

# Advanced materials & solutions for high temperatures



# High Temperature Mission

- To engineer **innovative solutions** for our **customers**

- High temperature
- Corrosion
- Mechanical wear

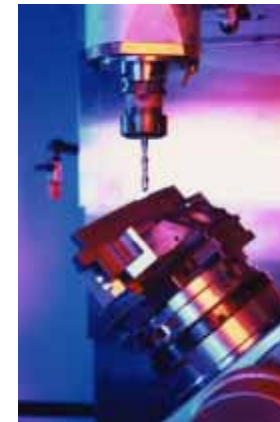
# High Temperature From material to engineering solutions



Iso-moulded and extruded graphite  
C/C composites  
Insulation materials  
Sintered SiC



Systems,  
Enhancement on carbon  
and graphite materials

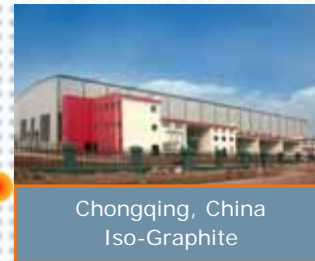


Machining  
capabilities



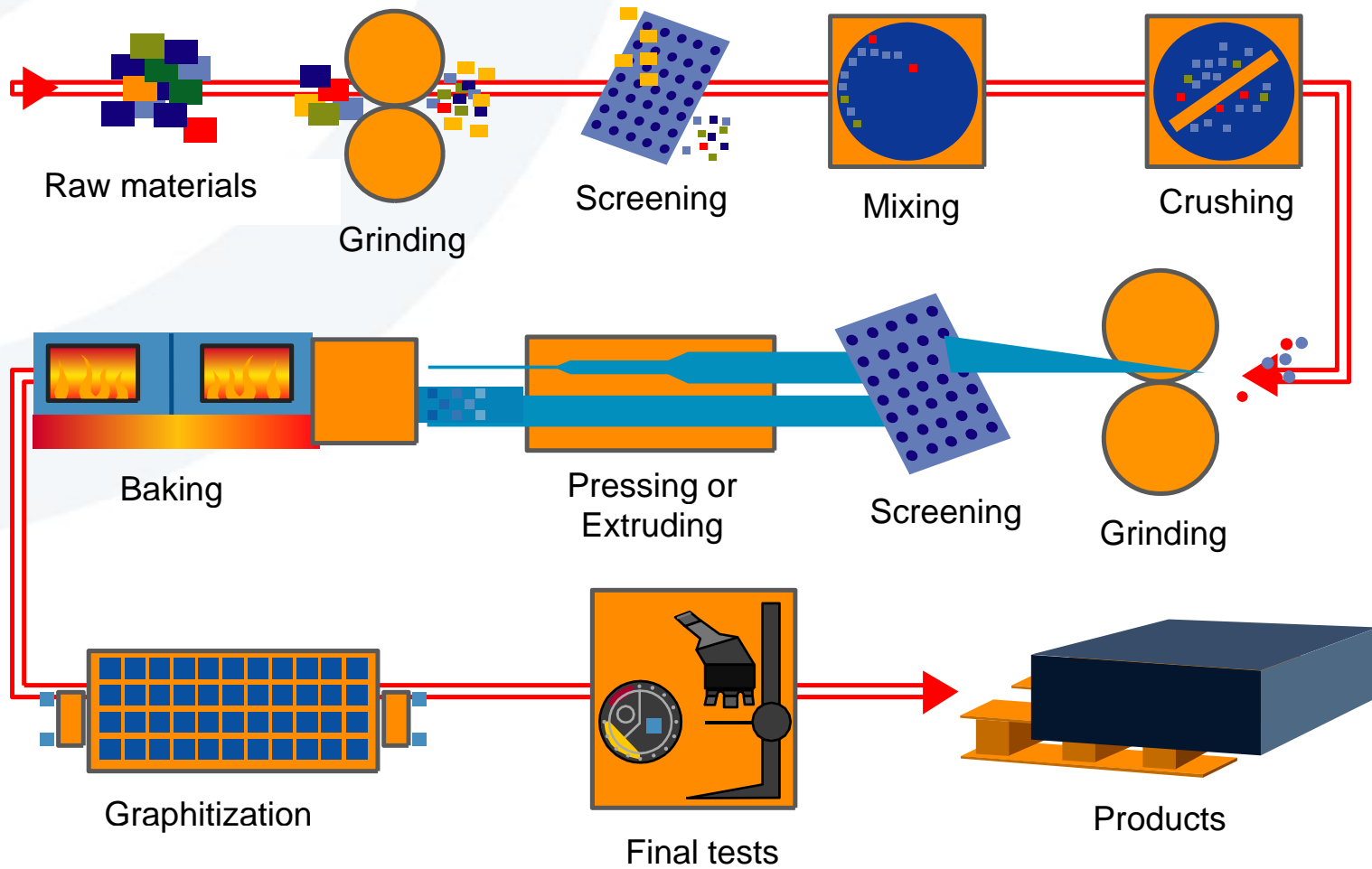
# High Temperature - Materials

## Main production sites





# High Temperature – Materials Graphite manufacturing



# High Temperature - Materials

## Rigid carbon insulation CALCARB®

- **CALCARB® CBCF** (Carbon Bonded Carbon Fibre) shows **high performance** and very **homogeneous insulation** properties.
