



CENTURY MULTECH INC.

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Global provider of halogen-free flame retardants, specialty additives, and more. Complete expertise in international trade, since 1976.

CORE AND NEW PRODUCTS

○ Halogen-Free Flame Retardants

- Melamine Cyanurate (MCA) – CAS No. 37640-57-6
- Melamine Polyphosphate (MCA-PP) – CAS No. 218768-84-4
- Melamine Pyrophosphate (CM-Pyro) – CAS No. 15541-60-3
- Melamine Phosphate (CM-MP) – CAS No. 20208-95-1
- Melamine (CM-Melamine)
- Melem (CM-JMA-101)
- Piperazine Pyrophosphate (JNP-2)
- Piperazine Pyrophosphate modified with P/N elements (JNP-2-3)
- Zinc Borate (CM-ZB)
- Aluminum Hydroxide (CM-ATH)
- DOPO (CM-DOPO)
- Red phosphorus paste (CM-RPP)
- Ammonium Polyphosphate water-soluble (CM-APP-W 111)
- Ammonium Polyphosphate phase II (CM-APP-201)
- Ammonium Polyphosphate phase II with melamine treatment (CM-APP-202)
- Ammonium Polyphosphate phase II with silane treatment (CM-APP-203)
- Ammonium Polyphosphate phase II with epoxy treatment (CM-APP-226)
- Expandable graphite

○ Specialty Materials

- JH-11 amine solvent for H₂S treatment
- JH-14 amine solvent for CO₂ treatment

- For more info on our products, please visit www.century-multech.com



HALOGEN-FREE FLAME RETARDANTS

MELAMINE CYANURATE (CM-MCA)

- Applications
 - primarily used for nylon
 - primarily for electrical & electronic applications (connectors, switches, etc.) made from polyamide or thermoplastic urethanes (TPU)
 - suitable for synthetic resins (i.e. PA, PVC, PS)
- Benefits
 - Halogen-free, low smoke density, low toxicity and less corrosion
 - High sublimation temperature (440°C) with high thermal resistance and thermal processing stability
 - Good economics and mechanical properties, compared to compounds containing halogen/antimony flame retardant systems
 - Lower corrosion offers advantages in the processing stage or fire hazard
 - UL94V-0 rating for unfilled or mineral filled compounds
 - UL94V-2 rating for glass filled compounds
- Packing
 - 20 kg per multi-ply paper bag (10-11 MTs per 20' container or 20-22 MTs per 40' container)
 - 25 kg per composite woven bag with inner PE lining
 - 600 kg per jumbo bag available upon request
- Additional Info
 - Can provide over 10+ grades of MCA – based on particle size and surface treatment material
 - Formulate a new MCA grade (MCA-S) – specifically for fiber and fabric applications

MELAMINE CYANURATE - AVAILABILITY

- Our main available grades

- **Granular form**

Grade	Avg Particle Size
MCA-12	1 - 2 mm
MCA-30	2 - 4 mm

- **Powder form**

Grade	Avg Particle Size
MCA-22 ¹	1.1 - 1.4 μm
MCA-25	1.4 - 1.8 μm
MCA-50	$\geq 1.8 \mu\text{m}$
MCA-01	0.05 - 0.6 mm

- **Surface treatment form: MCA-610 and MCA-610-2**

- MCA-33 custom form²

- Available in stock at our New Jersey warehouse

¹comparable to Ciba's MCA-15

²similar to MCA-22, except with better whiteness and an CTI index of over 600V

MELAMINE CYANURATE - GRADES



Century Multech Melamine Cyanurate Grades

MCA Grade	MCA022, MCA033*	MCA025	MCA050	MCA01	MCA12	MCA30	MCA610
Form	Powder	Powder	Powder	Granular	Granular	Granular	Surface Treatment**
Appearance	White crystal powder	White crystal powder	White crystal powder	White granules	White granules	White granules	White crystal powder
MCA %	≥ 99.5	≥ 99.5	≥ 97.5	≥ 99.5	≥ 99.5	≥ 99.5	97 to 99.5
Water Content %	≤ 0.2	≤ 0.2	≤ 0.30	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Excess Melamine %	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Excess Cyanuric Acid %	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Average particle size	≤ 1.8 μm	1.4 μm to 1.8 μm	≥ 1.8 μm	0.05 mm ≤ 90% ≤ 0.6 mm	1.0 mm ≤ 90% ≤ 2.0 mm	2.0 mm ≤ 90% ≤ 4.0 mm	≤ 3 μm
pH Value, 1% aqueous	5.0 – 7.0	5.0 – 7.0	5.0 – 8.0	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0
Whiteness, F457	≥ 95.0	≥ 95.0	≥ 95.0	≥ 95.0	≥ 95.0	≥ 95.0	≥ 95.0

