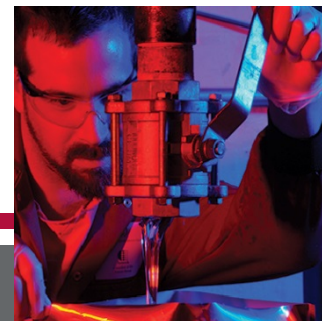


BEST PRACTICES FOR THE HANDLING AND USE OF OXAZOLIDINE PU ADDITIVE TECHNOLOGY

CHARLES LYNCH
COMMERCIAL MANAGER



OXAZOLIDINES

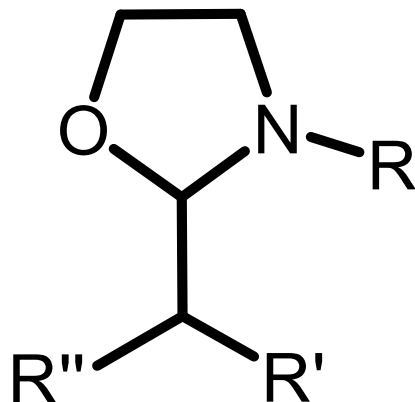
HOW DO THEY WORK?



WHAT IS AN OXAZOLIDINE - CHEMISTRY

- A five membered heterocyclic ring structure containing nitrogen and oxygen

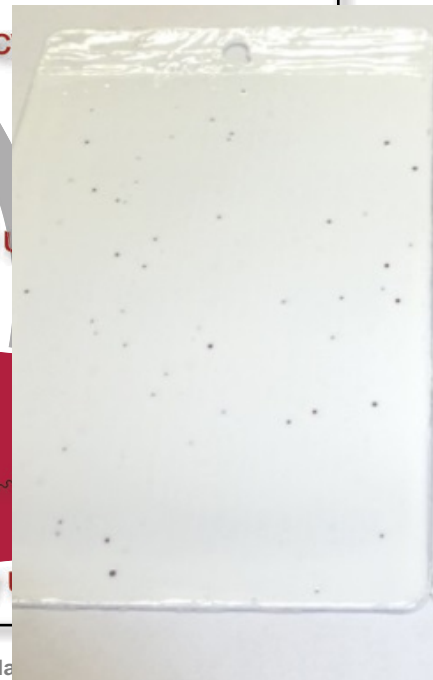
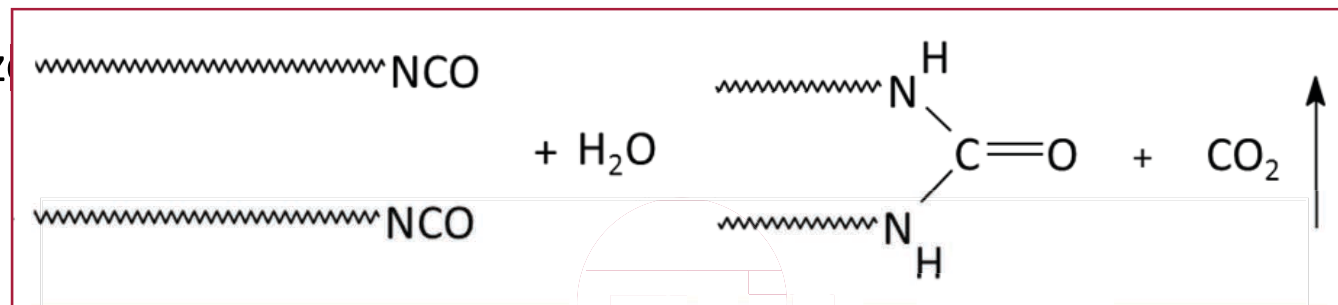
General Oxazolidine Structure



- A versatile additive for both 1K and 2K solvent borne and high solids polyurethane systems

