer), maximum	0.25%
Odor	Essentially odorless
Specific Gravity, 25/25°C	1.045-1.055

PHYSICAL PROPERTIES:

Molecular Weight	402.5
Refractive Index 25°C	1.441 (typical)
Weight per gallon, 25°C	8.74 lb.
Boiling Point, 1 mm Hg	173°C
Viscosity, 25°C	25 -35 cps
Pour Point	-75°C
Flashpoint, COC	204°C
Solubility in Water, 25°C	Insoluble

HANDLING INFORMATION:

Refer to Material Safety Data Sheet



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Uniplex 84 (ATBC) Application in PVC Injection Molding

Formulation

Component	phr
PVC	100
Plasticizer	50
Calcium/ Zinc Stabilizer	5
Stearic Acid	0.25

Properties

Parameter	DINP	DOA	Uniplex 84
Hardness, Durometer A, 10 sec.	78	78	78
Modulus at 100% Elongation (psi)	1350	1100	1360
Tensile Strength (psi)	2750	1800	2860
Ultimate Elongation (%)	390	420	410
Brittle Point (°C)	-26	-57	-20



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COMPARISONS OF PLASTICIZERS IN PLASTISOLS

Formulation

Component	phr
PVC (Geon 121)	100 phr
Plasticizers	70 phr
Mark 7101 (Witco)	2.5 phr

Properties

Plasticizer	DINP	Uniplex 84
Hot Bench Gelation Temperature	244°F	228°F
Brookfield Viscosity, cP, 2 hours at 25°C		
3 rpm	3480	3200
30 rpm	3030	2620
Aged 7 days at 38°C (100°F)		
3 rpm	6440	6270
30 rpm	4360	4060
Severs viscosity, P, 2 hours at 25°C Shear rate (sec ⁻¹)		
100	63	48
500	101	73
1000	100	72
1500	103	76

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