

MEDIA SELECTION GUIDE - BY CONTAMINANT

BEST SELECTION: **XX**

Figures shown are typical percent loading by weight capacities but will vary by application.

Contaminant	Mole Wt	ACC	AXA	SNI-C	S2	SXL	PA8	MK5
Acetone	58	10					4	
Ammonia	17		10					
Benzene	78	20						
Butadiene	54	6						
Carbon Monoxide	28						2	
Carbon Dioxide	44			5	5	4		
Carbon Tetrachloride	154	35						
Chlorine	71	<1		<1	<1	<1		10
Chloroform	119	15						
Corrosive Gas	45			25	25	50	6	
Cyclohexane	84	18						
Diethylamine	73		5					
Dimethyl Sulfide	62			10	10	10	5	
Ethanol	46	5					4	
Ethylene	28						8	
Ethylene Dichloride	99	18						
Ethylene Oxide	44	5	5				10	
Formaldehyde	30	5					4	
Freon	110	10						
Hexane	69	20						
Hydrazine	32		5					
Hydrochloric Acid	36							10
Hydrogen Cyanide	27			2	2		4	
Hydrogen Fluoride	20							10
Hydrogen Sulfide	34	2		25	25	50	16	
Iodine	254	5						10
Isopropyl Alcohol	60	10					1	
Methanol	32	5						
Methyl Chloride	50	4						
Methylene Chloride	85	10						
Methyl Ethyl Keytone (MEK)	72	15					10	
Methyl Mercaptan	48	4		5	5	5	8	
No _x	46			8	8	8	8	
Nitrous Oxide	44			5	5	4		
Ozone	48	20					15	
Perchloro Ethylene	165	35						

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UNISORB CANADA MEDIA SELECTION GUIDE

Contaminant	Mole Wt	ACC	AXA	SNI-C	S2	SXL	PA8	MK5
Phenol	94	30						
Phosgene	99	8						
Solvents, Paint	90	20						
Styrene	104	20						
Sulfur Dioxide	64			8	8	11	8	
Sulfuric Acid	98	15		15	15	10		4
Toluene	92	20						
Trichloro Ethylene	131	25						
Vinyl Chloride	63	8					4	
VOC's	90	10 - 15						
Xylene	106	20						
WWTP Odor	40	30 ⁺		25 ⁺	25 ⁺	60 ⁺	8	

TO CALCULATE POUNDS OF CONTAMINANT REQUIRED PER YEAR

Use Formula

Lbs of Contaminant Per Year = CFM × PPM of Contaminant × Molecular Weight × 0.00134

** Based on a 24 hour / 365 day operation **

TO CALCULATE POUNDS OF MEDIA REQUIRED PER YEAR

Use Formula

Lbs of Media Required = Pounds of Contaminant Per Year / Percent Loading by Weight

(Figure from Selection Chart)

Example:

Contaminant = H₂S

CFM = 1,000

PPM = 3 Continuous 24 hour / 365 day operation

MW H₂S = 34

Pounds of Contaminant Required

CFM × PPM on Contaminant × Molecular Weight × 0.00134

= 1,000 CFM × 3 PPM × 34 × 0.00134

= 136.7 lbs of H₂S / year

Pounds of Media Required

Select SXL @ 50% Loading Capacity

Pounds of Contaminant Per Year / Percent Loading by Weight

= 136.7 lbs/year / 0.5

= 274 lbs of SXL for 1 year capacity

* Unisorb Canada considers the above as best available information but actual conditions vary in practice and may require further consultation before finalizing system design.

AC ACTIVATED CARBONS

DESCRIPTION

Activated carbons are one of the most cost effective methods of gas removal. Many types of activated carbons are available. Activated carbon is used for purifying air and water because it cast as an absorbent, and can efectively remove particles and organics from water, and odors from air. One of the best materials for reducing resks to human health, this material is also aesthetically pleasing. Each activated carbon has its own specific benefit. Unless specified otherwise, Unisorb provides AC-X type carbon as a standard.



AC-X – EXTRUDED ACTIVATED CARBON

Because of its shape, performance and low cost extruded Carbon has become the standard over the past decade. Unisorb carbon has

a low dust, high activity level, economical choice.

Shape: 4mm Cylindrical



AC-G – GRANULAR ACTIVATED CARBON

Our standard virgin carbon is manufactured from select grades of bituminous coal under strictly controlled steam activation conditions.

This carbon is irregularly shaped and grandular in appearance. With a highly developed porous structure, large surface area, high adsorption rate, slamm bed resistance and high mechanical strength, it is suitable for a wide range of water treatment and vapor absorption applications.



AC-C – COCONUT SHELL CARBON

Produced from the shell of coconuts, this carbon is considered the finest in the world for air purification. The reason for this is that the

coconut shell carbon has a higher pressure drop (1.8"per foot and 70 fpm).