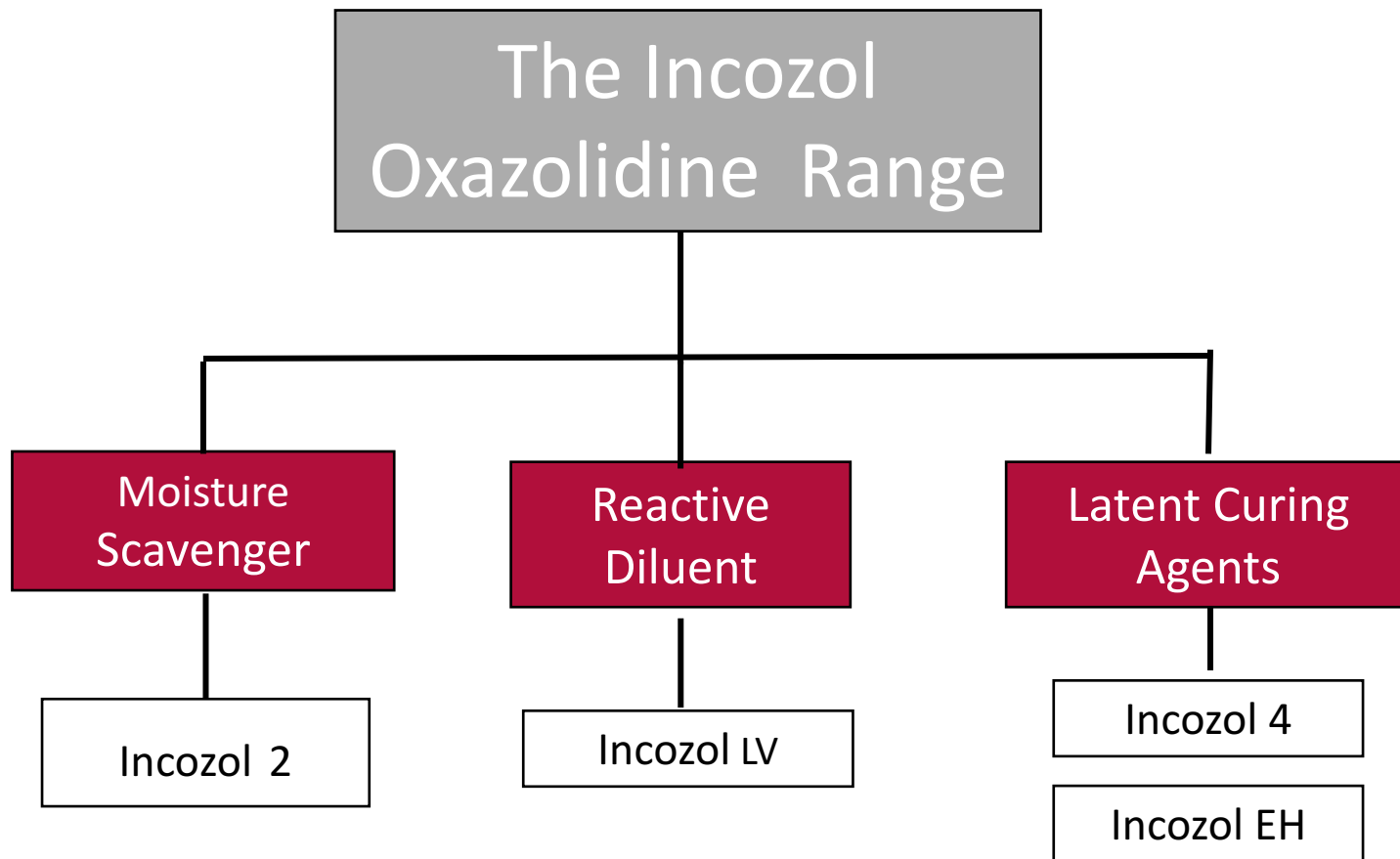
BENEFITS OF OXAZOLIDINES IN YOUR FORMULATION

- All Oxaz



Schematic chemical reaction showing the hydrolysis of oxazolidine latent hardener and the latent hardener reacting with the isocyanate groups firstly through the secondary amine and then primary hydroxyl groups.

