Homemade Explosive (HME)/ Bulk Explosive (BE) Recognition Guide

3rd Ed., January 2012

Attack the Network • Defeat the Device • Train the Force

Home Made Explosives (HME) Recognition Guide

HME related images within this Recognition Guide are representative of what's been found in the AF AOR.

Instructions for Recognition Guide Use:

- This RECOGNITION GUIDE contains images of HME / BE materials and manufacturing components and provides a list of common indicators (observables) that when found, indicate a high probability of HME / BE related activity.
- If any observables are present at a given location, persons associated with the area should be questioned and potentially detained.
- Refer to this material if something looks: suspicious, out of place, or out of character.
- Probability of HME production activity increases when one or more component and/or indicator is found at the same location.
- Urea (46 or 46-0-0) and DAP (18-46-0) fertilizers are authorized by GIRoA for farm use in AF.
- Ammonium Nitrate (AN) (34 or 34-0-0) and Calcium Ammonium Nitrate (CAN) (26 or 26-0-0) fertilizers are illegal in AF and can be confiscated.

WARNING!!!!

If potential HME, precursors, or materials are discovered, execute the following:

1. Remove all personnel from the potential threat.
2. Emplace cordon and notify up; protocols should be followed when reporting HME finds, to include: location and geo-coords, estimated amount and type (if known), and assistance needed with find.
3. Call EOD Immediately!
   - ***DO NOT*** attempt to render safe.
   - ***DO NOT*** attempt to disrupt IED.
   - ***DO NOT*** open any containers.
   - ***DO NOT*** dispose of IED.
   - ***DO NOT*** handle suspected HME/BE.
   - ***DO NOT*** touch:
     - If it looks suspicious
     - If it looks out of place
     - If it looks out of character
     - If you don't know what it is or does!

**** Handling of IED devices, components, and/or materials may contaminate forensic evidence.***

***** Mishandling of IED devices, components and/or main charges may result in bodily harm or death.***

Ammonium Nitrate (AN)– 34% Nitrogen

Calcium Ammonium Nitrate (CAN) 26% - 27% Nitrogen

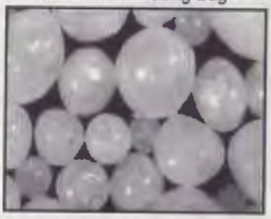
Ammonium Nitrate is a strong oxidizer that can be detonated with a booster. It is usually mixed with a liquid fuel, powdered sugar, or aluminum powder to increase its sensitivity and explosive power.

AN Fertilizer - 25kg Bag

AN Fertilizer - 50Kg Bag

Found/Cleared Repackaged AN

AN Granules



AN Prills - Oily/Waxy

AN Prills Dry

AN & CAN

Ammonium Nitrate based HME is the Most Common Main Charge Used by Insurgents in the AF AOR

