

Paint & Ink Driers

PORTFOLIO FOR PAINTS & COATINGS



TROY

The Gold Standard for Performance

2021
Global

TROY

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Portfolio



Troy Preservatives Accommodate the Evolving Needs of Customers Worldwide

Troy driers and metal carboxylate products enable manufacturers to create value added, high performance coatings, including architectural, decorative, OEM/industrial, traffic, and gel coat, as well as inks, lubricants, and many other industrial and consumer materials. Troy offers a full portfolio of paint driers, which are shown on page 11.

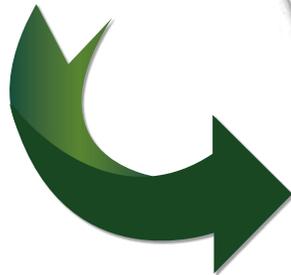
Over periods of prolonged paint storage, however, paint driers become deactivated — a condition known as loss-of-dry. The best defense is to incorporate a loss-of-dry inhibitor. In response to this challenge, Troy developed Troymax™ Permadyr, a high-performance loss-of-dry inhibitor. By incorporating Troymax Permadyr into formulations, drying times can be maintained for significantly longer periods, extending product shelf-life and protecting the paint's commercial value.

Consumers and manufacturers are affected by the skinning of liquid products such as paints, stains, inks, and other coatings. Skinning is a premature, unwanted, film-formation on liquid or slurried product surfaces. The risk of skinning can be reduced with the addition of Troymax Antiskin agents. Troy's line of Troymax Antiskin products is shown on page 11.



Access Additional Driers Literature at troycorp.com

For more information, comprehensive brochures are available, detailing Troy's complete lines of Driers and Antiskinning Agents, as well as unique Troymax Permadyr. To view and download these full product brochures, as well as product PDSs and SDSs, visit troycorp.com.



Advanced Driers

Element	Symbol	Typical use level % metal per resin solids	Description
Barium	Ba	0.20	Barium carboxylates improve through-drying of a coating and have good pigment wetting characteristics. They also demonstrate lower water sensitivity than Calcium carboxylates.
Bismuth	Bi	0.20	Bismuth is used as a substitute for lead. It strongly activates cobalt and improves through-drying properties and drying under adverse weather conditions (like Calcium does). Bismuth carboxylates are used in baking finishes to improve the hardness.
Calcium	Ca	0.20	Calcium carboxylates, by themselves, have minimal effectiveness as driers but are very useful when used in combination with active driers such as Cobalt and Manganese. Calcium driers help to improve hardness and gloss as well as to reduce skin-formation, silking, and blooming. They are also useful as pigment wetting/dispersing agents and loss-of-dry inhibitors. Calcium carboxylates are not recommended for coatings subjected to drying under adverse conditions.
Cobalt	Co	0.04	Cobalt carboxylates are the most effective oxidative catalysts at ambient temperatures. Cobalt driers produce fast surface dry to the film. They also are effective as accelerators for peroxide-initiated polyesters and epoxies.
Copper	Cu	0.15	Copper carboxylates possess some catalytic activity and tend to produce more consistent films.
Iron	Fe	0.06	Effective drying catalyst for baking finishes.
Lithium	Li	0.08	Lithium carboxylates promote through-drying. They are often used in High Solids coatings and water-dispersible alkyds. They do not lose their effectiveness even in cool environments.
Manganese	Mn	0.04	Manganese carboxylates improve the surface drying of a paint film and also possess some through-drying properties. They are frequently used as polymerization accelerators in baking finishes and low-temperature drying systems.
Potassium	K	0.10	Potassium carboxylates work synergistically with Cobalt in thermo-set systems.
Strontium	Sr	0.20	Strontium carboxylates improve through-drying under adverse conditions, such as high humidity and low temperatures.
Zinc	Zn	0.15	Zinc carboxylates demonstrate anti-oxidant properties. Zinc carboxylates keep auto-oxidative films "open," thus permitting hardening throughout. Zinc carboxylates are very effective wetting/pigment-dispersing agents.
Zirconium	Zr	0.20	Zirconium carboxylates improve the through-dry of auto-oxidative drying systems. They are used in combination with Cobalt and Calcium carboxylates. They are preferentially used as replacements for Lead.

