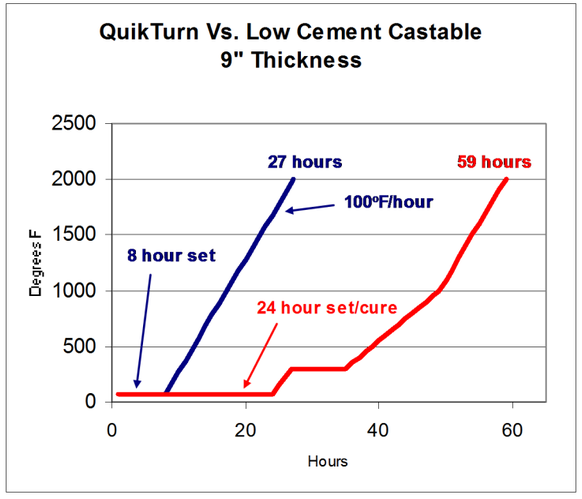
The Economic$ of QuikTurn

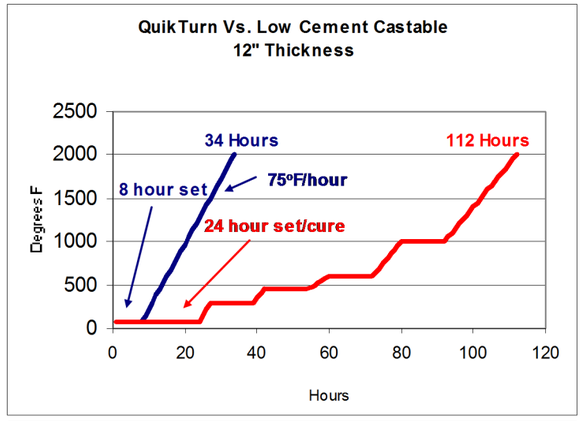
As the saying goes, “Time is money!” And we all know what “downtime” means in terms of money. Many manufacturers that use refractories have reluctantly given up some of their valuable time to long dryouts associated with monolithic linings. Yes, monolithics offer multiple installation choices that are often faster than brick installation, have comparable properties to brick, and offer improved lining life. For many manufacturers, the advantages of monolithics have been realized at the bottom line, even if long dryouts have left them dreaming of quicker turnarounds. How much additional revenue can be generated if the furnace/unit can begin production one or two days sooner?

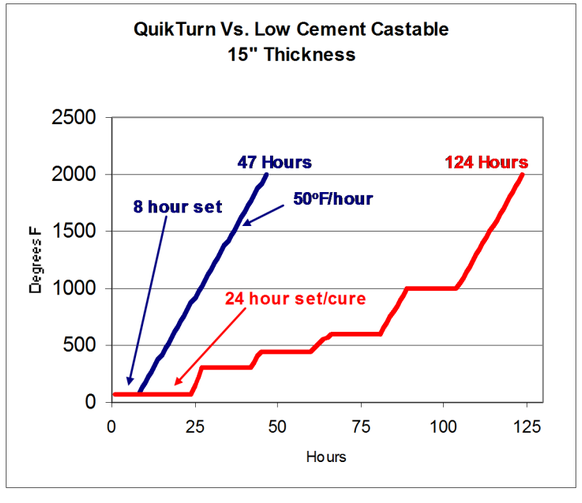
In recent years, refractory monolithic products have been introduced to the market-place that promise “no dryout,” “fast dryout,” or “improved dryout.” But the time-savings offered came at a price. That price was usually paid in limited installation options, special equipment requirements, reduced physical properties, and reduced temperature limits. Now you can get quicker turnarounds without paying the price normally associated with “fast dryout” products. **QuikTurn** products are here!

The **QuikTurn** family of products does not require time to cure and ramp-and-hold heating schedules associated with traditional monolithics. They do not have reduced properties or reduced temperature limits, and they don’t require special equipment for installation. We offer products ranging in alumina content from 45% to 77%, and we also have products that contain silicon carbide, fused silica, and AZS aggregate.

When comparing dryout times for **QuikTurn** products versus regular low-cement castables (LCC), the time savings can be dramatic. **QuikTurn** can significantly reduce the time required to dryout and heatup a monolithic lining, compared to that of a regular LCC. Also, when using **QuikTurn**, you can realize additional savings over that of a regular LCC because professional dryout assistance is usually not required (and the associated cost can be eliminated). The furnace can begin production days earlier than if a regular low-cement castable is used.







Graph Legend

QuikTurn — Low Cement Castable

Dryout Time Savings: QuikTurn vs. LCC

9” Lining: 32 hours 12” Lining: 78 hours 15” Lining: 77 hours

NOTE: These are graphical representations of RESCO’s standard dryout schedules. Consult our website or your local sales representative for detailed schedules. Many factors affect actual drying/heat-up time.

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TRI MEMBER

QuikTurn 45 PC
QuikTurn 60 PC
QuikTurn 60 G
QuikTurn 60 SF
QuikTurn 65 PCA
QuikTurn 32-70
QuikTurn 32-70 PC
QuikTurn 56 SC PC
QuikTurn 56 SC G
QuikTurn AZS PC
QuikTurn FS-PC

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QuikTurn

RAPID HEAT-UP MONOLITHIC REFRACTORIES

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QuikTurn

QuikTurn 45 PC is a 45% alumina, ultra-low cement monolithic refractory. This product can be installed using vibration casting, pumping, and wet shotcreting techniques.

QuikTurn 60 PC is a 60% alumina, mullite-based, ultra-low cement castable that can be installed using vibration casting, pumping, and wet shotcreting techniques. **QuikTurn 60 PC** has excellent alkali and abrasion resistance combined with good resistance to thermal shock.

