U. S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

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MATERIAL SAFETY DATA SHEET

May 1984

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Kenrich Petrochemicals, Inc.	EMERGENCY TELEPHONE NO.: 201-823-9000
ADDRESS (Number, Street, City, State, and ZIP Code): 140 East 22nd Street, Bayonne, NJ 07002	
CHEMICAL NAME AND SYNONYMS: *	TRADE NAME AND SYNONYMS: Ken-React CAPOW L38/H
CHEMICAL FAMILY: organotitanate-non-metallic oxide mixture	FORMULA: 65% $ROTi[OP(O)(OH)OP(O)(OC_8H_{17})_2]_3/SiO_2$

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N.A.	SPECIFIC GRAVITY (H_2O=1)	1.33
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR	Off-white powder, alcoholic odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used): N.A.	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA: water fog, dry chemical, CO_2			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

(Continued on reverse side)

*Neoalkoxy tri(dioctyl pyrophosphato)titanate on a hydrated amorphous silicon dioxide

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Unknown

EFFECTS OF OVEREXPOSURE
None observed to date.

EMERGENCY AND FIRST AID PROCEDURES
For external contact, wash with soap and water.

For ingestion, give dilute bicarbonate of soda. Consult physician.

SECTION VI - REACTIVITY DATA

STABILITY			
—	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	reacts with alkalis

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			
	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Shovel up. If contaminated, collect for disposal

WASTE DISPOSAL METHOD
Chemical landfill in accordance with federal, state, and local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
NIOSH approved.

VENTILATION		
	LOCAL EXHAUST: desirable	SPECIAL
	MECHANICAL *(General)*: yes.	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Polyolefin or viton	safety goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep in closed container until ready for use. Store in a cool, dry area.

OTHER PRECAUTIONS

KENRICH PETROCHEMICALS, INC.

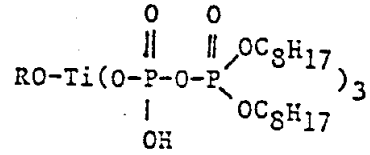
KEN-REACT TITANATE COUPLING AGENT

CAPOW L38/H

PRODUCT DATA SHEET

Chemical Description: Neoalkoxy, tri(dioctylpyrophosphato) titanate
Titanium IV neoalkoxy, tris(dioctyl)pyrophosphato-O)

Chemical Structure:



Titanate Type: Neoalkoxy titanate adsorbed on a hydrated amorphous silicon dioxide carrier

Typical Properties:

Physical Form	Powder
Activity	65% Active LICA 38 Titanate
Color, descriptive	Off-White
Specific Gravity	1.33

140 EAST 22nd STREET - P.O. BOX 32 - BAYONNE, N.J. 07002-0032 Telephone: (201) 823-9000

TELEX: 12 5023

SPI MEMBER

A Product of New Jersey

Coupling agents are molecular bridges at the interface between two substrates, usually but not limited to an inorganic filler and an organic polymer matrix. Titanium-derived coupling agents react with free protons at the inorganic interface resulting in the formation of organic monomolecular layers on the inorganic surface.

Typically, titanate-treated inorganics are hydrophobic, organophilic, and organofunctional. When used in polymers, they improve impact strength, do not create embrittlement, exhibit melt viscosity lower than virgin polymer at inorganic loadings above 50%, and do not phase separate.

Reactive Substrates:	Minerals, silicas, silicates, metals-oxides, peroxides, hydrates, acetates, borates, sulfates, carbonates, nitrates, carbon black, graphite, aramid, pigments, cellulosics, sulfur, azodicarbonamide, polymers, etc.
Amounts to Use:	Titanate use level can vary from ppm when used as a catalyst to 10% of formulation when used as a comonomer. A general rule of thumb is to use 0.2% by weight of polymer or 0.2% to 0.5% by weight of filler, whichever is the greater. Typically, a 2.7 S.G., 2.5 micron mineral filler such as $CaCO_3$ will require 0.2% to 0.4% titanate by weight of $CaCO_3$. 0.1% to 0.5% is a good range for ladder studies.
Suggested Functions:	Coupling agent, adhesion promoter, catalyst, dispersion aid, deagglomerater, wetting agent, surfactant, grinding aid, process aid, peptizer, flow control agent, lubricant, viscosity depressant, thixotrope, suspension aid, impact modifier, comonomer, superplasticizer, low temperature flexibilizer, Lewis Acid Reducing Agent, hydrophobe, cure rate modifier, blowing agent activator, intumescent activator, conductivity enhancer, corrosion inhibitor, etc. Function depends on substrate, polymer, other ingredients, curatives, etc. and their interaction with the neoalkoxy, pyrophosphato and dioctyl chemical functionalities of CAPOW L38/H.
Some Commercial Applications Using CAPOW L38/H:	CAPOW L38/H was designed to provide similar functions as KR 38S, but in powder form with the increased thermal and solvolytic stability of the neoalkoxy type designed for wider use in high temperature processing engineering thermoplastics and coatings systems using protonated solvents such as ketones. Applications include: increased tensile strength and other properties in 30% PAN carbon fiber/ABS, unfilled CPVC, $CaCO_3$/rigid PVC and 70% $CaCO_3$/thermoset polyester. Especially effective for improvement in electrical conductivity of metal and carbon black filled composites.

*covered by one or more of the following U.S. Patents: 4,069,192, 4,080,353, 4,087,402, 4,094,853, 4,096110, 4098,758, 4,122,062, 4,152,311, 4,192,792, 4,101,810, 4,261,913, 4,277,415, 4,338,220, 4,417,009. Also patented in 22 free world countries.