*MCA033 properties are similar to that of MCA-022, but uniquely produced to achieve higher whiteness and a CTI Index of over 600V

**MCA610 is coated with a layer of PVA (polyvinylalcohol) to improve its dispersion quality and further improve its fire retardant properties

MELAMINE CYANURATE - PROPERTIES

Appearance	=	White Crystal Powder
Melamine Cyanurate (%)	≥	99.5
Residual melamine (%)	≤	0.3
Residual cyanuric acid (%)	≤	0.2
Whiteness (%)	≥	95
pH value (10g/L)	=	5.0 - 7.0
Moisture (%)	≤	0.15
Water solubility (g/100ml)	<	0.01
Thermal decomposition	=	350°C
Chemical Formula	=	C₆H₉N₉O₃
Molecular weight	=	255.2
Melting point	=	350°C
Density (g/cm³) at 25°C	=	1.35 to 1.85
Sublimation temperature	=	440°C

MELAMINE POLYPHOSPHATE (MCA-PP)

- Applications
 - Specially used for glass-fiber reinforced nylon
 - Widely applied to thermoplastics, thermosetting plastics, rubber, and fiber
- Benefits
 - Halogen-free and very high thermal stability
 - UL94V-0 rating for nylon 66
 - UL94V-1 rating for nylon 6
 - UL94V-0 rating for nylon 6 by adding other flame retardants (i.e. pentaerythritol & ammonium polyphosphate)
- Packing
 - 25 kg per paper bag (plastic liner/paper bag)
 - 12 MTs per 20' container
- Additional Info
 - Can customize based on particle size with A, B, and C grades
 - Formulated a new MCA-PP-6A-S grade specifically for polyester applications

MELAMINE POLYPHOSPHATE - PROPERTIES

Appearance	=	White powder
Chemical Formula	=	$\text{HO}(\text{C}_3\text{H}_7\text{N}_6\text{PO}_3)_n\text{H}$
N content (%)	=	42 to 44
P content (%)	=	12 to 14
pH value (10g/L)	=	4 to 6
Particle size μm	MPP-A	$\text{D}_{50} \leq 2.5, \text{D}_{98} \leq 30$
Particle size μm	MPP-B	$\text{D}_{50} \leq 1.7, \text{D}_{98} \leq 18$
Bulk density kg/m^3	=	300 to 500
Solubility (20°C) g/L	\leq	0.05
Decomposition temperature	MPP-A	$\geq 375^\circ\text{C}$
Decomposition temperature	MPP-B	$\geq 360^\circ\text{C}$

MELAMINE PYROPHOSPHATE (CM-PYRO)

○ Applications

- Useful in fabrics, nylons, paint, paper and plastics as flame retardant.
- Compatible with melamine-urea formaldehyde systems.
- Shown uses in the electronic industry when incorporated in the manufacturing of circuit boards and other equipment.

○ Benefits

- Can be partially used instead of ammonium polyphosphate (as a spumescent and a catalyst) in some intumescent applications.
- Can be used with epoxy and other adhesive compositions to achieve fire retardant barriers in gluelines in wood and plastic laminates.
- Useable with di-pentaerythritol as well as polyolefins.
- Useable in SMC process (unsaturated polyester resins).

○ Packing

- 25 kg WPP/PE bag
- 12 MT per 20' full container load

MELAMINE PYROPHOSPHATE - PROPERTIES

Appearance	=	White powder
N content (%)	≥	38.3
P content (%)	≥	14.1
Moisture (%)	<	0.2
Solubility, g/100ml H₂O	<	0.06
pH value (1% aqueous)	=	3.8 ± 4
Conductivity, μs/cm	<	500

MELAMINE PHOSPHATE (CM-MP)

○ Applications

- Can be applied to polyolefins, linear polyester, polyamide, some thermosetting resins, rubber, paint, latex, paper, and textiles.