QuikTurn 60 G is a 60% alumina, mullite-based, ultra-low cement gunning mix that can be installed using normal dry gunning techniques. This product is an ideal choice for repairing refractory linings because it offers excellent properties compared to conventional gun mixes, along with faster turnaround compared to regular low-cement gun mixes.

QuikTurn 60 SF is a 60% alumina, ultra-low cement castable. This product should be installed via self-leveling only.

QuikTurn 65 PCA is a 65% alumina low cement castable. It can be pumped, and it has been designed for aluminum contact applications.

QuikTurn 32-70 is a 3200°F, 77% alumina, ultra-low cement castable that is installed by vibration casting only.

		QuikTurn 45 PC	QuikTurn 60 PC	QuikTurn 60 SF	QuikTurn 65 PCA	QuikTurn 32-70	QuikTurn 32-70 PC	QuikTurn 56 SC PC	QuikTurn 60 G	QuikTurn 56 SC G	QuikTurn AZS PC	QuikTurn FS-PC
Maximum Service Temp.	°F	3000	3100	3100	3000/2000*	3200	3200	2900	3100	2900	2800	2000/3000 **
	°C	1650	1700	1700	1650/1095*	1760	1760	1590	1700	1590	1538	1093/1650
Bulk Density	lb/Ft^3, 220°F	--	155	--	--	--	--	--	148	149	---	134
	kg/m^3, 110°C	--	2,510	--	--	--	--	--	2,379	2,413	---	2,144
	lb/Ft^3, 1500°F	144	152	150	164	170	170	155	143	147	176	128
	kg/m^3, 815°C	2,307	2,461	2,400	2,630	2,720	2,720	2,510	2,316	2,380	2,816	2,048
Cold Crushing Strength	lb/in^2, 1500°F	8,000-10,000	9,000-13,000	6,000-8,500	11,300	17,000	13,000	9,400	7,500-12,000	14,500	12,000	8,000
	kg/cm^2, 815°C	562-703	630-910	420-595	795	1195	910	658	525-840	1,015	840	560
Modulus of Rupture	lb/in^2, 1500°F	--	2,000-3,000	--	2,075	1,700	1,040	780	2,000-3,000	3,300	---	1,150
	kg/cm^2, 815°C	--	140-210	--	145	120	73	55	140-210	213	---	81
Thermal Conductivity (K-Factor)	BTU,ft^2,°F,in., 1000°F	--	10.0	--	--	--	--	--	10.0	--	--	--
	W/m,K., 540°C	--	1.44	--	--	--	--	--	1.44	--	--	--
	BTU,ft^2,°F,in., 1500°F	--	10.0	--	--	--	--	--	10.0	38.0	--	--
	W/m,K, 815°C	--	1.44	--	--	--	--	--	1.44	5.47	--	--
	BTU,ft^2,°F,in., 2000°F	--	10.0	--	--	--	--	--	10.0	44.0	--	--
	W/m,K, 1095°C	--	1.44	--	--	--	--	--	1.44	6.33	--	--
Erosion Loss	cc, 1500°F	<12.0	<12.0	<15.1	--	--	6.0	<12.0	--	<12.0	5.0	<14
Permanent Linear Change	%, 1500°F (815°C)	0.0 to -0.3	-0.1 to -0.3	0.0 to -0.1	0.0 to -0.1	-0.2	-0.3	-0.1	-0.1 to -0.3	-0.2	0.0 to -0.3	0.0 to -0.3
Chemical Analysis, %	Al_2O_3	45.9	61.3	63.9	64.6	76.7	76.7	32.3	60.8	27.5	53.7	23.6
	SiO_2	47.4	29.9	29.4	26.5	18.5	18.5	11.9	30.4	15.3	19.5	74.5
	Fe_2O_3	0.9	0.9	0.9	0.9	1.1	1.0	0.4	0.9	0.3	0.2	0.2
	TiO_2	1.4	1.8	1.5	1.7	2.4	2.5	0.7	1.8	0.5	0.3	0.3
	CaO	0.9	0.9	0.9	0.9	0.7	1.0	1.3	0.9	0.9	0.9	0.9
	SiC	--	--	--	--	--	--	53.3	--	54.9	4.9	---
	ZrO_2	--	--	--	--	--	--	--	--	--	20.3	---
	Alkalies	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.1

* Denotes refractory/aluminum contact temperature limits.

** Denotes cyclic/constant temperature limits

QuikTurn 32-70 PC is a 3200°F, 77% alumina, ultra-low cement castable that is installed by vibration casting, pumping, or shotcreting.

QuikTurn 56 SC PC is a silicon carbide-based, ultra-low cement castable that can be installed with vibration casting, pumping, and wet shotcreting methods. This product has a temperature limit of 2900°F and it is very resistant to abrasion and alkali attack. It also has a high thermal conductivity.

QuikTurn 56 SC G is a silicon carbide-based, ultra-low cement gunning mix. It can be installed using normal dry gunning equipment. This product features high thermal conductivity with very good abrasion and alkali resistance.

QuikTurn AZS PC is an ultra low cement castable that contains alumina-zirconia-silica (AZS) aggregate and can be vibration cast, pumped, and shotcreted. This product was formulated specifically for cement preheater tower applications that require an abrasion-resistant monolithic refractory that resists dust build up.

QuikTurn FS-PC is a fused silica-based, ultra low cement castable that can be vibration cast or pump cast. This product features excellent thermal shock resistance at temperatures below 2000 °F.