INCOZOL RANGE



INCOZOL APPLICATION'S



WATERPROOFING



FLOORING



WIND TURBINES



ROOF COATING



WALKWAYS AND STEPS



AEROSPACE



BALCONY COATING



MILITARY



AUTOMOTIVE
Incorez
custom chemistry

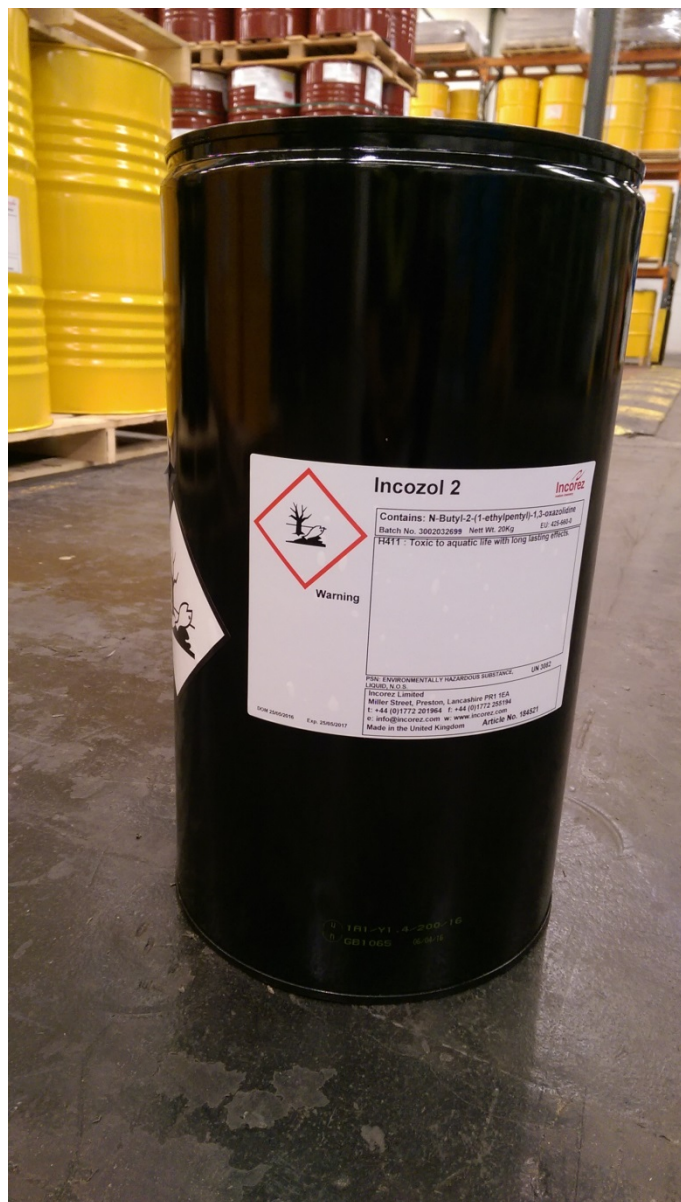
ACHIEVING BEST PERFORMANCE

PRACTICAL STEPS FOR MANUFACTURING



1K MOISTURE CURED PU COATING FORMULATION

Materials		Parts by Weight
Aliphatic Prepolymer	IPDI Prepolymer (Polyether based with 4% NCO)	35
Pigment	Titanium Dioxide	14
Filler	Barytes	28
Pigment	Black Pigment	0.5
Catalyst	Tin-free catalyst	0.2
Additive	Substrate wetting agents	0.25
Additive	UV Absorber	0.25
Additive	UV Stabilizer	0.25
Diluents	Solvent	16.55
Oxazolidine	Incozol EH (Latent curing hardener)	5.00
Total		100



EQUIPMENT



High Speed Dispenser (HSD)



Enclosed Vessel with Vacuum and Nitrogen inlets

PREPARING THE VESSEL

- Moisture sensitive raw materials
- Manufacturing to be carried out in an enclosed vessel under an inert atmosphere, preferably by vacuum and/or nitrogen purging
- Ideally, it is recommended to dry pigments and fillers before using (@80°C overnight)



