

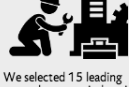
2013 Industrial Degreaser Ratings

We tested 15 leading degreasers to help you cut through the grime... and hype.

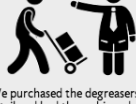


We have all heard the belief that the more caustic or "nasty" the degreaser, the better it works to cut grime... but there was very little actual data to back up that belief. We wanted to find out the truth on degreasers.

The Waste Minimization Forum (wastemin.com) had an independent lab perform ASTM Standard cleaning effectiveness testing on 15 leading degreasers.



We selected 15 leading general purpose industrial degreasers, both water- and solvent-based.



We purchased the degreasers at retail and had them shipped directly to an independent lab with expertise in solvent testing.



The lab performed ASTM G122 Standard testing, which is designed to measure the effectiveness of cleaning agents.



We took those results, pricing, and any health hazards as listed on SDS to create "the full picture."

See "Detailed Test Protocol" at the bottom of this document if you would like to learn more about how we tested.

Five findings we thought were interesting:

- 1) The most powerful degreaser was one of the LEAST hazardous
- 2) Brake cleaner (both chlorinated- and non-) makes for fairly ineffective and expensive general degreaser
- 3) A leading water-based degreaser stopped flash rust 3.5X longer (and better overall) than a leading solvent-based degreaser
- 4) A degreaser commonly sold at retail is a Characteristic Hazwaste
- 5) Price does not equal performance: the \$107/gallon degreaser came in 6th

The Ratings

		Notes and Warnings	\$ per oz @ max. label concentration	Oil / Grease Removal	Overall Score (coverage of grease and oil scores)
#1	CRC Hydroforce Industrial Degreaser	Non-Haz 	\$.24	96% 87%	91%
BEST OVERALL BEST ON GREASE	Dominant degreasing performance, readily biodegradable, wide compatibility and one of the safest degreasers we tested. A whopping 18 points ahead of second best for cleaning tough grease. Water-based, readily biodegradable, use full strength or dilute, \$31 per gallon. PN 14416				
#2	Oil Eater Cleaner and Degreaser	Non-Haz 	\$.12	98% 69%	83%
BEST BANG FOR THE BUCK	Will do the job on many surfaces... at about half the price of the #1 rated degreaser. Same performance as Purple Power, but a couple dollars less per gallon and a lower health risk profile. Water-based, use full strength or dilute, \$15 per gallon.	Use with caution on Al, painted or coated surfaces. Avoid use on glass.			
#3	Purple Power Industrial Strength	Non-Haz 	\$.13	98% 69%	83%
	Great overall performance at low cost. Will corrode bare metals like aluminum and magnesium if left on surface at high concentrations. Water-based, use full strength or dilute, \$17 per gallon.	Do not use on painted or coated surfaces. Use with caution on Al, Mg, Cu and Zn.			
#4	CRC Citrus Degreaser	RCRA Hazwaste 	\$.59	97% 66%	82%
	Solid performance, but being over twice the cost of #1 and a RCRA Hazwaste makes it not worth the hassle for most applications. Solvent-based, non-dilutable, \$75 per gallon.				
#5	Super Clean Tough Task	RCRA Hazwaste 	\$.08	97% 53%	75%
	The highest health hazard of ANY degreaser tested. SDS note a range of severe skin and inhalation hazards. Consider the far safer Enviro HD for similar performance at half the price. Water-based, use full strength or dilute, \$10.50 per gallon.	Caution on glass			
#6	CRC Heavy Duty Degreaser	RCRA Hazwaste 	\$.83	94% 55%	74%
	More than \$100 per gallon with PERC and chlorine content, we're not sure why you would use this mid-pack performer. Solvent-based, chlorinated, non-dilutable, \$107 per gallon.	Avoid use on metals like Al, Mg, Cu and Zn			
#7	Enviro Solutions HD Degreaser	Non-Haz 	\$.04	92% 53%	73%
	If you don't mind sacrificing a couple points of performance for low price, the low hazard profile and readily biodegradable composition makes this a solid overall choice. Water-based, readily biodegradable, dilute at 4:1 or greater, \$25 per gallon.				
#8	Ecolink Parts Kleen II	Non-Haz 	\$.26	97% 43%	70%
	While PKII was mid-pack for spray-on degreasing, we wonder if this formula isn't better suited for immersion tanks or parts washers to give it more time to loosen grease and grime. Solvent-based, non-dilutable, \$33 per gallon.				
#9	ZEP Industrial Purple Degreaser	RCRA Hazwaste 	\$.03	86% 43%	64%
	The low sticker price might be attractive to many, but it comes with fairly low performance and among the highest health hazards of the degreasers we tested. Water-based, dilute at 4:1 or greater, \$21 per gallon.	Avoid use on metals like Al, Mg, Cu and Zn			
#10	Facto HD40	Non-Haz 	\$.15	61% 57%	59%
	Middle of the road price with moderate performance and high health hazard profile. Not a lot going for it. Water-based, use at full strength or dilute, \$19 per gallon.				
#11	CRC Brakleen Chlorinated Brake Cleaner	RCRA Hazwaste 	\$.17	85% 26%	55%
	One of the old standbys of shops, chlorinated brake cleaner is in fact more effective than non-chlorinated... but they are both near the bottom on measured degreasing performance. Solvent-based, chlorinated, non-dilutable, \$22 per gallon (non-aerosol).				
#12	Simple Green Industrial Strength	Non-Haz 	\$.06	99.6% 7%	54%
SAFEST & LEAST TOUGH BEST FOR OIL	This degreaser may sacrifice performance on tough grease, but it had the best performance on oily surfaces, was by far the safest to use, and was among the least expensive. Water-based, readily biodegradable, may be disposed in sanitary sewer, dilute at 1:1 or greater, \$16 per gallon.				
#13	Ecolink Rip-Tide	Non-Haz 	\$.40	97% 7%	52%
	Similar to Simple Green in performance on both oil and grease... at 6 times the cost of Simple Green. Water-based, use at full strength or dilute, \$51 per gallon.				
#14	CRC Brakleen Non-Chlor. Brake Cleaner	RCRA Hazwaste 	\$.20	63% 8%	36%
	Significantly less effective overall than Simple Green... at three times the cost and significantly more hazard. Save it for brake jobs. Solvent-based, non-dilutable, \$25 per gallon.				
#15	Clean and Green HD Degreaser	Non-Haz 	\$.01	68% 2%	35%
	According to the instructions, 15:1 was the strongest recommended dilution. We wonder if it would be more effective if not so diluted. That said, Simple Green is still the "greener" choice. Water-based, dilute at 15:1 or greater, \$25 per gallon.				

