

1 H Hydrogen																	2 He Helium									
3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon									
11 Na Sodium	12 Mg Magnesium											13 Al Aluminum	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon									
19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton									
37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon									
55 Cs Cesium	56 Ba Barium											72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon
87 Fr Francium	88 Ra Radium											104 Rf Rutherfordium	105 Db Dubnium	106 Sg Seaborgium	107 Bh Bohrium	108 Hs Hassium	109 Mt Meitnerium	110 Uun Ununium	111 Uuu Ununium	112 Uub Unubium			114 Uuq Ununquadium			116 Uuh Ununhexium
		Lanthanides										57 La Lanthanum	58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium	61 Pm Promethium	62 Sm Samarium	63 Eu Europium	64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium
		Actinides										89 Ac Actinium	90 Th Thorium	91 Pa Protactinium	92 U Uranium	93 Np Neptunium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium

Metals in blue represent "Shepherd Specialties" utilized in industrial quantities.

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The Shepherd Chemical Company

Catalyst Materials

Since 1916 The Shepherd Chemical Company has been manufacturing high quality metal based chemicals. Our focus is on the development and manufacture of unique value added compounds which enhance the value of our customer's technology. We offer both a line of standard products and development services for custom chemicals.

The Shepherd Chemical Company supplies a wide range of organic and inorganic metal salts and solutions to the catalyst industry. We work with customers in a collaborative approach to tailor our products and capabilities to achieve their desired target products. We maintain an R&D team, characterization lab, and engineering staff focused on the development and rapid scale-up of new compounds. Today, a significant portion of business is made up of custom products or customized versions of our standard products.



Catalyst Materials

Shepherd is a leading supplier of high purity salts and solutions to the catalyst industry. Our ability to deliver high volumes of salts and solutions meeting the quality requirements of the catalyst industry is a key strength of Shepherd. We are able to develop a variety of starting materials for a particular metal base to allow your technologies to evaluate the optimum starting material which delivers superior catalytic activity.

Shepherd is able to customize the starting materials for catalyst manufacture including mixed metal salts and solutions. Beyond our standard products in this area, Shepherd manufactures a number of proprietary blends specified by our customers effectively resulting in an extension of our customers manufacturing capability.

Custom Manufacturing

- Mixed metal salts
- Custom solutions
- Commercial volumes of difficult to find metal precursors



BiCAT – Polyurethane elastomer and foam catalysts

Bismuth	16-28% Bi
Zinc	19-22% Zn
Zirconium	12-18% Zr
Nickel	2% Ni

Specialty Acrylate Monomers

Chromium Acetate	23-25% Cr
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Polyolefin Catalyst Precursors

Chromium Acetate	23-25% Cr
Chromium Nitrate	12-14% Cr

Heavy Oil Cracking Catalyst

Molybdenum Octoate	15-18% Mo
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1,4 BDO Catalyst (Invista Tech)

Copper-Bismuth Carbonates

PTA Catalyst, Adipic Acid, Cyclohexanone Caprolactam, Trimellitic Anhydride Catalyst

Manganese Acetate	22-24% Mn
Cobalt Acetate	23-25% Co

Unsaturated Polyester Resins

Cobalt Octoate / Cobalt 21	12-21% Co
Potassium Octoate	15% K
Zinc Octoate	18-22% Zn
Zirconium Octoate	18% Zr

Esterification

Titanium Catalysts	8-10% Ti
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Styrene Butadiene Rubber Polybutadiene Rubber

Nickel Octoate in solvent	8-12% Ni
Nickel Napthenate in solvent	8-10% Ni
Cobalt Octoate	10-12% Co
Neodymium Octoate	4-12% Nd