- **CALCARB® CBCF** can be **machined accurately** and can be protected with painting or CVD coating in order to get **extended lifetime** for semicon and PV applications.



# High Temperature - Materials

## CFC- Carbon/Carbon composites AEROLOR®

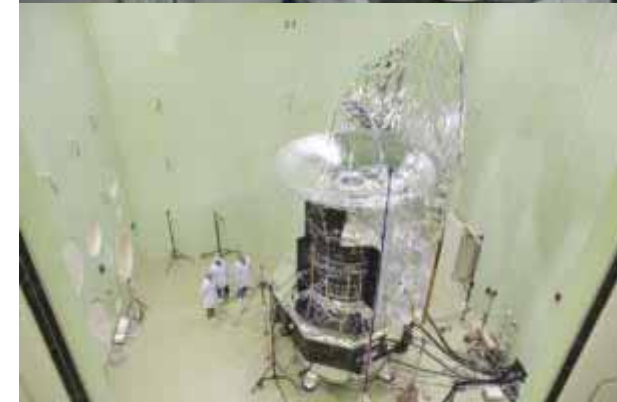
- **3 Dimensional** structure shows high mechanical strength, reduced oxidation and delamination.
- Available in **large sizes** up to 2200 mm.



# High Temperature - Materials

## Sintered Silicon Carbide BOOSTEC®

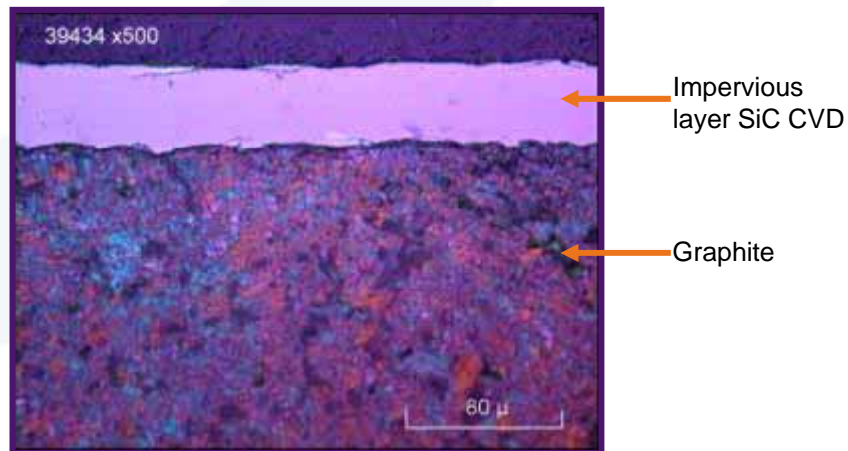
- **Boostec®** shows high thermal conductivity and mechanical strength.
- **Boostec® SiC** is available in **diameter 1500 mm** through isostatic pulling.
- **Boostec® SiC** is available up to 3500 mm in machined parts thanks to patented SiC brazing technology.