○ Benefits

- Excellent intumescent flame retardant

○ Packing

- 25 kg/paper bag (plastic liner/paper bag)
- 12 MT per 20' container

MELAMINE PHOSPHATE - PROPERTIES

Appearance	=	White powder
Chemical Formula	=	$C_3H_9N_6PO_4$
N content (%)	=	42 to 44
P content (%)	=	12 to 14
Water content (%)	≤	0.3
pH value (10g/L)	=	2 to 4
Particle size μm	=	D50 ≤ 2.5
Solubility (20°C) g/L	≤	3

MELAMINE (CM-MELAMINE)

○ Applications

- Combined with formaldehyde to produce melamine resin. Its uses include whiteboards, floor tiles, kitchenware, fire retardant fabrics, and commercial filters.
- Can also be used in decorative and protective laminates used to manufacture furniture, flooring, and fiberboard.
- Other uses include the production of particleboards, medium density fibreboards, surface coatings, enamels, paint additives, upholstery fabrics, flame-retardant clothing, heat resistant glove and aprons, and thermal liners.

○ Benefits

- Available in low-pressure or high-pressure form
- Melamine contains 67% nitrogen by mass and, if mixed with resins, has fire retardant properties due to its release of nitrogen gas when burned or charred.
- Melamine resin is a synthetic polymer that is fire resistant and heat tolerant. It is a versatile material that has a highly stable structure.
- Can be easily molded while warm, but will set into a fixed form, which makes it suitable for certain industrial applications.

○ Packing

- 25 kg PP woven bag with PE inner bag
- 500 kg/1000kg PP/PE woven bag

MELAMINE - PROPERTIES

Molecular Formula	=	C₃H₆N₆
Molecular Weight	=	126.12
Standard Purity	≥	99.8%
Moisture	≤	0.10%
Ash	≤	0.03%
pH Value	=	7.5 to 9.5
Turbidity	≤	20
Color (Pt-Co)	≤	20

*available in low-pressure or high-pressure form

MELEM (CM-JMA-101)

○ Description

- JMA-101 is a new product, which is part of the environmental-friendly halogen-free nitrogen-series flame retardant for high-temperature engineering plastics.
- It has high nitrogen content and good liquidity.
- It has compatibility and excellent flame retardancy with high polymer materials such as high temperature nylon.

○ Packing

- 20 KG per bag (composite paper bag) or 25 KG per bag (composite woven bag)

○ Storage

- Store in a dry and well-ventilated place to prevent dampening.

○ Application

- Used in engineering plastics as a flame retardant. The processing temperature can reach 350°C.

MELEM - PROPERTIES

Appearance	=	white crystal powder
N Content %	\geq	55
Water Content %	\leq	0.3
pH Value (10 g/L)	=	4.0 to 7.0
Particle Size D [50] μm	\leq	25
Decomposition Temperature, -1%, $^{\circ}\text{C}$)	\geq	400

PIPERAZINE PYROPHOSPHATE (JNP-2)

○ USES

- JNP-2 is an environmentally friendly, halogen-free, nitrogen-phosphorus, high-efficiency flame retardant, with excellent properties. It is a white, odorless, tasteless powder. It is used as a flame retardant additive, in polyethylene and polypropylene resin, EDPM, and TPE elastomer materials.

○ STORAGE

- Store in a cool and dry area at room temperature. Keep away from moisture and sunlight.

○ PACKING

- 25 kg or 20 kg per bag (composite paper bag). 12 Metric Tons per 20' full container load.

PIPERAZINE PYROPHOSPHATE (JNP-2)

Sample Application Advice			
Base Material	Suggested Dosage %	Exam Standard	FR Rating
Polypropylene (PP)	19.0 - 22.0	UL94	V-0 (1.6 mm)
Application Note			
Formula			
No.	PP %	JNP-2 compound %	Antioxidant, white oil, etc.
1	76	19	5
2	72	23	5
Flame Retardant and Mechanical Properties			
No.	UL94 (1.6 mm)	Tensile strength/Mpa	Flexural Modulus/Mpa
1	V-0	21.6	1920
2	V-0	22.1	1806

PIPERAZINE PYROPHOSPHATE (JNP-2) - PROPERTIES

Appearance	=	White crystal powder
N Content %	≥	10.4
P Content %	≥	23.4
Water Content %	≤	0.2
Whiteness (F457)	≥	92.0
Average Particle Size (μm)	≤	10.0

PIPERAZINE PYROPHOSPHATE – MODIFIED WITH P/N ELEMENTS (JNP-2-3)

○ USES

- JNP-2-3 is an environmentally-friendly, halogen-free, nitrogen-phosphorus, high-efficiency flame retardant, with excellent properties. It is a white, odorless, tasteless, powder. It is used as a flame retardant additive, in polyethylene and polypropylene resin, EDPM, and TPE elastomer materials.