ADDING MATERIALS

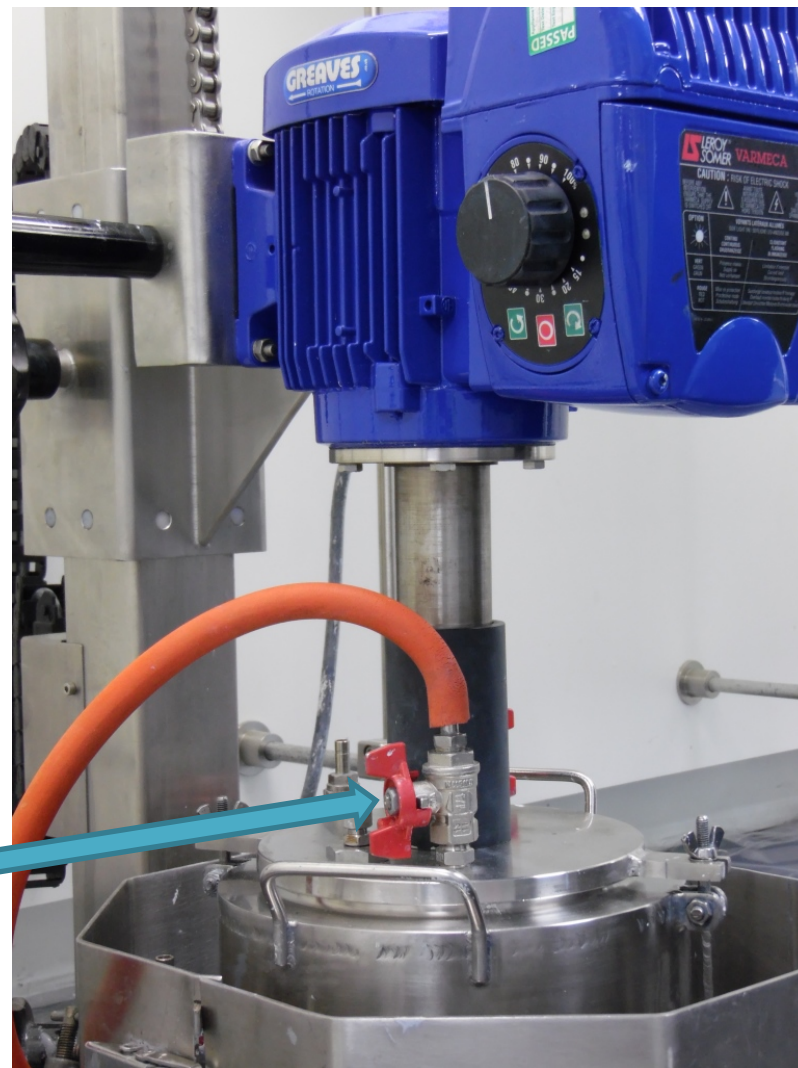
- To a clean and dry vessel add IPDI Prepolymer
- Then add the oven dried pigments and fillers in to the Prepolymer under slow stirring



DISPERSING PIGMENTS AND FILLERS

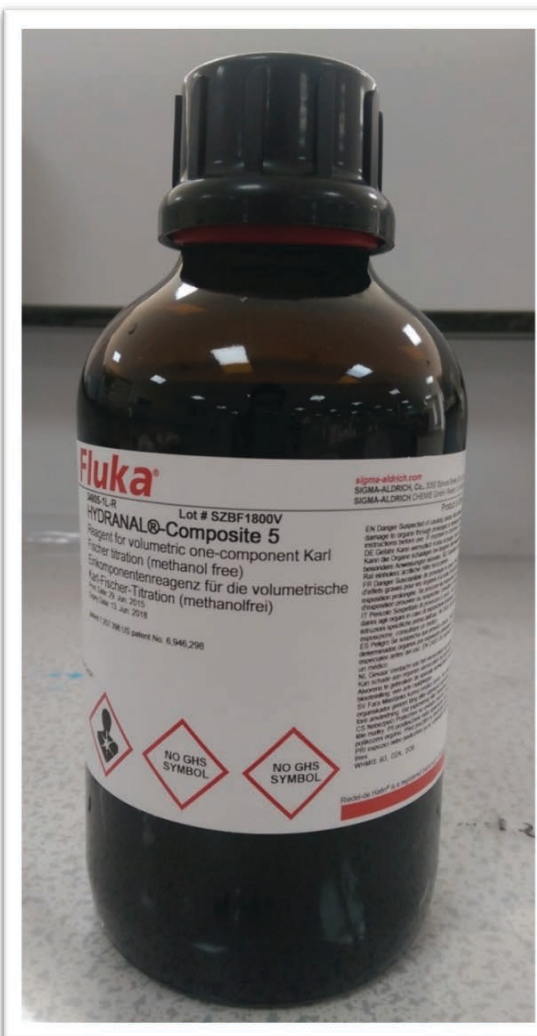
- High speed disperse the mixture to achieve the recommended grind under vacuum.
- Premix the solvent and additives (catalyst, UV additive)
- Once the grind is achieved add the premix of solvents and additives to the Prepolymer and pigment mix