"But, water-based degreasers promote rust!?"

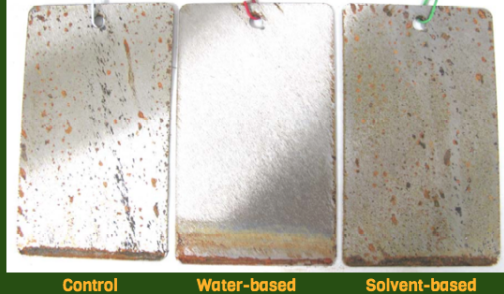
We wanted to test that, as well. So, we chose a leading water-based and a leading solvent-based degreaser to see if it was actually true.

The panels were sprayed with degreaser, allowed to dry, placed in a humidity cabinet and monitored for the first sign of rust (conducted in compliance with CC-018 Accelerated Corrosion Testing).

Time for first sign of rust to appear:

Bare Steel (Control) : 1 hour
Solvent-based degreaser (CRC HD) : 1 hour
Water-based degreaser (Oil Eater) : 3.5 hours

After 24 hours of the Accelerated Corrosion Test:



Control (Bare steel)

Water-based Oil Eater

Solvent-based CRC Heavy Duty

5 Things to know about The Waste Minimization Forum



1. It is a forum dedicated to sharing Best Practices for waste minimization, lean manufacturing and sustainability.
2. We are dedicated to creating real, usable insights and information that plants can use NOW.
3. No question is too large or too small for the Forum.
4. No fluff or spin is allowed. No selling, no press releases.
5. Join us at www.wastemin.com

Comments, feedback or ideas for new research are greatly appreciated, and we hope you found this helpful. Contact Andy James, Publisher of The Waste Minimization Forum: andy@wastemin.com

Detailed testing protocol

All testing was performed by an independent, ISO/IEC accredited lab selected for their specific expertise in solvents and corrosion testing. No "pre-briefing" occurred.

All degreasers were selected according to market share and popularity in plants and with enthusiasts, as well to include a range of prices and formulations. All degreasers were purchased at retail via Amazon.com, and were shipped directly to testing lab in sealed condition. We did not include shipping in price per gallon, and we believe Amazon offered the most consistent "street price."

Degreasers were selected for primary use to be spray or cold immersion degreasing more than use in a heated parts washer. We made this distinction because we believe parts washer solvents are formulated to a different set of functions, such as longer dwell times, contaminant load/recyclability and ability to be heated. Two brake cleaners were included as they are commonly used for general degreasing.

In keeping with ASTM and engineering standards, we are paraphrasing the test protocols below. Full test standards may be purchased for a nominal fee from ASTM International at astm.org

ASTM G-121 Standard ("Standard Practice for Preparation of Standard Stained Test Coupons for the Evaluation of Cleaning Agents") was used to prepare 1010 Carbon steel test panels before testing, which involves cleaning steel panels to a very specific standard before beginning degreaser testing.

ASTM G-122 Standard ("Standard Test for Evaluating the Effectiveness of Cleaning Agents") was used to evaluate degreasing performance, and defines the prescribed amount, application, drying time, mechanical agitation and measurement standards for evaluating cleaning agents. 10 minutes is the prescribed degreaser dwell time in the Standard, which we believe is reasonable.

All samples were tested in triplicate, representing six separate tests per degreaser (three oil, three grease). Findings are represented as percentage of oil or grease mass removed after samples are fully dried.

Degreasers were tested at manufacturers maximum concentration listed on bottle/label.

Mineral oil was used to represent a thin spray-type oily film for Oil Performance testing.

Cortec Corrlube grease was used to represent a persistent, industrial grease for Grease Performance testing.

CC-018 Accelerated Corrosion Testing was used to evaluate degreaser anti-corrosion performance for two samples and control. That test involved the application of degreaser to test panels, after which it was allowed to dry. The panels were then mounted in a humidity chamber operating to ASTM D-1748 Standard to accelerate corrosion. Panels are visually monitored for first appearance of rust every 30 minutes. Photographs shown were after 24 hours in the humidity chamber to allow for extended testing and visual confirmation.