○ STORAGE

- Store in a cool and dry area at room temperature.

○ PACKING

- 25 kg or 20 kg per bag (composite paper bag). 12 metric tons per 20' full container.

○ APPLICATION EXAMPLE

- Suggested dosage level is between 20% and 30% to achieve a UL94V-0 rating in PP compounds (1.6 mm).

○ ADDITIONAL INFO

- CM-JNP-2-3 is a complete flame retardant system, so you do not need to add other flame retardant materials to the formulation.
- CM-JNP-2-3 is comparable in specification and quality to FP2200S, but it is more cost-efficient.

PIPERAZINE PYROPHOSPHATE – MODIFIED WITH P/N ELEMENTS (JNP-2-3) - PROPERTIES

Appearance	=	White crystal powder
N Content %	≥	19.0
P Content %	≥	17.0
Water Content %	≤	0.2
Whiteness (F457)	≥	92.0

ZINC BORATE (CM-ZB)

○ Application

- Can be applied to a wide range of plastics and rubber processing, such as PVC, PP, PE, Nylon, PVC Resin, polyphenylene ethylene, epoxy resin, polyester resin, acid ethylene and natural rubber, styrene butadiene rubber, and chloroprene rubber.
- Can be applied to the production of paper, fiber fabric, decorative panels, floor leather, wallpaper, carpet, ceramic glaze, fungicides, and paint production to improve flame retardant performance.
- In halogen-containing systems, can be used together with antimony trioxide and alumina trihydrate.
- In halogen-free systems, can be used together with alumina trihydrate, magnesium hydroxide, red phosphorus, and ammonium polyphosphate.
- Also used for conveyor belts, wires and cables, intumescent coatings and paints, and anti-corrosive pigments.

○ Benefits

- Multi-functional synergistic flame retardant with antimony oxide
- Can replace antimony trioxide as a synergist in both halogen-based and halogen-free systems
- Anti-dripping and char-promoting agent, and suppresses afterglow.
- Suppresses arcing and tracking in electrical insulator plastics.

○ Packing

- 25 kg bags, 500 kgs bags, or 1000 kg bags available
- Store in a cool and dry place

ZINC BORATE - PROPERTIES

Grade	=	Top	Regular
Whiteness	≥	99	95
Surface Water %	≤	0.5	1
Particle Size*, μm	=	3 to 5	3 to 5
Pb, PPM	<	10	20
Cd, PPM	<	5	10
ZnO, %	=	37.0 to 40.0	
B₂O₃, %	≥	46.0 to 48.0	
H₂O (hydrate), %	≤	13.0 to 15.5	
Fineness (Residue on 45 μm sieve)	≤	0.1	
Specific Gravity g/cm³	=	2.67	
Melting Point °C	=	980	
Temperature of dehydration °C	=	290	
Refractive index	=	1.58	
Product Standard	=	Q/ZWW003-2009	
Chemical Formula*	=	(2ZnO·3B₂O₃·3.5H₂O)	

*Other normal formulations we can offer include:

- 2ZnO · 3B₂O₃ · 3H₂O
- 4ZnO · B₂O₃ · H₂O
- 2ZnO · 2B₂O₃ · 3H₂O
- 2ZnO · 3B₂O₃

*We can also offer particle size:

- 2 μm
- 8 μm
- 12 μm

But our 3 to 5 μm standard size can meet most application requirements for zinc borate.

ALUMINUM HYDROXIDE (CM-ATH)

○ Application

- Fire retardant with good performance to reduce smoke and toxic gases.
- Widely and very commonly used in plastics – including PP, PE, EVA, ABS, HIPS, PVC, etc. – and rubber.

○ Benefits

- Can be composited with other fire retardants – such as Zinc Borate, Phosphorus, PBDE – to achieve good synergy and improved performance.
- Can be surface treated by non-polar polymer of Stearic acid or Silicon oil - to facilitate dispersion across plastic materials and improve mechanical properties for fire retardant performance.

