



# UDICELL and EXACTFLO™

Product Line Overview



**ASK**CHEMICALS  
We advance your casting



# Improve Performance via Cleaner Metal

The ASK Chemicals Hi-Tech legacy name has represented superior quality, excellence and innovation within the metal filtration market for over three decades. Our engineers developed fully sintered reticulated ceramics in the early 1980's and ever since metalcasters have enjoyed new dimensions in filtration for higher temperature alloys worldwide. Today, our innovation legacy continues within our premiere brands, UDICELL™ and EXACTFLO™. ASK Chemicals offers a complete filter-portfolio consisting of traditional-formulations and custom designs to accommodate any metal application requirement. With in-house production we guarantee customer satisfaction and constant innovation: custom shapes, edge coating and breakthrough filtration units for large steel and iron castings.

At ASK Chemicals we provide innovation driven research through our product development approach. We focus specifically on market trends and customer demands because of the increasingly complex requirements our industry faces: reduced emissions, casting defect prevention, cost-efficiency, as well as overall casting quality. Such requirements necessitate more than just strong partnerships and outstanding technologies; rather, we believe that first-class research and development that focuses on efficiency, environmentally friendly solutions and key performance parameters is essential.

In addition we offer our customers a holistic approach that goes well beyond merely offering products. Our application technology and technical sales specialists, in particular, always assess the entire production process as a whole. Only this approach allows for customer specific solutions that are precisely tailored to meet customer requirements.

Finally, our specialists' expertise is complemented by a broad range of services that offers our customers real added value. In this way, for example, our design services can be systematically deployed to optimize the process as a whole – from conceptual development to actualized series production – thereby offering important savings and process improvement for our customers.





- Invented fully sintered reticulated ceramics (legacy)
- Over 30 years of filtration experience
- Industry leading innovations
- Holistic value added services

# Basic Information

## Filter Families

### ➤ UDICELL™

Highly robust filters meant for high temperature alloys and/or heavy castings.

### ➤ EXACTFLO™

Cost effective filters meant to control metal flow & inclusion removal for ferrous/non-ferrous.

### ➤ Exactfill housing systems

Filter housing systems, utilizing UDICELL™ filters, for heavy steel and iron castings.

## Filter material selection

Recommended metal type → **StL**  
Recommended pore sizes → **10 – 15**

	Filter material			
Metal type	Zirconia	Alumina	Silicon carbide	Carbon bonded
Steel ( <b>StL</b> )	■			■
Iron ( <b>GI, DI</b> )	■		■	■
Aluminum ( <b>Al</b> )		■	■	
Brass / Bronze / Copper ( <b>BBC</b> )	■	■	■	
Superalloys ( <b>Ni, Co</b> )	■	■		

## Pore size selection: sand foundry



	Pore size				
Metal type	10 ppi	15 ppi	20 ppi	30 ppi	45 ppi
Steel ( <b>StL</b> )	■	■			
Ductile iron ( <b>DI</b> )	■	■			
Gray iron ( <b>GI</b> )			■	■	■
Aluminum ( <b>Al</b> )	■	■	■	■	
Brass / Bronze / Copper ( <b>BBC</b> )	■	■	■	■	

## Custom solutions

Apart from the system solutions mentioned in this brochure, ASK Chemicals also offers you custom solutions to fit your individual process. Please contact us to discuss your specific needs.



# UDICELL™ Zirconia Filters

Industry leading chemical, thermal & mechanical stability



UDICELL™ filters are fully sintered ceramic filters made of partially stabilized zirconia. These filters are specifically designed for use in steel and iron foundries. UDICELL™ provides the highest consistency and performance for high temperature alloys and/or large pouring weights. The UDICELL™ filter is a cost efficient means of reducing castings defects.