# High Temperature - Materials

## Silicon Carbide coating on graphite

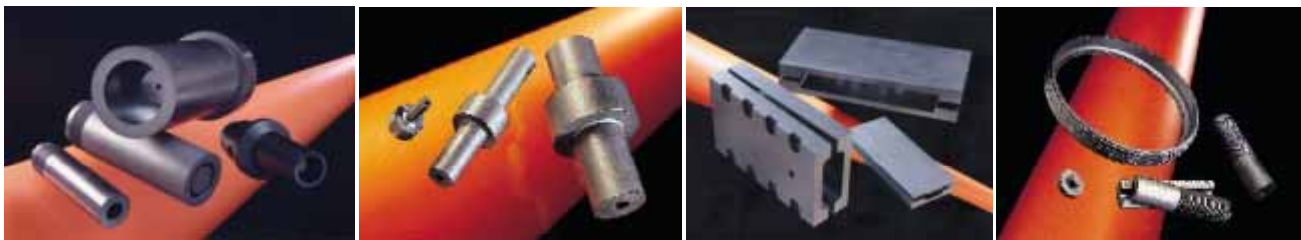
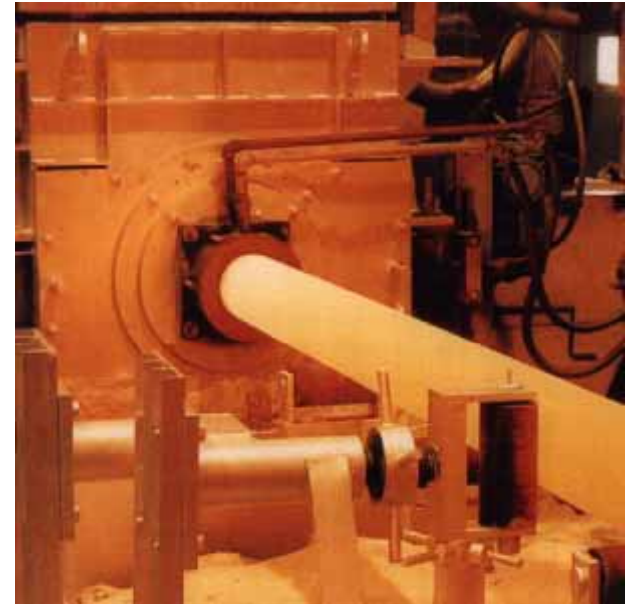
- SiC is deposited by CVD on the surface of specially engineered graphite grades (cracking of MTS).



- Improve chemical resistance to  $H_2$ ,  $HCl$ ,  $HF$ ,  $O_2$ ,  $SiO$ ,  $NH_3$ ,...
- Avoid pollutions of semiconductor wafers or reactants.

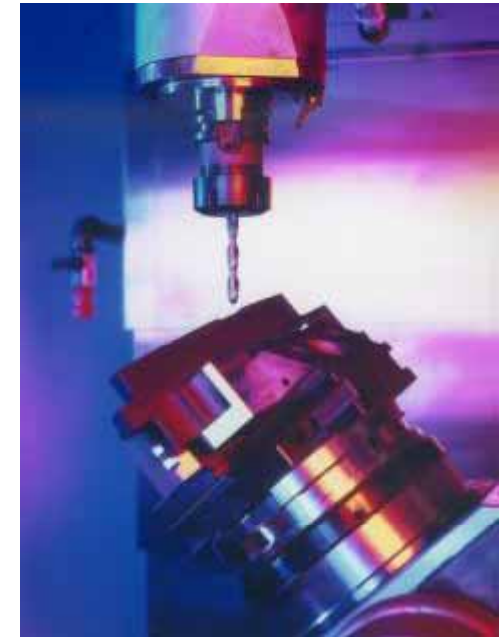
# High Temperature Continuous casting of metals

- Dedicated graphite **grades**
- **Cost effective** choice according to your casting operation
- High thermal **conductivity** and enhanced lifetime
- **Machining** “know how” and service



# High Temperature ELLOR® - E D M

- A **wide range** of grades from roughing to ultra-fine precision machining
- Extensive distribution **network**
- ELLOR graphite grades **approved** by EDM machine manufacturers
- **Custom machined** electrodes on request



# High Temperature CERBERITE® Hot glass handling

- **Proven solutions** for the glass industry
- Only **one source** complete system supplier
- Fully **integrated supplier** from carbon materials to systems
- A **complete product range** combining metallic hardware and carbon-based contact materials
- **Worldwide network** with local service



# High Temperature Applications in Semicon



SiO<sub>2</sub>



Ultra pure Si



CZ – Monocrystal growing

SiC coating



Wafer processing

SiC coating

## Epitaxy

- Barrels
- Pancakes
- Single wafers



SiC = Impervious layer (non pollution / increased lifetime)

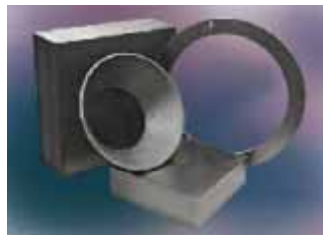
# High Temperature Semiconductor Applications

- **Innovative solutions** for the semiconductor industry from CZ to wafer processing
  - Dedicated graphite grades
  - Highly purified graphite & ETV-ICP impurity analysis
  - SiC coating CARBOSIL®
  - Carbon and graphite enhancement
  - Rigid carbon insulation CALCARB® & ISOLOR®
  - Carbon/Carbon composites
- Unique **machining** competences
- Clean room packaging
- **Partnership** with O.E.M.s