VACUUM



IN-PROCESS TESTING

- Take a sample of the dispersed material and check the water content using Karl Fischer method.



ADDING THE INCOZOL

- The moisture content should be <500 ppm or <0.05%.
- The final step once you achieve the recommended moisture is to add Incozol EH
- Stir for 5-10 mins without vacuum



STORING AND HANDLING OXAZOLIDINES – POST MANUFACTURE

- Purge with Nitrogen after use
- Never leave the lid open after use
- Avoid any moisture ingress to reduce the degradation of the product
- Store at ambient temperature in a dry and well ventilated place

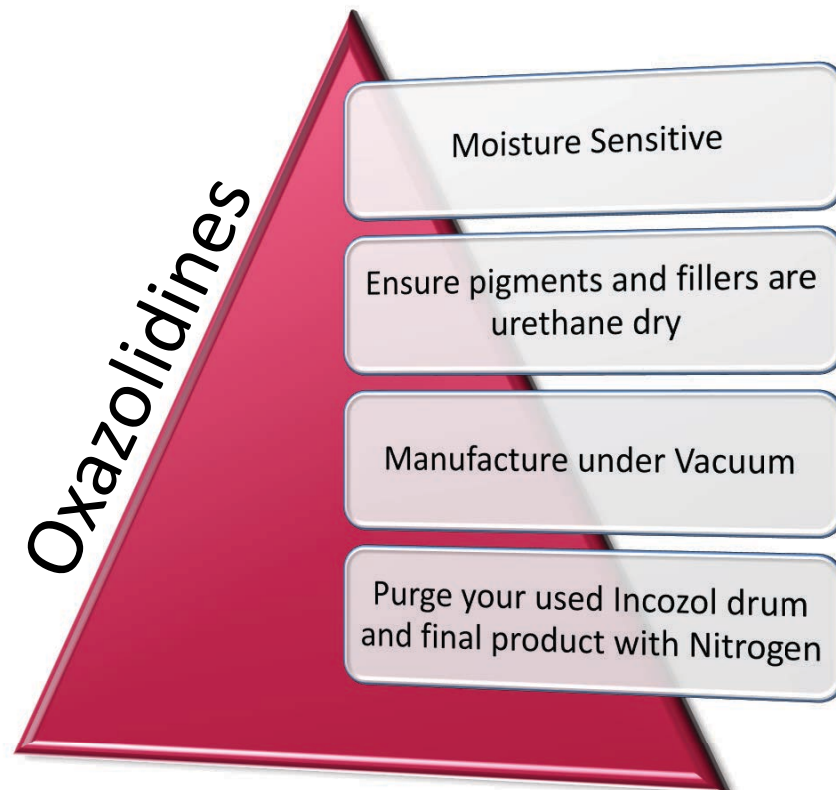


FILLING YOUR FINAL PRODUCT

- Moisture sensitive final product
- To avoid any moisture ingress filling should be carried out under an inert atmosphere using Nitrogen as shown in the below picture



SUMMARY – BEST PRACTICES



BEST PRACTICES LEADS TO BEST PERFORMANCE

**Solves bubble
trouble**

**Manufacture
low VOC high
solids
systems**

**Faster
through cure
– 1K moisture
cure**

**Multifunctional
and thus
improves
durability
through
crosslinking**