## Benefits: PSZM (white)

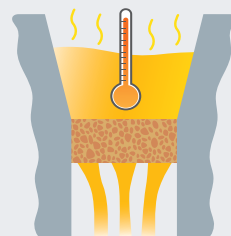
- Highest purity / chemical grade
- Open pore structure
- Extremely durable & consistent

## Benefits: PSZT (tan)

- High purity / thermal grade
- Open pore structure
- Extremely durable & consistent

### Zirconia for extreme conditions

UDICELL™ foam ceramic filters offer superior thermo-shock resilience as well as resistance against temperature fluctuations and reduced thermal absorption during pouring. In fact, UDICELL™ zirconia filters are capable of withstanding temperatures greater than 3,200 °F (1,760 °C). This capability allows for proper filtration of metals in the most extreme conditions.



Filter size		Ledge size		Flow rate		Capacity			
inch	mm	inch	mm	kg / sec	lb / sec	kg		lb	
						LCLA	SS	LCLA	SS
2 ODx0.75	50 ODx20	0.20	5	3	7	30	44	66	97
3 ODx1	75 ODx25	0.30	7	6	13	68	100	150	220
4 ODx1	100 ODx25	0.35	9	13	29	122	177	268	389
5 ODx1.25	125 ODx30	0.45	11	19	42	190	277	418	609
6 ODx1.25	150 ODx30	0.50	12	28	62	274	398	603	876
7 ODx1.25	175 ODx30	0.55	14	42	92	373	542	821	1,192
8 ODx1.5	200 ODx38	0.65	16	50	110	487	708	1,071	1,558
2x2x0.75	50x50x20	0.30	5	4	9	39	56	86	123
3x3x1	75x75x25	0.30	7	8	18	87	127	191	279
4x4x1	100x100x25	0.35	9	14	31	155	225	341	495
5x5x1.25	125x125x30	0.45	11	24	53	242	335	532	737
6x6x1.25	150x150x30	0.50	12	36	79	349	507	768	1,115
7x7x1.25	175x175x30	0.55	14	53	117	475	690	1,045	1,518
8x8x1.5	200x200x38	0.65	16	64	141	620	902	1,364	1,984

SS = Stainless Steel, LCLA = Low Carbon Low Alloy Steel

# UDICELL™ Carbon Bonded Filters

The ideal filter for priming difficulties



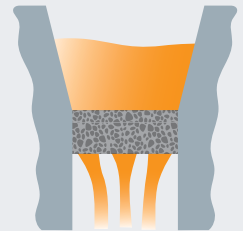
ASK Chemicals carbon bonded filters are used for ferrous alloys that may experience priming difficulties. The carbon bonded filters provide an excellent mix of priming efficiency with filtration effectiveness. A low percentage of carbon limits the possibility of contamination from carbon pick-up. UDICELL™ carbon bonded filters can be engineered in custom shapes, with a maximum dimension of 6" or 150 mm.

## Benefits

- Ideal for low pouring temperatures
- Efficient filtration & oxide reduction
- Available in round & square design  $\leq 6"$

### Stop waiting: speed up your priming

Priming difficulties are an irritating problem. While your filter primes your molten metal is getting cooler. This, in turn, plugs your filter pores and reduces its filtration capabilities. With UDICELL™ carbon bonded filters you bypass this issue because of its open pore structure. The result is fast even flow alongside more predictable mold filling times.



Filter size		Ledge size		Capacity	
inch	mm	inch	mm	kg/LCLA	lb/LCLA
2 ODx0.75	50 ODx20	0.20	5	39	86
3 ODx1	75 ODx25	0.30	7	88	194
4 ODx1	100 ODx25	0.35	9	159	349
5 ODx1.25	125 ODx30	0.45	11	247	543
6 ODx1.25	150 ODx30	0.50	12	356	784
2x2x0.75	50x50x20	0.20	5	51	112
3x3x1	75x75x25	0.30	7	113	249
4x4x1	100x100x25	0.35	9	202	443
5x5x1.25	125x125x30	0.45	11	315	692
6x6x1.25	150x150x30	0.50	12	454	998