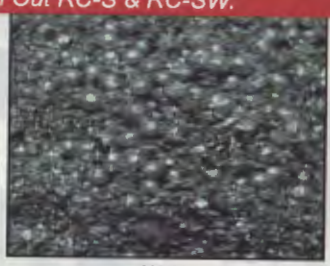
Per GIRoA Law, AN and CAN Based Fertilizers are Illegal to Possess in Afghanistan
Indicators (Observables): ANY of the Following May be an Indication of HME / BE Production
AN: Appearance –White to Off White Prills / Crystals, Granules; Waxy/Oily, Dry
AN: Packaging - White, Green, or Brown Plastic Sacks with Black, Green, or Green and Blue printing. Look for 34, 34% or 34-0-0
AN: Typically 34% Nitrogen, Rarely Used by Farmers, Never More Than 34.5% Nitrogen, Not 46% Nitrogen
AN: Additives (Enhancers) - Aluminum Powder, Fuel Oils, Sugar, Starches (e.g. Wheat or Corn Meal Powders)
AN: Odor - Strong Acidic / Caustic Odors – Smells Like Ammonia
ANFO: Fuel Oils - Motor Oil, Diesel Fuel, Heavy Oils, Kerosene, etc.
ANFO: Appearance - Off White to Pinkish to Reddish Colored / Granules or Prills, Colors Influenced by Additives
ANFO: Odor - Fuel-Like (e.g. Kerosene, Diesel, Heating Oil, etc.)
ANFO: Fuel Stains on Sacks / Bags
Bricks / Rocks / Munitions: Used to Crush / Grind Fertilizer Prills into Powder (May Have Fertilizer Residue on Them)
Grinder: Industrial or Hand Grinders Used to Crush Prills into Powder
HME Production TTPs:
AN + Aluminum Powder (AN-AL) is the Predominant HME Found in Main Charges in the AF AOR
AN Fertilizer or AN Based HME is Often Repackaged in Flour Sacks, Sugar Sacks, Sona Brand Urea Fertilizer Sacks
HME / BE Production is Likely to Occur in Abandoned or Isolated Compounds or Structures (e.g. Grape Huts)
AN Grinding May Take Place Anywhere (e.g. Agricultural Fields, Rural Roads, Junk Yards, Occupied Compounds)
HME May Be Ground Out of the Backs of Vehicles
Use of Grinders, Rocks/Bricks/Munitions, Heavy Cylinders to Crush AN Into Powder in Order to Increase Surface Areas
There is NO Reason to Grind or Cook Any Fertilizers, Discovery of These Processes Indicates HME Production.

Ammonium Nitrate & Aluminum (AN-AL) – 34% Nitrogen

Precursors & Explosive Material
AN-AL is the Most Common Type of HME Found Through Out RC-S & RC-SW.

Aluminum Powder (AL)

Aluminum Powder (AL)



AN-AL

AN-AL in Igloo Type Cooler

AN-AL Spill on Ground

AN-AL in Yellow Palm Oil Container

Ammonium Nitrate & Aluminum (AN-AL) – 34% Nitrogen

Ammonium Nitrate based HME is the Most Common Main Charge Used by Insurgents in the AF AOR

AN-AL in Pressure Cooker

Aluminum Powder (AL)

Indicators (Observables): ANY of the Following May be an Indication of HME / BE Production
Aluminum: Packaging - 5 gallon Unmarked Buckets with Handle, Commercial Aluminized Paint or AL Powder Packaging
Aluminum: Bag / Jar / Jug Containing Odorless Gray / Silver Colored Powder, Empty Paint Cans with Aluminum Powder Residue
AN-AL: Hands, Containers Covered with Gray / Silver Color Flakes or Dust (Aluminum Powder)
AN-AL: Containers - Plastic Jugs / Containers with or without Aluminum Paint Residue (Silver)
AN: Appearance - Gray or Silvery Colored / Crushed (Powdery) Crystals with Flecks
AN: Odor - Odorless to Slight Ammonia
AN Package Labeling: 34 – 0 –0; 34% Nitrogen
HME Production TTPs:
AN + Aluminum Powder (AN-AL) is the Predominant HME Found in Main Charges in the AF AOR
AN Fertilizer or AN Based HME is Often Repackaged in Flour Sacks, Sugar Sacks, Sona Brand Urea Fertilizer Sacks
HME / BE Production is Likely to Occur in Abandoned or Isolated Compounds or Structures (e.g. Grape Huts)
HME May Be Ground Out of the Backs of Vehicles
Use of Grinders, Rocks/Bricks/Munitions, Heavy Cylinders to Crush AN Into Powder in Order to Increase Surface Areas
There is NO Reason to Grind or Cook Any Fertilizers, Discovery of These Processes Indicates HME Production.