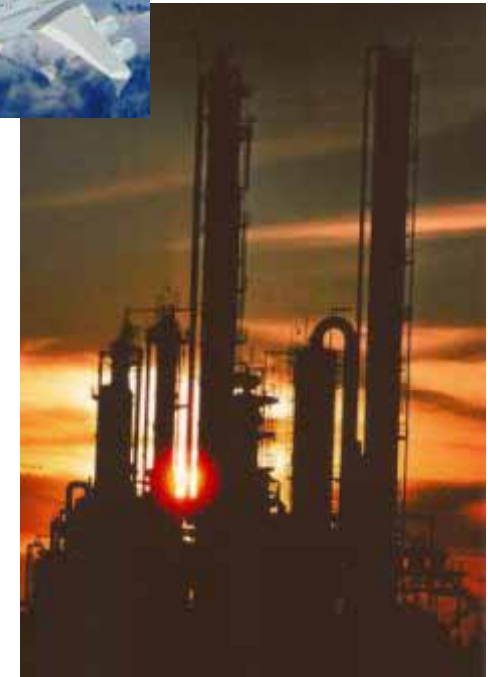
# High Temperature Solar silicon and photovoltaics

- **Dedicated solutions** for solar silicon and photovoltaics
  - Highly purified graphite
  - ETV-ICP impurity analysis
  - SiC coating CARBOSIL®
  - Carbon and graphite enhancement
  - Rigid carbon insulation CALCARB® & ISOLOR®
- Large size in isostatic graphite and insulation (Ø 1500 mm) and carbon / carbon composites (Ø 2200 mm)
- Unique **machining** competences
- **Partnership** with O.E.M.s



# High Temperature Carbon friction materials

- **Dry friction** conditions
- Cryogenic and high **temperatures**
- **Corrosive** applications (basis, solvent, acid)
- Reducing lubrication in mechanical equipment
- Low and stable **friction coefficient**
- **High speed** friction applications
- Air bearings
- Thermal shock conditions
- When **weight** saving is required



# High Temperature Dynamic sealing applications

- **Solutions** for
  - linear and rotation movement
  - high speed in dry friction
  - application when other materials cannot resist severe technical conditions
- **Increased lifetime**
- The Carbon material solution even in **dry friction conditions**



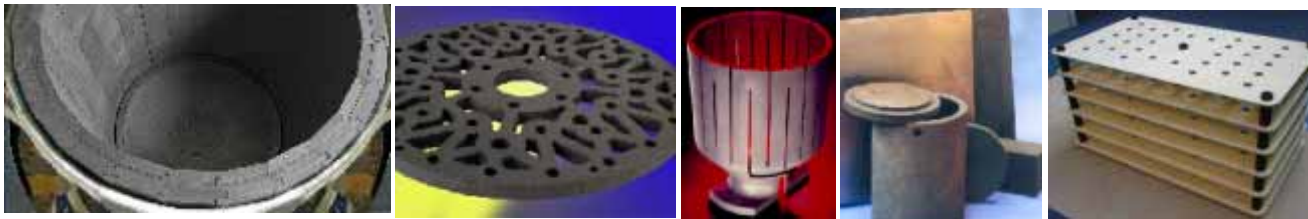
# High Temperature PAPYEX flexible graphite

- **Compressibility** and elastic recovery
- Chemical inertia and **resistance** to temperature
- **Approved** by specialized institutes (TÜV, BAM...) for the chemical industry
- Used for **dynamic** and **static sealing** applications, and for **thermal** insulation
- An **asbestos substitute** material



# High Temperature Furnace equipment

- **Graphite** (resistors)
- **AEROLOR**® C/C composites
  - 3D and 2D grades
- **Thermal insulation**
  - Flexible graphite **PAPYEX**®
  - **ISOLOR**® and **CALCARB**® insulation
- From **materials** to **thermal engineering**



# ANTICORROSION AND PROCESS EQUIPMENT



*Echangeurs  
de chaleur*



*Appareils  
sous pression*



*Colonnes*

*Systèmes  
anti-corrosion*

*Tuyauterie  
et accessoires*



*Agitateurs*



**MERSEN**

## MERSEN, UN EXPERT DES MATÉRIAUX ET DES ÉQUIPEMENTS POUR LES ENVIRONNEMENTS EXTRÊMES

Fort de ses expertises dans les matériaux haute performance, Mersen conçoit des solutions innovantes et adaptées aux besoins de ses clients pour optimiser leur performance industrielle dans des secteurs comme l'énergie (nucléaire et solaire), la chimie, la chimie fine, l'eau et les industries de procédés (métallurgie).

Les équipements conçus et fabriqués par Mersen répondent aux besoins de nos clients grâce à notre expérience et compétences tant en design thermique qu'en ingénierie des procédés et matériaux anti-corrosion. Tous ces équipements et systèmes sont conformes aux normes internationales telles que ASME, AS ADM, JIS, CODAP, RCCM, HAF 601.