LCLA = Low Carbon Low Alloy Steel

# EXACTFLO™ Cellular Filters

Pressed/extruded filters for improved flow control



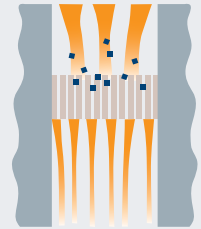
EXACTFLO™ cellular filters are ideally suited for both gray and ductile iron, as well as non-ferrous alloys. EXACTFLO™ cellular filters provide a highly repeatable cell structure to ensure consistent performance in regards to molten metal flow control. EXACTFLO™ cellular filters have both chemical inertness and mechanical strength, while providing a thermal robustness with alloys up to 1,450°C, or 2,650°F.

## Benefits

- Engineered to ensure consistency
- Available with round & square pores
- Reduces trapped gas
- Non-abrasive mold insertion

### 5-in-1 benefits with cellular filters from ASK Chemicals

EXACTFLO™ cellular filters are engineered to provide a unique combination of benefits in one filter. The first two advantages go hand-in-hand: dimensional accuracy and controlled metal flow. The consistent pattern design of the filter helps contribute to highly predictable flow rates. Additionally, our cellular filter have exceptional strength properties & thermal resistance. Oxide inclusion removal (top of filter) is the fifth, and final, featured benefit.



Filter size		Holes		Flow rate				Capacity			
inch	mm	size	qty	kg/sec		lb/sec		kg		lb	
				ductile	gray	ductile	gray	ductile	gray	ductile	gray
1.5x1.5x0.5	37x37x12.5	100 csi		1.5	2.9	3.2	6.4	23	46	51	102
1.5x1.5x0.5	37x37x12.5	2.3 mm	161	1.6	3.3	3.6	7.2	21	42	46	92
1.5x1.5x0.5	37x37x12.5	300 csi		N/A	1.9	N/A	4.2	N/A	35	N/A	76
2x2x0.5	50x50x12.5	100 csi		2.6	5.3	5.8	11.6	43	86	95	190
2x2x0.5	50x50x12.5	2.3 mm	294	3.0	6.0	6.6	13.2	38	76	84	168
2x2x0.5	50x50x12.5	300 csi		N/A	3.4	N/A	7.5	N/A	65	N/A	142
2.17x2.17x0.5	55x55x12.5	100 csi		3.2	6.4	7.0	14.0	52	104	114	228
2.17x2.17x0.5	55x55x12.5	2.3 mm	367	3.8	7.5	8.3	16.6	47	94	103	206
2.17x2.17x0.5	55x55x12.5	300 csi		N/A	4.1	N/A	9.1	N/A	78	N/A	172
2.6x2.6x0.5	66x66x12.5	100 csi		4.6	9.2	10.1	20.2	74	148	162	324
2.6x2.6x0.5	66x66x12.5	2.3 mm	537	5.5	11.0	12.1	24.2	69	138	152	304
2.6x2.6x0.5	66x66x12.5	300 csi		N/A	6.0	N/A	13.1	N/A	111	N/A	244
2.95x2.95x0.5	75x75x12.5	100 csi		6.0	11.9	13.1	26.2	96	192	211	422
2.95x2.95x0.5	75x75x12.5	2.5 mm	562	6.3	12.5	13.8	27.6	99	198	218	436
2.95x2.95x0.5	75x75x12.5	300 csi		N/A	7.7	N/A	17.0	N/A	144	N/A	316
3.2x3.2x0.5	81x81x12.5	100 csi		7.0	13.9	15.3	30.6	112	224	246	492
3.2x3.2x0.5	81x81x12.5	2.5 mm	710	7.9	15.8	17.4	34.8	125	250	275	550
3.2x3.2x0.5	81x81x12.5	300 csi		N/A	9.0	N/A	19.9	N/A	168	N/A	370