Introduction

Troy driers and metal carboxylate products enable manufacturers to create value added, high performance coatings, including architectural, decorative, OEM/industrial, traffic, and gel coat, as well as inks, lubricants, and many other industrial and consumer materials. Troy offers a full portfolio of paint driers, which are shown on page 11.

Over periods of prolonged paint storage, however, paint driers become deactivated — a condition known as loss-of-dry. The best defense is to incorporate a loss-of-dry inhibitor. In response to this challenge, Troy developed Troymax™ Permadyr, a high-performance loss-of-dry inhibitor. By incorporating Troymax Permadyr into formulations, drying times can be maintained for significantly longer periods, extending product shelf-life and protecting the paint's commercial value.

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Periodic Table of the Elements

1 IA H Hydrogen 1.008	2 IIA He Helium 4.0026											13 IIIA B Boron 10.81	14 IVA C Carbon 12.011	15 VA N Nitrogen 14.007	16 VIA O Oxygen 15.999	17 VIIA F Fluorine 18.998	18 VIIIA Ne Neon 20.180
3 Li Lithium 6.94	4 Be Beryllium 9.012											5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.078	21 3 IIIB Sc Scandium 44.956	22 4 IVB Ti Titanium 47.88	23 5 VB V Vanadium 50.942	24 6 VIB Cr Chromium 51.996	25 7 VIIB Mn Manganese 54.938	26 8 VIIIB Fe Iron 55.845	27 9 VIIIB Co Cobalt 58.933	28 10 VIIIB Ni Nickel 58.693	29 11 IB Cu Copper 63.546	30 12 IIB Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.63	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798
37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.6	53 I Iodine 126.90	54 Xe Xenon 131.29
55 Cs Cesium 132.905	56 Ba Barium 137.33	57-71 Lanthanides	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89-103 Actinides	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (264)	108 Hs Hassium (265)	109 Mt Meitnerium (266)	110 Ds Darmstadtium (267)	111 Rg Roentgenium (268)	112 Cn Copernicium (269)	113 Nh Nihonium (270)	114 Fl Flerovium (271)	115 Mc Moscovium (272)	116 Lv Livermorium (273)	117 Ts Tennessine (274)	118 Og Oganesson (276)
57 La Lanthanum 138.905	58 Ce Cerium 140.12	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.05	71 Lu Lutetium 174.967			
89 Ac Actinium (227)	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (260)			

Product		Description
Driers		
Troymax [®] Bismuth	24	Carboxylates from Synthetic Acids
Troymax [®] Calcium	10NA, 8NA, 6NA, 5NA, 4NA	Carboxylates from Synthetic Acids
Troymax [®] Calcium Octoate	6, 5	Carboxylates from Synthetic Acids
Troymax [®] Cobalt	6, 8, 10 NEO, 10, 12 NEO, 6 D60, 10 D60, 12 D20, 12	Carboxylates from Synthetic Acids
Troymax [®] Lithium	2	Carboxylates from Synthetic Acids
Troymax [®] Manganese	12, 10, 9, 6	Carboxylates from Synthetic Acids
Troymax [®] Potassium	15	Carboxylates from Synthetic Acids
Troymax [®] Strontium	10	Carboxylates from Synthetic Acids
Troymax [®] Zinc	22,18, 16, 16 NEO, 12, 10, 8	Carboxylates from Synthetic Acids
Troymax [®] Zirconium	24, 18, 12, 10, 6	Carboxylates from Synthetic Acids
Troychem [®] Copper	8	Naphthenates
Troychem [®] Zinc	8	Naphthenates
Troymax [®] Permady		Loss of Dry Inhibitor & Water Dispersible
Troymax [®] Cobalt	21	Loss of Dry Inhibitor
Troychem [®] Calcium	6WD	Water Dispersible
Troychem [®] Cobalt	6WD	Water Dispersible
Troychem [®] Manganese	6WD	Water Dispersible
Troychem [®] Zirconium	12WD	Water Dispersible
Troymax [®]	KC10	Water Dispersible
Troymax [®] Lithium	2	Water Dispersible
Troymax [®]	350	Organic Drier Accelerator
Troymax [®]	CZ69,CSD, 123, 2002, KC10	Standard Drier Blends
Troymax [®]	BXPB	Lead Replacement
Oxime-Based Anti-Skinning Agents		
Troymax [®] Antiskin OS		Oxime-Based Anti-Skinning Agents
Troymax [®] Antiskin OP		Oxime-Based Anti-Skinning Agents
Troymax [®] Antiskin OL		Non-Oxime Anti-Skinning Agent
Troymax [®] Antiskin B		Oxime-Based Anti-Skinning Agents
Troymax [®] Antiskin MP		Oxime-Based Anti-Skinning Agents

