

Zinc Dialkyl Dithio Phosphate

PRODUCT IN FOCUS



Zinc Dialkyl Dithio Phosphate

INTRODUCTION

Zinc Dialkyl Dithio Phosphate (ZDDP) belongs to a family of coordination compounds classified as members of transition metal dithiophosphate.

ZDDP is widely used based on a combination of different selected alcohols thus providing antiwear performance and enhanced thermal and hydrolytic stability. In combination with other additives, it is especially used for the formulation of hydraulic fluids, industrial gear oils, metalworking fluids, greases and automotive engine oils.

Manufacture

The most used industrial method is through reaction of phosphorus pentasulfide (P_2S_5) with selected alcohols under controlled temperature to form dialkyl dithiophosphoric acid.

The reaction is followed by neutralising the intermediate with a zinc source (e.g., ZnO), then filter and dry to obtain zinc dialkyldithiophosphate (ZDDP).

Applications

ZDDP is a proven, industry-trusted additive designed to enhance lubricant performance and protect critical equipment under the most demanding conditions.

Automotive Engine Oils :

Used in passenger car and heavy-duty engine oils to protect critical components like:

- Camshafts
- Lifters
- Pistons

Reduces metal-to-metal wear under high pressure

Industrial Lubricants :

It is used in

- Gear oils
- Compressor oils
- Turbine oils

Enhances oxidation stability and extends lubricant life

Hydraulic Fluids:

Prevents wear in hydraulic pumps and valves
Improves system reliability under high load conditions

Metalworking & Industrial Applications :

Used in cutting fluids and metal-forming oils
Reduces friction and tool wear during machining

Specialty & High-Performance Lubricants :

Widely used in

- Aviation lubricants
- Racing oils (higher ZDDP for extreme conditions)
- Marine engine oils

Synonyms

Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts)

CAS no.

85940-28-9

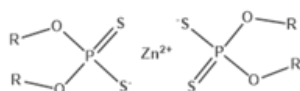
EINECS no.

288-917-4

Molecular formula

$Zn[(RO)_2PS_2]_2$

Structure



R= Et, ^tPr or ^tBu

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SPECIFICATIONS

Test	Unit	Specification
Appearance	-	Bright Yellow Liquid
Density @15.6°C	g/ml	1.10 - 1.20
Viscosity @40°C	cSt	350 - 600
Viscosity @100°C	cSt	10.0 - 20.0
Flash Point, open cup	°C	Min 130
Zinc content	%	10.5 - 11.0
Phosphorus content	%	9.0 - 11.0
Sulphur content	%	18.0 - 22.0

PACKING

200/220 Kg UN approved M.S. Drums

STORAGE

Store in a cool, well-ventilated place, out of direct sunlight

REACH status

Registered

ExSyn offers Zinc Dialkyl Dithio Phosphate (ZDDP) on commercial scales and welcomes enquiries. No matter the quantity you need, our exceptional quality and service will make ExSyn your supplier of choice! If you need any additional information or SDS, please contact us.