**Al**  
**10-30 ppi**

**Fe ductile**  
**10-15 ppi**

**Fe gray**  
**20-45 ppi**

# EXACTFLO™ Silicon Carbide Filters

Reticulated filters for increased cleanliness



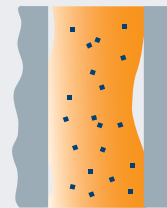
EXACTFLO™ SiC filters are ideally suited for both grey and ductile iron, as well as non-ferrous alloys. EXACTFLO™ SiC filters provide a highly porous, open structure with a tortuous path for metal flow resulting in cost effective and efficient removal of oxide inclusions. EXACTFLO™ SiC filters have chemical inertness and mechanical strength, while providing thermal robustness with alloys up to 1,510 °C, or 2,750 °F.

## Benefits

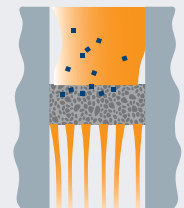
- Removes inclusions
- Provides laminar flow
- Improves surface finish

### The advantages of Improved laminar flow

EXACTFLO™ silicon carbide filters provide little turbulence during metal pouring. This has several advantages including the assurance of less gas absorption (i.e. oxidation). In addition, a higher quality metal will enter the mold resulting in lower rejection rates, less reworking, improved surfaces and increase cost effectiveness.



No filter



SiC filter

Filter size		Ledge size		Flow rate		Capacity					
inch	mm	inch	mm	kg / sec	lb / sec	ductile	kg gray	alum.	ductile	kg gray	alum.
2 ODx0.75	50 ODx22	0.20	5	3	7	39	78	27	86	172	60
3 ODx0.75	75 ODx22	0.30	7	6	13	88	176	—	194	387	—
4 ODx0.75	100 ODx22	0.35	9	13	29	157	314	—	345	691	—
5 ODx1.25	125 ODx30	0.45	11	19	42	245	490	169	539	1,078	375
6 ODx1.25	150 ODx30	0.50	12	28	62	353	706	243	777	1,553	540
1.5x1.5x0.5	38x38x13	0.20	5	2	4	29	58	—	64	128	—
2x2x0.75	50x50x22	0.20	5	4	9	50	100	21	110	220	47
2.17x2.17x0.5	55x55x13	0.20	5	4	9	60	121	—	132	266	—
2.4x2.4x0.75	60x60x22	0.30	7	6	13	72	144	—	158	317	—
3x3x0.75	75x75x22	0.30	7	8	18	112	225	—	246	495	—
4x4x0.75	100x100x22	0.35	9	14	31	200	400	—	440	880	—
5x5x1.25	125x125x30	0.45	11	24	53	312	625	132	686	1,375	294
5.25x5.25x0.75	134x134x22	0.45	11	28	62	359	718	—	790	1,580	—
6x6x1.25	150x150x30	0.50	12	36	79	450	900	—	990	1,980	—

Additional sizes are available; please consult your ASK-Representative



# UDICELL™ Exactfill Housing System

## Filter Systems for large steel & iron castings



The UDICELL™ Exactfill standard ceramic housings are a cost effective and efficient way to produce large ferrous castings. With the increased size capabilities of reticulated filter manufacturing, ASK leads the way in successful filtration in this segment of casting. When implemented in standard ceramic tile applications, the Exactfill housings are easily assembled in the gating system.

## Benefits

- 5 Styles to support different uses
- Cost effective
- Quick install & easy to use