○ Packing

- 25 kg bags, 500 kgs bags, or 1000 kg bags available
- Store in a cool and dry place
- Custom packaging available upon your request

ALUMINUM HYDROXIDE - PROPERTIES

Surface Water %	≤	0.4
Whiteness	=	95
Purity %	=	99.5
Fineness (residue on 45 um sieve) %	≤	0.1
Specific gravity, g/cm³	=	2.42
pH	=	7.5 – 9.8
Absorption of oil, ml/100g	=	35 – 40
SiO₂ %	=	0.06
Fe₂O₃ %	=	0.03
Na₂O soluble %	=	0.04

CM-DOPO (9,10-DIHYDRO-9-OXA-PHOSPHAPHENANTHRENE-10-OXIDE)

○ Application

- Can be used in liner polyester, polyamide, epoxy resin, widely used in plastic circuit board for electronic equipment

○ Benefits

- White crystals or powder, easily soluble in methanol, ethanol, chloroform, etc. Soluble in benzene, toluene, methoxychlor, etc.; insoluble in water.
- Excellence in heat stability, water resistance, oxidation resistance, it is a kind of reactive and additive flame retardant.
- Performance is better than general phosphate ester in flame retarding due to inclusion of P-C bond.

○ Packing

- Packed in 25 kg compound bag; outer layer for plastic weaving bag lined with PVC bag

○ Additional Info

- CAS # 35948-25-5
- Molecular Formula: C₁₂H₉O₂P
- Molecular Weight: 216.17
- Could be a breakthrough halogen-free technology applied towards the treatment of PU foam – particularly within furniture.

CM-DOPO (9,10-DIHYDRO-9-OXA- PHOSPHAPHENANTHRENE-10-OXIDE) - PROPERTIES

Appearance	=	white powder or flake
DOPO Content %	=	99.5 min.
OPP Content (ppm)	=	1000 max.
Melting Point, C	=	117-120
Water Absorption Rate %	=	0.30 max.
Acid Value (mg KOH/Kg)	=	300 max.
Color of Melt (APHA)	=	100 max.

RED PHOSPHORUS PASTE (CM-RPP)

○ Uses

- Surface-coated red phosphorus flame retardant, light red to dark red paste, is an efficient red phosphorus flame retardant. We use proprietary technology to modify red phosphorus, into red phosphorus paste. This product can be mainly applied to coatings, textiles, and the like.

○ Packing

- Packed in 1250 KG IBC drums

○ Storage

- Store in a cool and dry area

○ Additional Info

- Can be safer and less dangerous to handle compared to red phosphorus powder form

RED PHOSPHORUS PASTE (CM-RPP) - PROPERTIES

Appearance	=	Light red to dark red fluid
P Content %	>	20/30/40/50
pH (10g/L)	=	6.0 to 8.0
Particle Size [D97], um	≤	150
Viscosity (20 C), mpas	=	Negotiation

AMMONIUM POLYPHOSPHATE WATER-SOLUBLE (CM-APP-W 111)

○ PROPERTIES

- White powder, 100% soluble in water and easily dissolved to get a neutral solution. Typical solubility is 150g/100ml, and pH value is 6-8.

○ CHARACTERISTICS

- Powder solid, stable properties, convenient for transport, storage, and use.
- pH value is neutral, safe, and stable during production and usage, good compatibilities, not reactive with other substances

○ USAGE

- To be used in formulating liquid fertilizer (NPK 11-37-0 or NPK 10-34-0)
- As a flame retardant. Used solely or together with other materials in the flameproof treatment for textiles, papers, fibers, wood, and more.

○ PACKING

- 25 kg woven bag with plastic liner.

AMMONIUM POLYPHOSPHATE WATER-SOLUBLE (CM-APP-W 111) - PROPERTIES

Appearance	=	white granular powder
P ₂ O ₅ (%) w/w	≥	59
N (%) w/w	≥	17
pH value (1% aqueous solution)	=	6 to 8
Solubility g/100ml H ₂ O, 25°C	≥	40

Remark: P₂O₅ + N ≥ 78%

AMMONIUM POLYPHOSPHATE PHASE II (CM-APP-201)

○ USAGE

- APP-201 is a non-halogenated flame retardant. It acts as a fire retardant by intumescent mechanism.
- When APP-II is exposed to fire and heat, it decomposes to polymeric phosphate acid and ammonia.
- The polyphosphoric acid reacts with hydroxyl groups to form a nonstable phosphate ester.
- Following dehydration of the phosphate ester, a carbon foam is built up on the surface and acts as an insulation layer.

