



**TECHNICAL TIPS**

**CHEMICAL LISTING AND CAP MATERIAL COMPATABILITY**

Cormack Packaging are very aware of the extremely wide use of products our closures are used with and the need for customers to select the correct resin. The type or resins tend to dictate the type of function a particular cap will have. Examples are we do one piece squeeze and turn HDPE caps for some chemical applications but multi-piece push turn caps with a talc filled PP inner for other chemicals. The use of the wrong cap on a product can cause you a packaging failure

In making a section you need to consider the variables of your product strength and formulations, the bottle material, will the filled pack be stored in direct sunlight, and the expected life of the pack from packing until fully used by the end consumer. This also needs to be considered on the selection of the lining materials if you are using one.

“CP Labs:” have a very good table that lets you pick your chemical, and how different common cap resins will react with it at 2 different temperatures (20 and 50 degrees Celsius) over a 30 day period. The common caps we make here are in HDPE, Homo polymer PP, Random Copolymer PP, LDPE and occasionally we can supply caps in PETG.

Their table lists over 600 common chemicals and then shows each one tested at both 20 and 50 degrees Celsius over a 30 day period. They then give a simple recommendation to the suitability of the various common resins. This will give you a quick indication how the cap material you are looking at is likely to perform ranging from E (no noticeable change on 30 days), through to N (almost immediate damage). These are simply an initial recommendation, Not a guarantee. But they do provide you a good indication of what a particular cap (or liner) material you need to put down on your own full stability testing.

A sample of the extensive “CP Labs” table and the link to their exhaustive list as follows:

CHEMICAL	LDPE		HDPE		PP		PCO		PMP		PETG		FEP	
	20	50	20	50	20	50	20	50	20	50	20	50	20	50
<b>Acetic Acid 50%</b>	G	F	E	F	E	E	E	E	E	E	N	N	E	E
<b>Allyl Alcohol, Pure</b>	E	E	E	E	E	E	E	E	E	G	-	-	E	E
<b>Carbon Disulide</b>	N	N	N	N	N	N	N	N	N	N	-	-	E	E
<b>Chlororacetic Acid</b>	E	E	E	E	E	G	E	G	E	G	-	-	E	E
<b>Chlororm</b>	F	N	F	N	N	N	N	N	N	N	-	-	E	E
<b>Xylene</b>	E	E	E	E	E	E	E	E	N	N	N	N	N	N

**KEY: E** No Damage, **G** Little to no damage, **F** Some affect at 7 days, **N** Immediate damage

Link to full table: <https://www.calpaclab.com/chemical-compatibility-bottles-containers/>