Filter housing	Filter size		Max. flow rate		Max. capacity				Packaging
	inch	mm	kg / sec	lb / sec	kg ductile / LCLA	SS	kg ductile / LCLA	SS	Piece / pallet
Exactfill R-100	10 OD x 1.5	250 x 35	78	173	753	1,098	1,661	2,421	–
Exactfill R-90	9 OD x 1.5	225 x 35	64	140	618	901	1,363	1,987	630
Exactfill R-80	8 OD x 1.5	200 x 35	50	111	483	704	1,065	1,552	100
Exactfill R-70	7 OD x 1.25	175 x 35	38	85	370	539	815	1,189	144
Exactfill R-60	6 OD x 1.25	150 x 30	28	62	270	394	596	869	–
Exactfill T-60	6 x 6 x 1.25	150 x 150 x 30	36	79	346	505	763	1,112	245
Exactfill T-50	5 x 5 x 1.25	125 x 125 x 30	25	55	240	350	530	773	630
Exactfill E-60	6 x 6 x 1.25	150 x 150 x 30	36	79	346	505	763	1,112	384
Exactfill E-50	5 x 5 x 1.25	125 x 125 x 30	25	55	240	350	530	773	630
Exactfill I-30	3 x 3 x 0.75	75 x 75 x 22	9	20	87	126	191	278	1,008
Exactfill I-40	4 x 4 x 0.75	100 x 100 x 22	16	35	154	224	339	494	384
Exactfill S-30	3 x 3 x 1	75 x 75 x 25	9	20	87	126	191	278	1,800
Exactfill S-50	5 x 5 x 1.25	125 x 125 x 30	25	55	240	350	530	773	384
Exactfill S-60	6 x 6 x 1.25	150 x 150 x 30	36	79	346	505	763	1,112	180

**R** = round – vertically implemented UDICELL™ round filters, **T** = tee – horizontally implemented UDICELL™ square filters, **E** = elbow – horizontally implemented UDICELL™ square filters, **I** = iron – vertically implemented UDICELL™ square filters, **S** = steel – vertically implemented UDICELL™ square filters, **SS** = Stainless Steel

# UDICELL™ Exactfill Housing System

## Filtration system for large steel & iron castings



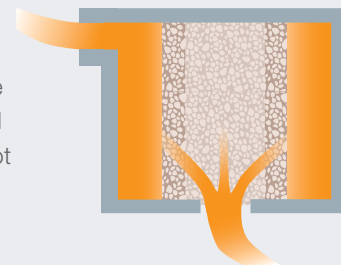
The exactfill housing system is easy to assemble within the gating and runner system. Assembly of multiple housing, at one or more levels, allows the molding and pouring of very large castings. Each piece has an outlet so you can close off either the top or bottom with the stopper. This feature eliminates the need for left or right hand versions. Also, these units are directly compatible with standard ceramic tile systems.

## Benefits

- Self-supporting geometry
- Very compact in size and construction
- Quick installation & easy to use

### Complete filtration coverage

The UDICELL™ exactfill housing system features an XL cylindrical UDICELL™ zirconia filter – the first of its kind. With one of these filters you can achieve total filtration from any angle. Compared to similar units using multiple filters our XL cylindrical version provides 3X more filter area! This not only increases filtration effectiveness but also assembly time and cost.



Filter housing	Filter size		Inlet /outlet diameter		Max. flow rate		Max. capacity				Packaging
	inch	mm	inch	mm	kg / sec	lb / sec	kg		lb		Piece / pallet
							ductile / LCLA	SS	ductile / LCLA	SS	
Exactfill-100	6 OD x 3.5 ID x 4	150 OD x 90 ID x 100	2.38	60	75	166	725	1,056	1,598	2,329	20
Exactfill-125	6 OD x 3.5 ID x 5	150 OD x 90 ID x 125	2.38	60	94	207	906	1,320	1,997	2,911	20
Exactfill-150	6 OD x 3.5 ID x 6	150 OD x 90 ID x 150	2.38	60	113	249	1,087	1,584	2,396	3,493	20
Exactfill-200	6 OD x 3.5 ID x 8	150 OD x 90 ID x 200	3.00	80	150	332	1,449	2,112	3,195	4,657	20

SS = Stainless Steel, LCLA = Low Carbon Low Alloy Steel

# Added Value for our Customers

## Application technology and technical sales – for complete process transparency

Application technology and technical sales at ASK Chemicals offer our customers comprehensive expertise in all areas of foundry technology and metallurgy. We offer a comprehensive service that focuses on the production process as a whole and helps customers not only to cut costs but also to enhance their processes. ASK Chemicals also conducts casting defect analysis and offers tailored training sessions on the customer's own premises.