Calcium Ammonium Nitrate (CAN) – 26% - 27% Nitrogen

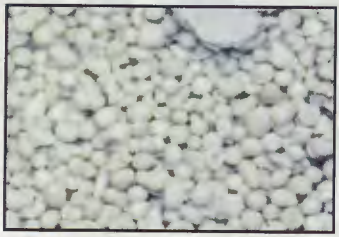
Precursors & Explosive Material

CAN Fertilizer, PAKARAB (Fatima)

CAN Granular Fertilizer, Fatima

Grinder - used to crush AN and CAN

CAN Prills

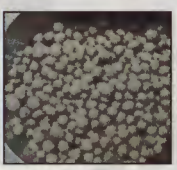


CAN Prills

There is NO Reason to Grind or Cook Any Fertilizers, Discovery of These Processes Indicates HME Production.

Calcium Ammonium Nitrate (CAN) – 26% - 27% Nitrogen

Can Prills



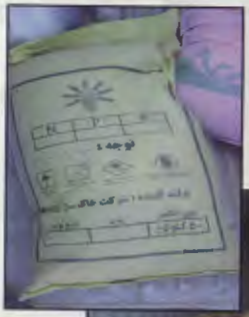
Can Prills

AN/CAN: Per GIRoA Law, Ammonium Nitrate Based Fertilizers are Illegal to Possess in Afghanistan
Indicators (Observables): ANY of the Following May be an Indication of HME / BE Production
Appearance: Prills Range in Color from Off White to Brown, Roughly Pea Size or Smaller
Bricks/Rocks/Munitions: Used to Crush / Grind Fertilizer Prills into Powder (May Have Fertilizer Residue on Them)
Grinder: Industrial or Hand Grinders Used to Crush Prills into Powder
Odor: Odorless to Slight Ammonia
CAN Package Labeling: 26/27 – 0 –0; 26/27% Nitrogen
Packaging: Brown Plastic Sacks with Green and Red Printing, Green Circle with Arabic Writing is Predominant in AF AOR
AN: Packaging - White, Green, or Brown Plastic Sacks with Black, Green, or Green and Blue printing. Look for 34, 34% or 34-0-0
HME Production TTPs:
AN Fertilizer or AN Based HME is Often Repackaged in Sugar Sacks, Flour Sacks, Sona Brand Urea Fertilizer Sacks, etc.
CAN Separation is Done Two Ways: 1) Boiled or "Cooked" in Water to Separate Calcium from AN Fertilizer, Cooking May Create Ammonia Gas Plume and Strong Ammonia Odor; 2) Grinders, Rocks/Bricks/Munitions, Heavy Cylinders to Crush CAN Into Powder
AN Separated by Cooking is Dried on Tarps (Colored Plastic, Clear Plastic, Cloth –Sizes Vary) Drying Usually Occurs Outside
HME / BE Production is Likely to Occur in Abandoned or Isolated Compounds or Structures (e.g. Grape Huts)
Wire Mesh or Sifters Used to Separate Larger Chunks
Soil Discoloration is Result of Effluence (Residual Water and Calcium from Cooking Process) Being Dumped on Ground
There is NO Reason to Grind or Cook Any Fertilizers, Discovery of These Processes Indicates HME Production.

Diammonium Phosphate (DAP) – 18% Nitrogen

DAP is Legal to Use As Fertilizer in Afghanistan

DAP Fertilizer – 50Kg Bag



DAP Fertilizer – 50Kg Bag

It is a Known Insurgent TTP to Conceal Illegal Fertilizers in Legal Fertilizer Bags. For Example, Placing Calcium Ammonium Nitrate (CAN) Fertilizer in a Diammonium Phosphate (DAP) Fertilizer Bag.

DAP Fertilizer – 50Kg Bag

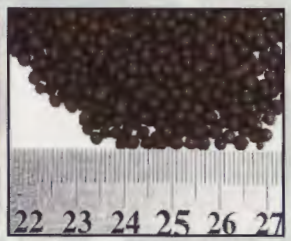
DAP Fertilizer – 50Kg Bag (Nitrogen content 18%, Phosphate content 46% - this is NOT Urea)

Don't Judge a Bag by it's Label

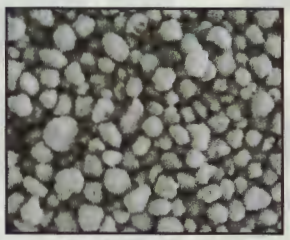
Diammonium Phosphate (DAP) – 18% Nitrogen