Pour garantir un service clients optimal, Mersen s'appuie sur ses 220 000 m<sup>2</sup> d'unités de production aux USA, Europe, Inde et Chine.



## UNE OFFRE COMPLÈTE D'ÉQUIPEMENTS ET DE MATÉRIAUX

Pour plus d'informations sur nos équipements, consultez nos brochures dédiées aux colonnes, appareils sous pression, échangeurs de chaleur, systèmes, agitateurs et tuyauterie sont à votre disposition.

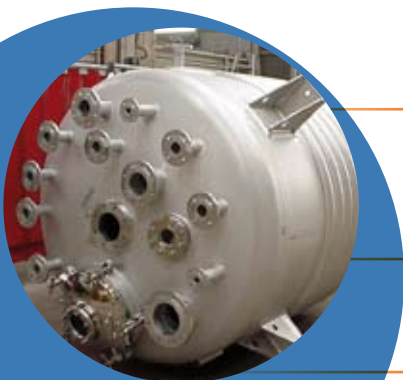
	Appareils sous pression	Agitateurs	Échangeurs de chaleur		Colonnes	Tuyauterie Accessoires
			à blocs ou à plaques	tubulaires		
Graphite						
SiC						
Tantale						
Zirconium						
Titane						
Acier Carbone Inox Alliage de Nickel						
Polymères fluorés						
						
<div style="background-color: #008080; color: white; padding: 10px; border-radius: 10px; display: inline-block;"> <h3>Systèmes Anti-corrosion</h3> </div>						

## DU GRAPHITE AUX ÉNERGIES RENOUVELABLES



2010 :

Carbone Lorraine change de nom et devient Mersen. Création d'une usine de 150 000 m<sup>2</sup> à Shanghai pouvant fabriquer toute notre gamme d'équipements



2009 :

Entrée sur le marché du nucléaire avec l'acquisition de 2C Cellier

2009 :

Acquisition de Lump, entreprise dédiée aux agitateurs

2008 :

Extension de notre gamme de matériaux à l'acier carbone et à l'acier inoxydable à travers l'acquisition de Xianda, société chinoise. Fabrication de réacteurs en zirconium CL-Clad<sup>®</sup> pour les applications liées à l'acide acétique



2007 :

Réalisation de la première colonne en tantale CL-Clad<sup>®</sup>



2006 :

Renforcement de notre expertise dans les échangeurs de chaleur avec l'acquisition de Kapp, un spécialiste des échangeurs à plaques soudés

2004 :

Fabrication du 1000<sup>ème</sup> échangeur de chaleur en graphite dans notre usine de Shanghai

2000 :

Nouveau four pour les tubes de 6 mètres de long en graphite



1990's :

Avancée dans les métaux nobles avec l'acquisition d'Astrococosmos et de Cometec

1960's :

1<sup>ère</sup> unité de synthèse d'acide chlorhydrique

1930's :

1<sup>er</sup> brevet à portée internationale déposé pour le graphite



### • Innovation matériaux

#### • Graphilor 3®

Le seul graphite imprégné combinant le graphite isostatique et une imprégnation spécifique (phénolique, carbone, PTFE).

##### **Avantages clients**

- Grande résistance à la corrosion
- Meilleure résistance mécanique et en température

#### • Imprégnations XTH et XC

Imprégnations exclusives en PTFE et carbone à l'échelle mondiale.

##### **Avantages clients**

- Résistance en température jusqu'à 230°C et 430°C
- Grande résistance à la corrosion

#### • CL-Clad®

Procédé de brasage breveté et développé par Mersen pour le tantale et le zirconium. La technologie CL-Clad® convient parfaitement aux équipements sous pression et résistant à la corrosion.

##### **Avantages clients**

- Technologie flexible
- Complète résistance au vide (grâce à l'adhérence entre les métaux et le support)
- Un design répondant aux normes de sécurité (design complètement soudé c'est-à-dire sans joint)
- Résistances thermique et mécanique

### • Innovations produits

#### • Tubes en Graphilor 3®

6 mètres de long sans joint

#### • Colonnes en PTFE

Diamètre jusqu'à DN2000 sans soudure

#### • HCI Sintaclor® avec récupération de chaleur

Unité de synthèse HCI avec production de vapeur pour augmenter l'efficacité énergétique

#### • CL-Clad® Heatex® en tantale

Echangeurs à plaques soudés en tantale CL-Clad® spécialement conçus pour les industries de la chimie fine et pharmaceutique

## APPAREILS SOUS PRESSION ET COLONNES



Colonne en CL-Clad® tantale

Mersen conçoit et fabrique des appareils sous pression en acier carbone, acier inoxydable, alliages de nickel ainsi qu'en matériaux anti-corrosion très élaborés comme le titane, le zirconium et le tantale.