○ APPLICATION

- In plastics (PP, PVC, PE, etc.), polyester, rubber, PU foam, and expandable fireproof coatings.

○ PACKING

- 25 kg woven bag with plastic liner, 25 kg paper bag.

AMMONIUM POLYPHOSPHATE PHASE II (CM-APP-201) - PROPERTIES

		Target Value	Typical Value
Appearance	=	white powder	white powder
P Content % (w/w)	≥	31	31.5
N Content % (w/w)	≥	14	14.5
Average Polymerization Degree, n	≥	1000	1500
Viscosity (10% aqueous, 25°C) mPa.s	≤	100	30
pH Value (10% aqueous)	=	5.5 to 7.5	6.2
Acid number mg KOH/g	≤	1	0.3
Average particle size (D50) μm	=	15 to 20	18
Particle size <50 μm % (w/w)	≥	99	99.5
Particle size >100 μm % (w/w)	=	0	0
Moisture Content % (w/w)	≤	0.25	0.1
Solubility g/100ml H ₂ O, 25°C	≤	0.5	0.3
Decomposition Temperature, °C	≥	270	280

AMMONIUM POLYPHOSPHATE PHASE II WITH MELAMINE TREATMENT (CM-APP-202)

○ USAGE

- APP-202 is a flame retardant based on phosphorus/nitrogen synergism, free of formaldehyde, manufactured from APP-201 with melamine modification based on proprietary method.
- APP-202 is different from APP-201 based on the following properties
 - Reduced solubility in water
 - Reduced viscosity in water
 - Improved dispersibility and compatibility with polymers and resins
 - Increased fluidity in powder
 - Improved thermal expansion efficiency during flame retardant process and insulation performance

○ APPLICATION

- APP-202 is finer than APP-201, and so is more dispersive in plastics and rubber. Usages include for:
 - Fiber materials (paper, wood, fireproof textiles)
 - All kinds of polymers (sunproof, waterproof, or fireproof)
 - Fire-refractory building board, coiled material
 - Epoxy resin and unsaturated resin
 - Cable and rubber
 - Plastic material of electron device
 - Textile

○ PACKING

- 25 kg woven bag with plastic liner, 25 kg paper bag

AMMONIUM POLYPHOSPHATE PHASE II WITH MELAMINE TREATMENT (CM-APP-202) - PROPERTIES

		Target Value	Typical Value
Appearance	=	white powder	white powder
P Content % (w/w)	≥	29	30.5
N Content % (w/w)	=	16 to 18	17
Average Polymerization Degree, n	≥	1000	1500
Viscosity (10% aqueous, 25°C) mPa.s	≤	50	20
pH Value (10% aqueous)	=	7 to 9	8
Acid number mg KOH/g	≤	1	0.5
Average particle size (D50) μm	=	18 to 22	20
Particle size <50 μm % (w/w)	≥	99	99.5
Particle size >100 μm % (w/w)	=	0	0
Moisture Content % (w/w)	≤	0.25	0.1
Solubility g/100ml H ₂ O, 25°C	≤	0.3	0.2
Decomposition Temperature, °C	≥	260	270

AMMONIUM POLYPHOSPHATE PHASE II WITH SILANE TREATMENT (CM-APP-203)

○ USAGE

- APP-203 is a non-halogen flame retardant based on phosphorus/nitrogen synergism. It is treated/coated by silane via specialized method. It is different from APP-201 by the following:
 - Reduced solubility in water
 - Reduced viscosity in water
 - Improved dispersibility and compatibility with polymers and resins
 - Increased fluidity in powder
 - Improved thermal expansion efficiency during flame retardant process and insulation performance

○ APPLICATION

- It can be used for all applications that our standard APP-201 is suitable for. It can be used in plastics (PP, PVC, PE, etc.), polyester, rubber, PU foam, and expandable fireproof coatings. It has lower viscosity and lower solubility (compared to the standard grade APP-201) in water, which could make it suitable for water-fast intumescent systems in polymers (such as PU, PBT, etc.) and paints.
 - Fiber materials (paper, wood, fireproof textiles)
 - All kinds of polymers (sunproof, waterproof, or fireproof)
 - Fire-refractory building board, coiled material
 - Epoxy resin and unsaturated resin
 - Cable and rubber
 - Plastic material of electron device
 - Textile