DAP Fertilizer – 50Kg Bag

DAP Fertilizer



DAP Fertilizer

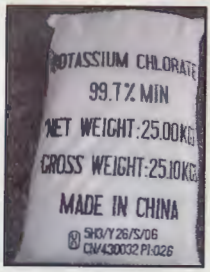


DAP Fertilizer

Diammonium Phosphate (DAP) Fertilizer is LEGAL for Use in Afghanistan
Indicators (Observables): NOT Used in IEDs
Appearance: Gray to Brown / Black Prills, Pink Prills
DAP: Approved for Use in AFG, Used to Compensate Farmers for Confiscated Ammonium Nitrate
Odor: Slight Ammonia Odor When Confined
Package Labeling: 18 –46 –0, 18% Nitrogen
Packaging: Plastic Pink Sacks with Purple, Green, and Red Printing, or Brown Sacks with Black Printing, or White Sacks with Black Printing, or Brown Sack with Blue and Red Printing

Potassium Chlorate (PC)

Precursors & Explosive Material
PC is predominantly found in RC-E, but is Migrating to Other RC's



PC 25Kg Bag

PC 50Kg Bag


Potassium Chlorate 50Kg Bag

Potassium Chlorate


Potassium Chlorate


Potassium Chlorate

Potassium Chlorate (PC)


Potassium Chlorate Mixed with Saw Dust

PC Based HME is Predominately Found in RC-E, However it is Migrating to Other RC's


Potassium Chlorate & Aluminum
Aluminum not typically found with PC.

Indicators (Observables): ANY of the Following May be an Indication of HME / BE Production
Additives: Aluminum Powder, Fuel Oil, Sawdust, Sugar, Starches (e.g. Wheat or Corn Meal Powder)
Appearance: Powder or Crystals (Color Influenced by Additive)
Odor: Odorless but May be Influenced or Masked by Additive
Packaging: White Sacks with Potassium Chlorate Printed on them
Packaging: Large Quantities - 55 Gallon Drums, May be Silver in Color, Sealed Plastic Bags
HME Production TTPs:
PC + Sugar is the Second Most Used HME Found in Main Charges in the AF AOR
PC HME Can be Repackaged in Other Containers for Concealment and Deception
HME / BE Production is Likely to Occur in Abandoned or Isolated Compounds or Structures (e.g. Grape Huts)
Use of Grinders, Rocks/Bricks/Munitions, Heavy Cylinders to Crush PC Into Powder in Order to Increase Surface Areas

Urea – 46% Nitrogen

Urea Fertilizer and Urea Nitrate are NOT the Same. DO NOT Intermix the Terms. Urea Fertilizer is a Legal Product and Urea Nitrate is an Explosive

Urea Fertilizer is Legal for Farm Use in Afghanistan

Urea Fertilizer (Mfr - Sona)– 50Kg Bags

Urea Fertilizer – 50Kg Bag

Urea Fertilizer – 50Kg Bag

Urea Fertilizer (Mfr - Fatima) - 50Kg Bags

12 Granulated Urea Fertilizer

Urea Fertilizer

Urea Fertilizer

Urea Fertilizer (Mfr - Fatima)

Urea Nitrate (UN)

Urea Fertilizer and Nitric Acid are Precursors to Make the Explosive Urea Nitrate

Nitric Acid Jugs (20 liter)