### Benefits

- Improved decision-making via greater transparency
- Reliable recommendations
- Quick response
- Customized solution development
- Cost in-use reporting (i.e. savings)
- Casting defect analyses
- On-site training sessions

### EXACTCALC™

EXACTCALC™ software, which is exclusive to ASK Chemicals, was specifically designed to assist the foundry engineer with riser & gating system design. With EXACTCALC™ you'll receive critical and comprehensive calculations: casting weight, modulus, riser feeding distance, riser size, riser neck contact dimensions, gating system dimensions and filter size.

#### Benefits

- Accurate recommendations
- Customizable “Learn-Function” – specific to your foundry
- Printable results



## Design Services – for perfect casting results

Our Design Services team monitors the entire casting development process from initial design to final production of actual cast parts (i.e. prototypes). Our highly experienced engineers enjoy a wide range of knowledge within all aspects of foundry technology and metallurgy. In addition, we use only the most advanced simulation software offered today: MAGMA, Novacast, FLOW-3D and Arena-Flow®. Beyond fully optimized designs and simulation expertise, the Design Services team cooperates with external companies and service providers to assure proper project alignment for unparalleled results and guaranteed customer satisfaction.

### Benefits

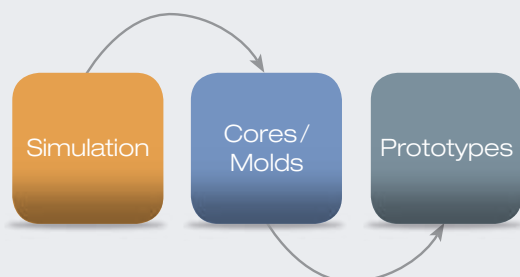
- Higher productivity and optimized catalyst consumption
- Manufacturing process design, including inorganic technology
- Calculation of optimal feed
- Optimized design and manufacture of model plates, core boxes and molds
- Less scrap
- Shorter product launch times
- Quicker time-to-market

### Simulation services

The simulation of casting processes provides foundries with invaluable casting mold information. Specifically, this benefit allows for the optimization of gating & feeding systems, overflows, venting design and risers. Moreover, it provides critical insight into the influences and effects directly related to casting integrity such as, cooling & heating measurements and filling & solidification times.

### From the idea to the prototype

ASK Chemicals supports your entire process from concept to prototype production. How you benefit: comprehensive expertise from a single source.



## Research and development – for innovation near you

Our R&D department performs innovation driven groundwork as well as market and customer driven development. Interaction between these three areas is of fundamental importance in offering our customers technologically sophisticated products and efficiency enhancing solutions at all times. Through close cooperation and the constant exchange of ideas with our application technology and technical sales specialists, R&D at ASK Chemicals is always in tune with the market and also has a presence on the customer's own premises itself.

### Benefits

- Highly experienced researchers
- Global presence and availability
- Comprehensive knowledge of the regional sand types and technological requirements
- Short response times for our customers
- First class equipment

## Comprehensive research and development services

### Pilot foundry

- Fully equipped research foundry
- Mold production, mold/core package assembly and casting
- "Real World" foundry process representation

### Metallurgical investigations

- Comprehensive examination of the graphite structure and metallic matrix: Graphite size, Number of nodules, Degree of dispersion, Nodularity, Ferrite/pearlite ratio
- Preparation of metallurgical reports

### Sand laboratory

- Examination of high temperature materials
- Testing of tensile strength, compression and transverse loading
- Sand characterization and analysis

### Product development and technical support

- Casting defect analysis
- Full spectrum chemical & polymer analysis
- Product, process and test method development





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