L'expérience de Mersen permet de concevoir et réaliser des appareils massifs, revêtus ou clad-dés. Depuis 2006, Mersen a développé et breveté avec succès sa propre technologie de cladage nommée CL-Clad®.

Notre longue expérience nous permet de maîtriser tous les procédés de soudage usités: GTAW, GMAW, SAW, PAW, FCAW, SMAW.

Le service ingénierie de Mersen travaille dans le respect des codes internationaux : ASME, AS, ADM, JIS, CODAP, RTOD ou RCCM dans le domaine nucléaire.

Tous nos appareils sous pression et colonnes répondent aux certifications internationales : ASME U, DESP, ISO 9001, ISO 14001, OHSAS 18001, SELO, KGS, GOST-R, HAF 601.

Réacteur en clad zirconium



Réacteur agité

### Applications clés

- Chimie (acide acétique)
- Chimie fine et pharmacie
- Pétro-chimie
- Mine et hydro-métallurgie
- Energies
- Environnement, dessalement d'eau de mer
- Séparation d'air

### Éléments internes :

En complément, Mersen fournit différents internes de colonnes en Graphilor®, fluoropolymère (PTFE, PVDF), métaux (tantale, zirconium, titane, et alliages de nickel), tels que supports dévésiculeurs (demisters), plateaux de distribution, anneaux de garnissage...



Appareil sous pression en titane



Colonne en CL-Clad® tantale



Appareil sous pression en clad zirconium

Depuis de nombreuses années, Mersen conçoit et fabrique une large gamme d'échangeurs de chaleur, quelque soient les matériaux ou la technologie. Nous sommes un expert reconnu en conceptions thermique et mécanique pour tous types d'échangeurs de chaleur (condenseur, évaporateurs ...) grâce, notamment, à de performants outils de calculs d'efficacité thermique.

Tous les échangeurs de chaleur produits par Mersen répondent aux réglementations en vigueur : TEMA, ASME, CODAP, ADM, JIS, RCCM, RTOD.

Nos échangeurs de chaleur répondent aux fortes contraintes de process grâce à l'expertise matériaux de Mersen, notamment le Graphilor®3.

### La gamme de nos échangeurs de chaleur comprend :

- Échangeurs de chaleur à blocs - forme cylindrique ou cubique - en graphite ou SiC
- Échangeurs de chaleur à tubes - Calandre & tubes, baïonnettes, serpentins - en graphite, métaux ou métaux nobles
- Échangeurs de chaleur à plaques - forme cylindrique ou cubique - plaques soudées ou plaques et joints - métaux ou métaux

Echangeur de chaleur à plaques soudées type S



### Applications clés

- Chimie (acide phosphorique)
- Chimie fine et pharmacie
- Pétro-chimie
- Mine et hydro-métallurgie
- Energies
- Environnement, traitement des eaux
- Séparation d'air

Echangeur de chaleur tubulaire en titane Grade 2



Blocs en Graphilor®



Echangeur de chaleur tubulaire en Graphilor®



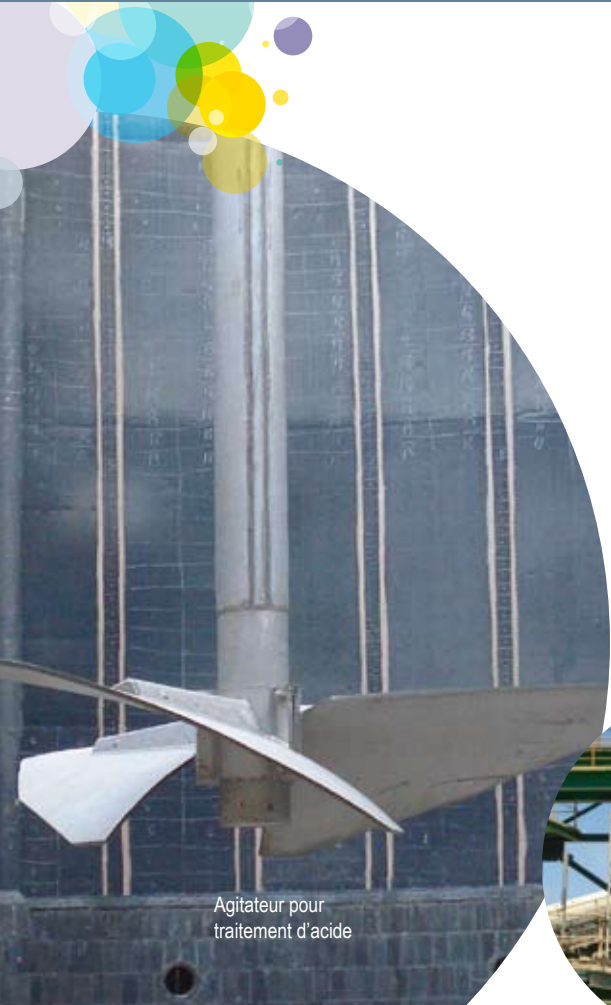
Baïonnettes en tantale

## LES AGITATEURS

Les agitateurs sont un élément clé dans la plupart des procédés de génie chimique. Depuis plus de 50 ans, les agitateurs Mersen sont conçus et fabriqués de manière à répondre à tous les besoins spécifiques de nos clients.