○ PACKING

- 25 kg woven bag with plastic liner, 500/1000 kg super sacks

AMMONIUM POLYPHOSPHATE PHASE II WITH SILANE TREATMENT (CM-APP-203) - PROPERTIES

		Target Value	Typical Value
Appearance	=	white powder	white powder
P Content % (w/w)	≥	30	31
N Content % (w/w)	=	14 to 16	15
Viscosity (10% aqueous, 25°C) mPa.s	≤	20	10
pH Value (10% aqueous)	=	6 to 8	7
Average particle size (D50) μm	=	18 to 22	20
Particle size <50 μm % (w/w)	≥	95	98
Particle size >100 μm % (w/w)	=	0.1	0
Moisture Content % (w/w)	≤	0.25	0.1
Solubility g/100ml H ₂ O, 25°C	≤	0.3	0.15

AMMONIUM POLYPHOSPHATE PHASE II WITH EPOXY TREATMENT (CM-APP-226)

○ Application

- APP-226 is a non-halogen flame retardant based on phosphorus/nitrogen synergism. It is treated/coated by epoxy resin via a specialized method, and is free of formaldehyde.
- Its solubility in water is very low and has less influence on polymers. APP-226 is very suitable in epoxy resin, polyurethane, and textile coating systems.

○ Packing

- 25 kg woven bag with plastic liner; 500/1000 kg super sacks.

AMMONIUM POLYPHOSPHATE PHASE II WITH EPOXY TREATMENT (CM-APP-226) - PROPERTIES

		Target Value	Typical Value
Appearance	=	white powder	white powder
P Content % (w/w)	≥	29	30
N Content % (w/w)	≥	13 to 15	14
Viscosity (10% aqueous, 25°C) mPa.s	≤	20	10
pH Value (10% aqueous)	=	6 to 8	7
Average particle size (D50) μm	=	20 to 24	22
Particle size <50 μm % (w/w)	≥	95	98
Particle size >100 μm % (w/w)	=	0.1	0
Moisture Content % (w/w)	≤	0.25	0.1
Solubility g/100ml H ₂ O, 25°C	≤	0.15	0.1
Solubility g/100ml H ₂ O, 60°C, 24h	≤	1	0.7

EXPANDABLE GRAPHITE (CM-GRAPHITE)

○ USES

- Can be used in PU foams. This foam can be used as a seating material in aircrafts and other traffic tools.
- Can be used as a heat and sound insulation sheet for cars after special treatment.
- Sealing tape in windows and doors for the building insulation industry.
- EVA and EPS foams
- Intumescent FR coatings, specifically for steel structural FR coatings
- FR in polyethylene, polypropylene, and other polyolefins, when halogenated flame retardants are prohibited.
- Plastics/metal (aluminum) composite boards
- Other applications include plastic pipes, fire-stop putties, and fire-stop pillows

○ PACKING

- Packing is in 25 kg bags, or 500 kg big bags. 18 Metric Tons per 20' full container load.

EXPANDABLE GRAPHITE (CM-GRAPHITE) PROPERTIES

Original Expansion Temperature (C)	=	170 C
Expansion Volume (ml/g)	=	350
pH	=	4 to 6
Conductivity (ms/cm)	≤	0.3
Moisture (%)	≤	0.4
Ash (%)	≤	1.0
Volatile %	≤	12
Carbon %	≤	99
Particle size (50 mesh)	≥	80%



SPECIALTY MATERIALS

JH-11 AMINE SOLVENT FOR HYDROGEN SULFIDE GAS TREATMENT

○ Application

- JH -11 is used for selectively removing H₂S from natural gas, refinery gas, sour gas, liquid hydrocarbons, and synthetic gas. Also useful in removing H₂S from Claus tail-gas.
- Can be used for removing H₂S in gases with high H₂S content and medium CO₂ content, and can satisfy the general requirements for purification gas and acid gas.
- JH-11 solvent can be applied directly to the plant/refinery, without additional additives. For questions and customized advice, you could contact us directly regarding your specific needs.

○ Benefits

- Composed primarily of MDEA, plus additives (i.e. anti-foaming agent, promoter, stabilizer, modifier, anti-oxidant, anti-precipitant, anti-corrosive agent).
- JH-11 is similar in physical and chemical properties to MDEA (please see Properties for comparison).
- The material provides additional improved functions in antifoaming, anticorrosion, and anti-oxidation.

○ Packing

- Packed in 200 Kg plastic drums, or 1000 Kg plastic totes.