Nitric Acid Stain on Skin

Urea Nitrate (UN) Weaponized in Pressure Cooker

Urea Nitrate Explosive is Created by processing Urea Fertilizer with Nitric Acid
Indicators (Observables): ANY of the Following May be an Indication of HME / BE Production
Appearance: Prills, Granules, Crystals, Oily/Waxy or Dry, Color Influenced by Additives
Aluminum Powder Bags Hidden within Repackaged Urea Fertilizer Bags: Bags May Contain Ammonium Nitrate
Fertilizers in Excess of 300kg for a Single Farmer Should be Investigated, Legal to Use by Farmers
Fertilizers/Precursors Sold in Bazaars / Markets, Fertilizers and Precursors Found at the Same Site
Package Labeling: 46 – 0 –0, 46% Nitrogen
Packaging: Brown Sacks with "46", Blue or White Sacks with "Nitrogen 46" or "46" Printed in Green or Red w/ English & Arabic
Cooking Pots and Heat Sources, Straining Platforms, Tarps (or The Like)
Nitric Acid: Black Plastic Jugs (20L) with Red Caps, Nitric Acid will Stain the Skin Yellowish Brown

HME Production Factory

Precursors in Bulk

Probable HME Factory

Probable HME Factory

Grinder - Used to Crush AN and CAN

Chemical Mixing Pool

HME / IED Production Factory

IED Factories are Typically Found to be Disorganized and Sloppy

Wood Scraps for Pressure Plates

Main Charges -Yellow Palm Oil Containers (YPOC)

Unidentified HME

Tools Used to Build Pressure Plates

Empty Fertilizer Bags and YPOCs

HME / IED Production Factory

Unidentified HME (Possible AN+Sugar or Potassium Chlorate)

Primed AN-AL Filled YPOC, and Low Metallic Signature Pressure Plates

Unidentified HME (Possible AN-AL)

Primed AN-AL Filled YPOC, Aluminum Powder, Fertilizer Bags

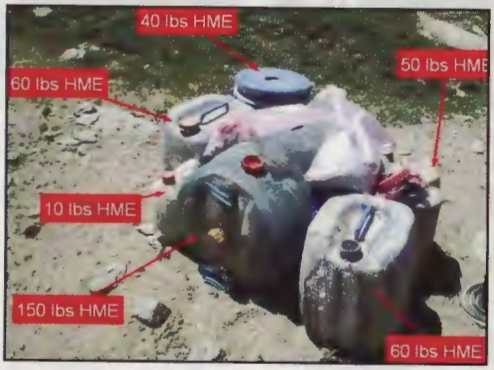
HME / IED Production Factory

DAP & Urea Fertilizer are LEGAL for Farm Use in Afghanistan
Indicators (Observables): ANY of the Following May be an Indication of an HME Factory
Hidden and / or Concealed Fertilizers, Precursors, or Other IED Materials or Components
Large Quantities of Fertilizers and Precursors
Quantities of Explosive Fuels –Fuel Oils, Aluminum Powder, Sugar, Starches, Saw Dust, etc., that are out of character for the site"
Ammonia or Urine-Like, Fuel-Like, Fruity Odors in Air
Chemical Filtrate Pool: Dug into Ground, Plastic Lined, Caustic Odors
Chemicals like Ammonium Nitrate, Nitric Acid (Nitric Acid has a Very Strong, Unique Odor That Can be Smelled at Low Concentrations; also Leaves Deep Yellow Stains on Skin and Clothing)
Chemical Spills or Residues on Ground, Discoloration of Soil
Heat Source: Propane Stove / Burners, Wood Fueled Fire, Supply of Fire Wood
Large Mixing Bowls, Metal or Plastic Barrels / Drums –May Contain Residue
Propane Tanks, Propane Burners, and Large Pots
Tarps: Blue, Brown, White, Clear Plastic, (Plastic or Cloth) –Used to Dry or Strain HME / BE
Tools to Refine HME/BE: Portable Electric Grinders, Heavy Cylinders, Rocks, Bricks, Sifters, Strainers, Wire Mesh, Funnels
Unidentified Substance on Tarps Left Out in Open, on Roof Tops, Grape Huts, or Indoors
Wooden Spoons, Paddles, Wood (e.g. 2x4) for Stirring Mixtures –May Contain Residue
Yellowish Stains on Hands, Fingers from Nitric Acid
There is NO Legitimate Reason to Grind / Crush, Cook, Dry, or Process Fertilizers