Les agitateurs sont composés d'une partie mécanique visible, la "tête d'agitation" et d'une partie hydraulique dans la cuve, appelée "mobile d'agitation". Du dimensionnement et de la conception du mobile d'agitation dépend la performance du procédé industriel.


Depuis de nombreuses années, Mersen a développé une large gamme de mobiles d'agitation répondant aux exigences les plus fortes de nos clients, ainsi que différents modèles de têtes d'agitation pour assurer la fiabilité et la longévité de ses agitateurs. Les agitateurs peuvent être associés à des réacteurs pour composer un skid clé en main.



Agitateur pour traitement d'acide

### Applications clés

- Acide phosphorique
- Chimie fine et pharmacie
- Pétro-chimie
- Mine et hydro-métallurgie
- Energies, pétrole et gaz
- Environnement, traitement des eaux



Agitateur pour pulpe phosphate

### Mersen propose une large gamme d'agitateurs et de mobiles d'agitation :

- Les agitateurs verticaux sans étanchéité
- Les agitateurs verticaux à étanchéité
- Les agitateurs à entrée latérale
- Les agitateurs personnalisés
- Les agitateurs XXL et racleurs
- Les mobiles d'agitation



Hélice à débit axial type LB



Agitateurs pour floculation en traitement des eaux



Agitateur entrée latérale – stockage vins

Mersen fabrique des systèmes depuis plus de 50 ans sur les 5 continents. Avec plus de 600 références dans le monde, Mersen est l'un des leaders dans la conception et la fabrication des systèmes HCl, notamment la synthèse, l'absorption ou le stripping.

Mersen propose une gamme complète de systèmes pour l'industrie chimique depuis l'élaboration des spécifications techniques et contractuelles, les équipements (échangeurs de chaleur, colonnes, réacteurs, tuyauterie) jusqu'à l'instrumentation, les armoires de contrôle et les options d'ingénierie au sein d'un système clé en main.

Les systèmes Mersen s'appuient sur notre forte expertise en matériaux anti-corrosion notamment Graphilor®3, Armylor®, métaux nobles (titane, zirconium, tantale), permettant leur parfaite intégration dans les process hautement corrosifs.

### Les grands systèmes d'ingénierie de Mersen incluent :

- Sintaclor®, synthèse d'HCl
- Acide chlorhydrique par absorption
- Production d'HCl par desorption/ systèmes de récupération
- Systèmes de dilution d'acides
- Unités de chauffage et de refroidissement, par exemple pour les bains de décapage
- Système de groupe à vide pour applications corrosives



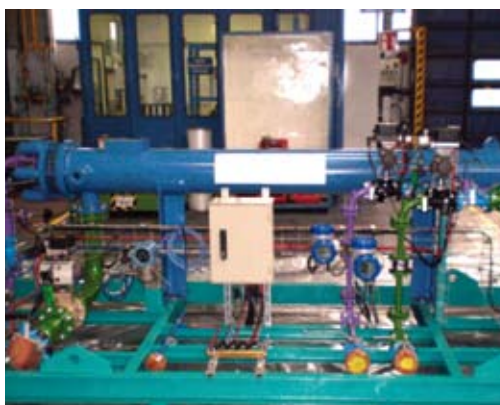
Unité de synthèse HCl



Unité de synthèse HCl avec récupération de chaleur



Unité de synthèse avec production de vapeur



Dilution d'acide fluorhydrique



Unité de dilution d'acide sulfurique

## TUYAUTERIE ET ACCESSOIRES



Mersen propose une gamme complète de tuyauterie et d'accessoires spécialement adaptée aux fluides corrosifs et à la protection des installations dans les industries chimique et pharmaceutique.



Tuyauterie en PTFE

### Tuyauterie :

Armylor® est la marque de Mersen pour les tuyauteries PTFE ou de PFA.

Depuis les années 1960, Mersen maîtrise tous les procédés de fabrication du PTFE tels que l'extrusion pâteuse, le moulage isostatique ou le moulage par transfert de PFA.

