



# Product Info Sheet



## General Description

ArmaKleen™ M-HP-2 is the lowest foaming spray cleaner in the ArmaKleen line of products and can be used in High-Pressure cabinet washers with spray pressures above 60 psi. ArmaKleen M-HP-2 meets MIL-C-29602 titled “Cleaning Compounds for Parts Washers and Spray Cabinets”. This versatile aqueous cleaner is effective on a variety of soils and is safe on steel, aluminum, brass and copper. M-HP-2 effectively splits oil and can be used with oil skimming, coalescing and other filtration systems to extend cleaner bath life. Spray washing applications that continually foam even with the addition of defoamer should consider switching to ArmaKleen M-HP-2.

When left on metal surfaces, ArmaKleen M-HP-2 provides temporary indoor rust protection during storage and between operations. The amount of rust protection is dependent on many variables including the environmental condition of the storage facility.

<b>Features</b>	<b>Benefits</b>
Low Foaming	Will not foam in high pressure spray applications
Multi-metal safe	Can simultaneously clean steel and aluminum
No VOCs	0 g/L VOC content; meets all air quality standards
Cleaner/Rust Preventative	Cleans metals and provides short term rust protection
Non flammable	Improves employee safety and eliminates fire hazards
No phosphates, nitrites or amines	Safer for workers and the environment
Oil splitter	Does not emulsify oil

## Specification Conformance

ArmaKleen M-HP-2 conforms to the following specifications

- Military Specification - MIL-C-29602
- Pratt & Whitney PWA36604 - Aqueous Metal Cleaner
- Rolls Royce CSS253 – Test methods for qualification testing of processing agents
- General Electric – Recommended practice for certifying agent approval of cleaning products used on metallic jet engine hardware
- Allied Signal EMS 53170 – Material requirements for aqueous and semi-aqueous degreasing
- General Motors HMCS ID # 356203 & 342655

## Operating Parameters

pH of Concentrate: 11.8  
pH of 10% by volume dilution: 11.5  
pH of 5% by volume dilution: 10.9

**Operating Parameters – Cont.**

Equipment Type	M-HP-2 Concentration	Washer Temperature
Spray Washer	10% by volume	120°F to 160°F
Immersion Washer	10% by volume	120°F to 160°F
Ultrasonic Washer	10% by volume	120°F to 160°F
High Pressure Spray Washers	3% to 10% by volume	130°F to 160°F

**Safety-Kleen Part Numbers**

ArmaKleen™ M-HP-2 (55 Gallon Drum) SK P/N: 6313 (Inventory) 6435 (Sales to Customers)  
 ArmaKleen™ M-HP-2 (5 Gallon Pail) SK P/N: 6335 (Inventory) 6335 (Sales to Customers)  
 ArmaKleen™ M-HP-2 (275 Gallon Tote) SK P/N: 6313 (Inventory) 6835 (Sales to Customers)

**Additives**

ArmaKleen M-Defoamer HD SK P/N 6310 (Pints – 8 per case)  
 ArmaKleen M-RP (for added rust protection) SK P/N 6342 (5-gallon pail)

**Soil Compatibility**

Grease, oil, lubricants, machining fluids and lubricants, rust preventatives and other commercial and industrial soils.

**Substrate Compatibility**

Steel, stainless steel, cast iron, aluminum, copper, brass and other alloys

**Compliance Information**



**SDS Information**  
 SK P/N 82846 Concentrate English  
 SK P/N 82846 FR Concentrate French

**National Stock Number**  
 55 gallon – NSN # 6850-01-445-9325  
 5 gallon – NSN # 6850-01-446-4369

**Titration Information**

**Hach Titration Kit**

SK P/N 4623 Total Alkalinity Titration Kit (order through branch SAP)

**Procedure**

1. Fill graduated cylinder with 5 mL of ArmaKleen M-HP-2 cleaning solution. The bottom curve of the solution should touch the top of the indicated line.

2. Pour the measured amount of cleaning solution from the graduated cylinder into the Erlenmeyer titration flask. Rinse the cylinder with 5-8 mL of water and transfer it to the same flask.
3. Add 5 drops of Bromocresol Green-Methyl Red Indicator Solution (small dropper bottle) to the flask and mix to produce a blue color. Clean water may be added to dirty solutions to see the color change more clearly. Several more drops of indicator solution may also be added if the solution is excessively dirty.
4. Carefully add 1.0N Sulfuric Acid (square dropper bottle) one drop at a time to the flask, swirling the flask after each drop. Count the number of drops.
5. When the solution changes to a greenish brown or tan color you are near the end point. Continue adding and counting the number of drops until the solution turns to a peach or bright pink color and the addition of an one more drop does not cause any further color change.
6. Use the titration table to find the cleaner concentration from the number of drops of acid used.
7. Wash the test solution down a sink with water. Rinse the graduated cylinder and mixing flask well before storing in the case.

**Cat.# 27501-00 Titration Guide Rev. 6, 9/10**

TITRATION TABLE																						
% CLEANER CONCENTRATION																						
Cleaner	mls	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	25
Sample		DROPS OF ACID REQUIRED FOR COLOR CHANGE																				
M-HP-2	5	3	5	7	10	12	14	15	17	20	22	24	26	28	30	32	34	40	42	44	45	52

**AquaPhoenix Titration Kit**

SK P/N xxxx Total Alkalinity Titration Kit (order through branch SAP)

**Procedure**

1. Fill graduated cylinder with 5 mL of ArmaKleen M-HP-2 cleaning solution. The bottom curve of the solution should touch the top of the indicated line.
2. Pour the measured amount of cleaning solution from the graduated cylinder into the Erlenmeyer titration flask. Rinse the cylinder with 5-8 mL of water and transfer it to the same flask.
3. Add 5 drops of Bromocresol Green-Methyl Red Indicator Solution (small dropper bottle) to the flask and mix to produce a blue color. Clean water may be added to dirty solutions to see the color change more clearly. Several more drops of indicator solution may also be added if the solution is excessively dirty.
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6. Use the titration table to find the cleaner concentration from the number of drops of acid used.

- Wash the test solution down a sink with water. Rinse the graduated cylinder and mixing flask well before storing in the case.

**Cat.# xxxxx Titration Guide Rev. xxxxx**

TITRATION TABLE																						
		% CLEANER CONCENTRATION																				
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Sample		DROPS OF ACID REQUIRED FOR COLOR CHANGE																				
M-HP-2	5	1	2	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	25

**Precautions**

Foaming may occur at operating temperatures below 120°F. At elevated usage concentrations spotting may result in no-rinse applications.

*IMPORTANT: The information presented in this product labeling and literature, while not guaranteed, is true and accurate to the best of our knowledge. No warranty, express or implied, is made regarding performance, stability or otherwise. Such information is not intended to be all-inclusive, and the manner and conditions of particular uses may involve other or additional preparatory, performance or safety considerations. While our technical personnel will be happy to respond to questions, safe, effective handling and use remains the responsibility of the user.*