Shape: Flat

GENERAL SPECIFICATIONS

1. **Carbon Telrchloride Activity (wt %):** 60 min.
2. **Lodine Number (mg/g):** 1200 min.
3. **Hardness Number:** 95% min.
4. **Apparent Density (g/ml):** 0.44 typical
5. **Total Surface Area (N₂ - BET method):**
1150 - 1250 m²/gm
6. **Total Ash Content:** 5% max
7. **Moisture:** 5% max
8. **Mesh Sizes:** 4×6, 4×8, 4×10

CAUTION: WET ACTIVATED CARBON DEPLETES OXYGEN FROM AIR

Whenever workers enter a vessel containing carbon, all recautions must be taken since dangerously low levels of oxygen may be encountered.

REMAINING LIFE TESTING

In some cases Unisorb Canada can provide free quarterly media testing for the life of the carbon installation. This testing provides critical data including remaining carbon life, total life prediction, moisture content, and projected replacement date. Date is provided for each of the seperated components of a blend. All analysis are performed at our laboratory.

SNI-C ACID GAS ADSORBENT

DESCRIPTION

SNI-C is used in pulp & paper and petrochemical oil & gas refinery markets. This product targets those gases which are predominant in this environment, especially Hydrogen Sulphide. SNI-C starts with the highest grade activated carbon. This ensures that the greatest possible absorption capacity is reached. The carbon is then impregnated with an acid gas neutralizing compound and a proprietary reagent in which improves its neutralizing efficiency. This product is designed to perform exceptionally well in all scrubbers.



SPECIFICATIONS

GENERAL DESCRIPTION

Porous, cylindrical pellets of high grade bituminous activated carbon.

PROPERTIES

- + **H₂S Removal Capacity (by weight):** 0.21 g/cc
- + **Removal Capacity (by weight):** H₂S: 25%; SO₂: 7%; Cl₂: <1%
- + **CTC Value:** 60% min
- + **Surface Area:** 1050 m²/g
- + **Density:** 657 kg/m³
- + **Moisture Content:** 15%
- + **Ash Content:** 12%
- + **Hardness:** 97 min
- + **Ignition Temperature:** 425°C
- + **Iodine Number:** 1010
- + **Particle Size:** 4mm Diameter

S2 ACID GAS ADSORBENT

DESCRIPTION

S2 has been used in the pulp & paper and petrochemical oil and gas refinery markets for over 40 years. This product targets those gases which are predominant in this environment, especially Hydrogen Sulphide. S2 starts with the highest grade activated carbon. This ensures that the greatest adsorption capacity is reached. The carbon is then impregnated with an acid gas neutralizing compound and a proprietary reagent which improves its neutralizing efficiency.

This product is designed to perform exceptionally well in all scrubbers.



SPECIFICATIONS

GENERAL DESCRIPTION

Porous, cylindrical pellets of high grade bituminous activated carbon.

PROPERTIES

- + **H₂S Removal Capacity (by weight):** minimum 0.20 g/cc
- + **Removal Capacity (by weight):** H₂S: 25%; SO₂: 7%; Cl₂: <1%
- + **CTC Value:** 60% min
- + **Surface Area:** 1050 m²/g
- + **Density:** 650 kg/m³
- + **Moisture Content:** 15%
- + **Ash Content:** 12%
- + **Hardness:** 97 min
- + **Ignition Temperature:** 425°C
- + **Iodine Number:** 1010
- + **Particle Size:** 4mm Diameter

SXL ACID GAS ADSORBENT

DESCRIPTION

SXL was recently developed to provide our customers with the highest extended life. While it targets the same gases as S2, SXL has a capacity for Hydrogen Sulphide (H_2S) which is roughly 60 % greater than any other product in the market. SXL starts with the highest grade activated carbon. This ensures that the greatest possible adsorption capacity is reached. The carbon is then impregnated with an acid gas neutralizing compound and **two proprietary reagents** which improve its neutralizing and adsorption efficiency.



SXL Performs exceptionally well in municipal odor control scrubbers where extremely high levels of H_2S and other odorous organics exist.

SPECIFICATIONS

GENERAL DESCRIPTION

Porous, cylindrical pellets of high grade bituminous activated carbon.

PROPERTIES

- + **H_2S Removal Capacity (by weight):** min 50%
- + **Removal Capacity (by weight):** H_2S : 50%; SO_2 : 11%; Cl_2 : <1%
- + **CTC Value:** 70% min
- + **Surface Area:** 1050 m²/g
- + **Density:** 600 kg/m³
- + **Moisture Content:** 15%
- + **Hardness:** 97 min
- + **Iodine Number:** 1050
- + **Extruded Size:** 3mm
- + **Ignition Temperature:** 425 °C

PA8 ADSORBENT MEDIA

DESCRIPTION

PA8 has been developed to have roughly twice the capacity of PA4 media. This second generation adsorbent media was developed in order to provide customers with the maximum adsorption benefit at the minimum cost. PA8 targets a broad range of gases which cause corrosion, odor and other undesirable gases. PA8 starts with the highest grade activated alumina. This ensures that the greatest possible adsorption capacity is reached. This alumina is then impregnated with permanganates while being formed into a spherical ball. A proprietary additive is used during the process in order to keep all eight percent of the permanganate available for reaction.