HME Main Charge Containers - Plastic

Plastic Containers That Are Commonly Used as Main Charges

Plastic Buckets



Various Plastic Containers

Yellow Palm Oil Containers (YPOC)

Green Buckets

Yellow Palm Oil Container (YPOC)

HME Main Charge Containers - Metal

Metal Containers That Are Commonly Used as Main Charges

Modified Munitions (DFFC)

Pressure Cooker

Cooking Pots

Paint Can

Ammo Can

Pressure Cookers

HME Main Charge Containers

Water Cooler

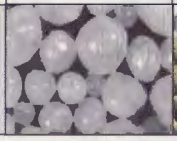
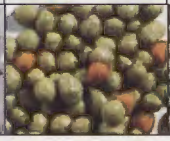
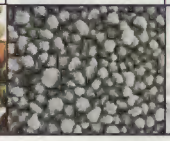
Improvised Containers (Claymores)

Plastic 5 Gal. Bucket

Indicators (Observables): ANY of the Following Materials May be Used in IEDs
Barrels & Drums: Plastic & Metal - Yellow, Blue, Black, etc.
Buckets: Plastic - Black, Red, Green, Yellow, etc., Det Cord Loop or Wires May be Protruding from Container
Coolers: Plastic (e.g. Igloo Water Cooler) - Blue, Red, Orange, Wrapped or Taped Closed, May be Working Cooler
Glass: Mason Jars, Bottles - Clear, Sizes May Very, Det Cord or Wires Protruding Out
Improvised: Plastic or Metal –To Make Improvised Claymores and Shape Charges, Sealed in Packing Tape
Jerry Cans: Plastic & Metal –Red, Green, Tan, Clear, etc.
Jugs: 5 –20 liters, Plastic Yellow Palm Oil (YPOC), Blue, Black, etc., Det Cord or Wires May be Protruding from Container
Plastic Wrap or Plastic Tape Used to Seal and Protect Main Charge: Clear, Yellow, Brown, Tan etc.
Tupperware Like Containers: Green, Blue, Red – Resealable Lids, Usually Wrapped in Plastic Protectant, Sealed with Packing Tape
HME Production TTPs:
Insurgents May Collect Containers, Containers that Look Out of Place or Out of Character May be an Indication that HME or IED Production is Taking Place
Insurgents Will Use ***ANY*** Container Available for Main Charge Housing

HME COMPARISON CHART - MATERIALS OF INTEREST					
	Ammonium Nitrate	Calcium Ammonium Nitrate	Diammonium Phosphate	Potassium Chlorate	Urea
Commercial Use	Fertilizer	Fertilizer	Fertilizer	Match Heads, Pyrotechnics	Fertilizer
Abbrev.	AN	CAN	DAP	PC	N/A
Fertilizer NPK Label (Nitrogen-Phosphate-Potassium)	34-0-0 or 35-0-0	26-0-0 or 27-0-0	18-46-0	Not Applicable (N/A)	46-0-0
Chemical Formula	NH_4NO_3	$NH_4NO_3 + CaCO_3$	$(NH_4)_2HPO_4$	$KClO_3$	$(NH_2)_2CO$
Associated with Explosives	Yes - AN + Fuel	Yes - AN + Fuel	No	Yes - PC + Fuel	Yes - Urea Nitrate (UN)
Characteristics:					
Size	1-3mm	2-4mm	2-4mm	<1mm	1-3mm
Shape	Round Pellets (Prills)	Round Pellets (Prills)	Round Pellets (Prills)	Cystal Like or Powder	Round Pellets (Prills) or Crystal Like
Color	More Ivory but can be Off-White to Light Brown, Color Influenced by Additives	Light Gray to Light Brown, Tan, Color Influenced by Additives	Gray, Light Brown to Dark Brown	Colorless to White, Color Influenced by Additives	White to Off White, Color Influenced by Additives
Appearance	Granules or Prills, Dry or Wax/Oil Coated	Granules or Prills, Dry	Granules or Pellets, Dry	Powder (Talc or Chalk Like)	Granules, Prills, Flakes, Pellets, or Crystals, Dry or Oily