Custom made Drier Blends can also be provided.

Vehicle or Type	Cobalt	Manganese	Zirconium	Calcium
ALKYDS				
Expressed as % metal on vehicle solids				
Long Oil Soya	.03 - .06	-	0.1 - 0.3	-
	.03 - .06	-	0.1 - 0.2	0.1 - 0.2
	.03 - .06	-	-	0.1 - 0.3
Medium Oil Soya	.02 - .04	-	0.05 - 0.1	0.05 - 0.1
	.02 - .04	-	0.1 - 0.2	-
Short Oil Soya	.01 - .03	-	0.05 - 0.1	-
	.01 - .03	-	-	0.05 - 0.1
	.01 - .03	-	0.05 - .01	0.05 - 0.1
Long Oil Linseed	.03 - .05	-	0.1 - 0.3	-
	.03 - .05	-	-	0.1 - 0.3
	.03 - .05	-	0.1 - 0.2	0.1 - 0.2
Medium Oil Linseed	.02 - .04	-	0.1 - 0.2	-
	.02 - .04	-	-	0.1 - 0.2
Long Oil (Others)	.03 - .06	-	0.1 - 0.3	0.1 - 0.3
	.03 - .06	-	-	-
Short Oil (Castor)	.01 - .03	-	0.1 - 0.2	0.1 - 0.2
	.01 - .03	-	-	-
Short Oil (Tall)	.01 - .03	-	0.1 - 0.2	-
	.01 - .03	-	-	0.1 - 0.2
OILS				
Linseed	-	.02 - .03	0.1 - 0.2	0.1 - 0.2
Raw	.02 - .03	-	0.1 - 0.2	0.1 - 0.2
Boiled	.01 - .02	.01 - .02	0.1 - 0.3	-
Alkali Refined	-	.02 - .03	0.1 - 0.2	-
Heat Bodied	.02 - .03	-	0.1 - 0.3	-
Soybean Raw	0.1 - 0.2	0.1 - .02	0.1 - 0.3	-
Heat Bodied	.05 - .1	.05 - 0.1	0.1 - 0.3	-
Example, 45 kg, resin at 50% solids = 22.5 kg resin solids. To incorporate 0.04% Cobalt metal on resin solids: 22.5 kg x 0.04% = 0.009 kg of Cobalt metal is required. This is provided by <u>0.009 x 100</u> = 0.075 kg of Troymax Cobalt 12				
12				



The Gold Standard for Performance

Services

As a Performance Partner, Troy offers a variety of services to support our product line of preservatives and additives to meet customer needs and provide market solutions.

Troy invites you to take advantage of the Troy services that can help you achieve your market objectives.

- Technical Service representatives can provide formulation assistance, product evaluation, and microbiological, analytical, and field testing to assist you in developing an optimum formulation that meets your product objective.
- Regulatory support is offered globally with regional and national expertise to meet your needs.
- R&D scientists work to anticipate future industry needs and develop innovative technology. Contact your Troy representative to discuss your unique requirement that may not be met by materials currently on the market. In fact, Troy may have just what you need already under development and if not, may be able to work with you to achieve your objective.
- A global supply network is in place to ensure product availability and fast delivery. Contact your local representative to ensure the product you need is available when you need it.

Contact your nearest Troy representative for immediate assistance or visit us online at www.troycorp.com. When visiting the website, become a registered user to obtain access to a wide range of resources.

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