JH-11 AMINE SOLVENT FOR HYDROGEN SULFIDE GAS TREATMENT

Material	MDEA	CM-JH-11
Appearance	Colorless/light yellow liquid	Colorless/light yellow liquid
Relative density (20°C)	1.040 – 1.044	1.041 – 1.043
B.P. °C 101.3 KPa	246 - 248	245 – 247.6
Condensation Point °C	-14.6	-14
Flash Point (open cup) °C	126.7	
Vapor Pressure (20°C) Pa	< 1.33	< 1.33
Viscosity (20°C) mPa S	101	100
Solubility	Soluble in water	Soluble in water

JH-14 AMINE SOLVENT FOR CARBON DIOXIDE GAS TREATMENT

○ Application

- JH-14 is used for selectively removing CO₂ from ammonia synthesis plants for the production of methanol, liquid ammonia, urea, and more.
- Also can be used for the treatment of natural gas, coal gas, coking gas, and oil well gas.
- JH-14 solvent can be applied directly to the plant/refinery, without additional additives. For questions and customized advice, you could contact us directly regarding your specific needs.

○ Benefits

- Composed primarily of MDEA, with additives (including activators, anti-foaming agent, and more).
- JH-14 is similar in physical and chemical properties to MDEA (please see Properties for comparison).
- The material provides improved functions for solution stability, solution consumption, CO₂ absorption, energy reduction, and foaming resistance.
- It is particularly effective in protecting against corrosion, in order to ensure the long-term capabilities of plant equipment.

○ Packing

- Packed in 200 Kg plastic drums, or 1000 Kg plastic totes.

JH-14 AMINE SOLVENT FOR CARBON DIOXIDE GAS TREATMENT

Material	MDEA	CM-JH-14
Appearance	Colorless/light yellow liquid	Colorless/light yellow liquid
Relative density (20°C)	1.040 – 1.044	1.038 – 1.042
B.P. °C 101.3 KPa	246 - 248	242 – 244
Condensation Point °C	-14.6	-14
Flash Point (open cup) °C	126.7	
Vapor Pressure (20°C) Pa	< 1.33	< 1.33
Viscosity (20°C) mPa S	101	100
Solubility	Soluble in water	Soluble in water

○ More Products We Offer

Acrolein
Activators, Rubber
Ammonium Molybdate
Ammonium Polyphosphate
AS Fluorescent Pigments
Ascorbic Acid
Azobisisoheptonitrile
Azodicarbonamide
Benzophenone
Calcium Citrate
Calcium Saccharin
Carbendazim
Carbon Black
Chrome Green
Citric Acid Monohydrate
Citric Acid, Anhydrous
Cybutryne
Diaminomaleonitrile
Diammonium Phosphate
Dimethyl Hexanediol
Diuron
Ferrous Sulphate
Iminodiacetic Acid
Iron Oxide
L-Malic Acid
Mandelic Acid
Melamine
Melamine Cyanurate
Melamine Polyphosphate
Melamine Pyrophosphate
Melamine Phosphate
Metatitanic Acid
Ultra-fine Microencapsulated Red Phosphorus

N,N-Dimethylethanamine
N-Methyldiethanolamine
Nitrilotriacetic Acid
P-Xylene Dichloride
P-Xylene Dimethyl Ether
P-Xylene Glycol
Pharmaceutical Intermediates
Phenylacetic Acid
Potassium Citrate
Potassium Ferrocyanide
PS Fluorescent Pigments
Rubber, Accelerators
Salicylic Acid
Sodium Benzoate
Sodium Citrate
Sodium Ferrocyanide
Sodium Hexametaphosphate
Sodium Molybdate
Sodium Sarcosinate
Sodium Starch Glycolate
Succinic Acid
Sucrose Benzoate
Terbutryne
Tert.-Amyl Alcohol
Titanium Dioxide, Anatase
Titanium Dioxide, Rutile
Trichloroethyl Phosphate
Trichloropropyl Phosphate
Triethyl Orthoformate
Zinc Borate
Zinc Carbonate
Zinc Oxide: Active
ZQ Fluorescent Pigments

For further inquiries,
please contact :

Century Multech, Inc.
3370 Prince Street
Suite 605
Flushing, NY 11354

Tel: 718-353-9885
Fax: 718-353-9878

OR

Visit our website at
[www.century-
multech.com](http://www.century-multech.com)