SPECIFICATIONS

GENERAL DESCRIPTION

Spherical ball pellets formed from a combination of powdered activated alumina and other binders, suitably impregnated with permanganates to provide optimum adsorption, absorption, and oxidation of a wide variety of gaseous contaminants.

REMOVAL CAPACITY

- + **Hydrogen Sulfide:** 0.13 g/cc min (16% by weight)
- + **Sulfur Dioxide:** 0.06 g/cc min (3.5% by weight)
- + **Nitric Oxide:** 0.06 g/cc min (2.5% by weight)
- + **Nitrogen Dioxide:** 0.016 g/cc min (1.0% by weight)
- + **Formaldehyde:** 0.023 g/cc (1.4% by weight)

MANUFACTURING QUALITY ASSURANCE STANDARDS

- + **Leach Test (indication of porosity) –** 180 minutes or less
- + **Permanganate Content:** 8% minimum
- + **Moisture Content:** 20% maximum
- + **Crush Strength:** 40% - 60%
- + **Abrasion Loss:** 3.0% maximum
- + **Nominal Pellet Diameter:** 1/8" (approximately 4 mm), 85% after screening

MEDIA REMAINING LIFE TESTING

Unisorb Canada provides free quarterly media testing for the life of the media installation. This testing provides critical data including remaining permanganate content, total life prediction, moisture content, and projected replacement date. Date is provided for each of the separated components of a blend. All analysis are performed at our own laboratory.

UL RATING

PA8 meets the requirements of a UL Class 1 fire rating

MK5 HCl & CHLORINE VAPOR ADSORBENT

DESCRIPTION

MK5 adsorbent media is specifically designed to capture and destroy atmospheric vent releases of HCl vapours at a minimum 95% removal efficiency in a properly designed deep bed configuration. MK5 will react with HCl vapours to produce a harmless byproduct which can be disposed of as a non-hazardous solid waste.



SPECIFICATIONS

- + **HCl Vapour Removal Capacity:** 10% by weight
- + **Physical Structure:** A porous pelet which is formed from the combination of powdered activated alumina and specialized chemical reagents which enhance the capacity for removal of HCl Vapours
- + **Reaction Byproducts:** Produces solid reactants within the media which can not be chemically reversed
- + **Manufacturing Method:** The pellets are formed in such a manner that the impregnates are applied during the pellet formation so that the impregnates are disrupted uniformly within the media. This ensures that the media is capable of adsorbing and removing chlorine or sulphur dioxide gas throughout the entire pellet.
- + **Ignitability:** The media is completely non-flammable and meets a 300°C auto ignition level as defined by ASTM-3466-76
- + **Physical Properties:**
 - Moisture Content: 15% maximum
 - Average Crush Strength: 35-70% maximum
 - Average Abrasion: 4.5% maximum
 - Bulk Density: 50 lbs/ft³ (800 kg/m³)
 - Pellet diameter: 0.125" nominal
- + **Pressure Drop (70°F Air):**
 - At 50 fpm face velocity: 0.45 IWC maximum per 12" media bed
 - At 100 fpm face velocity: 1.85 IWC maximum per 12" media bed

MEDIA REMAINING LIFE TESTING

Unisorb Canada provides free quarterly media testing for the life of the media installation. This testing provides critical data including remaining remaining life, and projected replacement date.

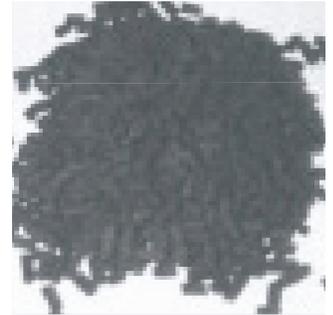
UL RATING

MK5 meets the requirements of a UL Class 2 fire rating.

AXA AMMONIA/AMINE ADSORBENT MEDIA

DESCRIPTION

AXA provides ideal adsorption of amines and other base compounds such as ammonia. It is developed from a highly activated carbon manufactured by steam activation. AXA has the perfect balance between adsorption and transportation pores enabling efficient adsorption and chemical reaction for a wide range of basic ammonia and amine vapors.



SPECIFICATIONS

GENERAL DESCRIPTION

Porous, cylindrical pellets of high grade bituminous activated carbon.

GENERAL DESCRIPTION

- + **Ammonia Removal Capacity:** 10% by weight
- + **CTC Value:** 60% min
- + **Surface Area:** 1050 m²/g
- + **Density:** 40 lbs/ft³ (641 kg/m³)
- + **Moisture Content:** 2%
- + **Hardness:** 97 min

MEDIA REMAINING LIFE TESTING

Unisorb Canada provides free quarterly media testing for the life of the media installation. This testing provides critical data including remaining carbon life, remaining permanganate content, total life prediction, moisture content, and projected replacement date. Date is provided for each of the separated components of a blend. All analysis are performed at our certified laboratory.