	Ammonium Nitrate	Calcium Ammonium Nitrate	Diammonium Phosphate	Potassium Chlorate	Urea
Odor	Odorless to Slight Ammonia	Odorless to Slight Ammonia	Odorless to Slight Ammonia When Confined	Odorless	Odorless to Acidic
Packaging	10-50kg Sacks: White, Green, or Brown Plastic with Black, Green, or Green and Blue printing. Common Brand: Pak-Arab, Fatima	Typically 50kg Sacks: Light Brown with Green and/or Blue Printing, Light Green with Green and Blue Printing. Common Brand: Pak-Arab, Fatima	Typically 50kg Sacks: Pink with Purple, Green and Red Printing; Brown with Black Printing; White with Black Printing; Brown with Blue and Red Printing. Common Brand: UAC	Typically 25kg or 50kg Sacks: White with Black Printing, Clear Plastic with Blue and Red Printing; 55Gal Metal Drums (Green)	Typically 50kg Sacks: Light Brown with Black/Blue and Red Printing; White with Green or Red Printing; Light Blue with Dark Blue Printing. Common Brand: SONA
					
Fuels - Required to Make Explosives (Not All Inclusive):	Fuel Oils (Oils, Diesel Fuel, Kerosene), Aluminum Powder, Sugars, Saw Dust	Fuel Oils (Oils, Diesel Fuel, Kerosene), Aluminum Powder, Sugars, Saw Dust	N/A	Sulfur, Phosphorus, Kerosene, Paraffin Wax, Sawdust, Sugars, Starches (Wheat or Corn Meal Powder), Petroleum Jelly	Aluminum Powder, TATP, Fuel Oils (Oils, Diesel Fuel, Kerosene). Urea Fertilizer is NOT Explosive. Urea Must be Processed with Nitric Acid to Make the Explosive Urea Nitrate.

	Ammonium Nitrate	Calcium Ammonium Nitrate	Diammonium Phosphate	Potassium Chlorate	Urea
Visual Observables:	Presence of: Precursors, Fertilizer Bags, Grinding Devices (Machines, Bricks, Rocks, Munitions), Mesh Screen, Spills or Residues on Ground	Presence of: Precursors, Fertilizer Bags, Water, Grinding Devices (Machines, Bricks, Rocks, Munitions), Large Pots/Mixing Bowls/ Containers, Stirring/ Mixing Devices, Heat Source for Cooking, Filtration Apparatus, Drying Surfaces (Tarps), Mesh Screen, Spills or Residues on Ground	N/A	Presence of: Precursors, PC Packaging, Grinding Devices (Machines, Bricks, Rocks, Munitions), Large Pots/ Mixing Bowls/Containers, Mesh Screen	Presence of: Nitric Acid, Precursors, Fertilizer Bags, Water, Grinding Devices (Machines, Bricks, Rocks, Munitions), Cooking Pots/Mixing Bowls/Containers & Stirring Devices (Wood Paddles), Protective Equipment (Gloves, Boots, Masks), Heat Source for Cooking, Filtration Apparatus, Drying Surfaces (Tarps), Spills on Ground
					

Points to Remember

Potassium Chlorate (PC) is a Pyrotechnic and is Primarily Used to Manufacture Fireworks and Matches. There is NO Known Legitimate Reason to Possess this Chemical in the ATO. PC is NOT Manufactured in the ATO.

It is a Known Insurgent TTP to Conceal Illegal Fertilizers in Legal Fertilizer Bags. For Example, Placing Calcium Ammonium Nitrate (CAN) Fertilizer in a Diammonium Phosphate (DAP) Fertilizer Bag. Don't Judge a Bag by it's Label.

The Images Featured in this Recognition Guide are a Representative Sampling of the Materials Found in the ATO, and are Not All Inclusive. Insurgents are Continually Refining Their TTPs and the Visual Appearance of Materials and Bags May Change Over Time.

DAP and Urea Fertilizers are Legal to Possess and Use in the ATO.