### La gamme de tuyauterie comprend :

- Tuyauterie et accessoires revêtus PTFE/PFA
- Soufflets et compensateurs en PTFE
- Clarinettes et pièces spéciales revêtues PTFE
- Tubes plongeurs revêtus PTFE
- Tuyauterie double enveloppe revêtue PTFE/PFA



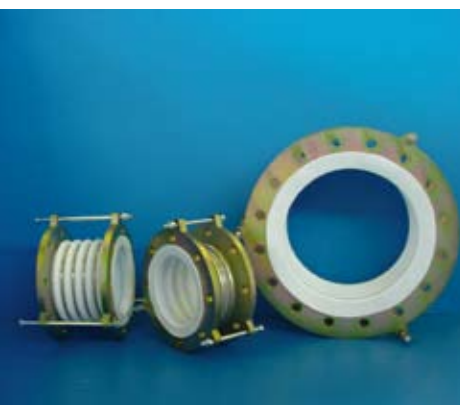
Distributeur en CL-Clad® tantale

### Accessoires :

Expert du tantale et autres métaux nobles, Mersen propose une large gamme de tuyauterie et accessoires fabriqués avec ces matériaux: puits thermométrique (thermowells), tronconique, support dévésiculeur (demister support), grilles...

### Disques de rupture en Graphilor® 3 :

Mersen, grâce à son expertise du graphite, propose également des disques de rupture en Graphilor® 3, destinés à la protection contre les surpressions ou dépressions accidentelles.



Soufflets et compensateurs en PTFE



Tuyauterie en PTFE



Disques de rupture en Graphilor®

## Nos implantations industrielles internationales

### Mersen France Brignais

- > 8,000 m<sup>2</sup>
- > Echangeurs de chaleur à plaques soudées ou plaques et joints, échangeurs tubulaires métalliques, agitateurs
- > ZI Les Vallières - 17 Rue de l'Industrie  
69530 Brignais / Tél. +33 (0)4 78 05 68 68

### Mersen UK Teesside

- > 5,600 m<sup>2</sup>
- > Echangeurs de chaleur en graphite, disques de rupture
- > Durham Lane Industrial Park, Eaglescliffe, Stockton-on-Tees. UK TS16 ORH  
Tél. +44(0)1642 790100

### Mersen India Chennai

- > 2,600 m<sup>2</sup>
- > Echangeurs de chaleur en graphite, systèmes anti-corrosion
- > SP52, Industrial Estate Ambattur - Chennai 600058  
Tél. +91 44 26232278

### Mersen USA Salem

- > 6,690 m<sup>2</sup>
- > Echangeurs de chaleur en graphite, échangeurs de chaleur à plaques soudées, soufflets et compensateurs, tuyauterie, systèmes anti-corrosion, disques de rupture
- > 540 Branch Drive - Salem, VA 24153  
Tél. +1 540-389-7535

### Mersen Xianda Shanghai-Fengxian

- > 150,000 m<sup>2</sup>
- > Graphite, polymères fluorés, métaux nobles, nickel alloys, acier carbone, acier inoxydable  
Echangeurs de chaleur, appareils sous pression, colonnes, tuyauterie, agitateurs, systèmes anti-corrosion
- > N°299 Shenzhou Road, FengChen, FengXian district, 201411 Shanghai, China - Tél. +86(0)21 5752 7777

### Nippon Carbon Mersen

- > Atelier de distribution et service après-vente
- > 5F Shinjuku Sky Bldg.4-1-23, Shinjuku, Shinjuku-ku - 160-0022 Tokyo  
Tel. +81 (0) 35368 3250

### Mersen France Pagny-sur-Moselle

- > 36,000 m<sup>2</sup>
- > Centre de Recherche et Développement  
Production de tubes en graphite  
Technologie CL-Clad®  
Extrusion et isomoulage de PTFE  
Echangeurs de chaleur, appareils sous pression, colonnes, tuyauterie, soufflets et compensateurs, agitateurs, systèmes anti-corrosion, disques de rupture
- > 1 rue Jules Ferry - F-54530 - Pagny sur Moselle  
Tél. +33 (0)3 83 81 60 81

### Mersen France Grésy

- > 8,000 m<sup>2</sup>
- > Spécialiste des équipements pour le nucléaire
- > Métaux nobles, alliages de nickel, acier carbone, acier inoxydable - Appareils sous pression, colonnes, agitateurs, échangeurs de chaleur
- > 553 rte Gorges du Sierroz - Le Vernay - ZI Grésy Aix Nord - 73100 Grésy sur Aix  
Tél. +33 (0)4 79 88 72 00

### Mersen Deutschland Linsengericht

- > 3,000 m<sup>2</sup>
- > Equipements en tantale : échangeurs de chaleur, baïonnettes, serpentins, échangeurs de chaleur à plaques, colonnes, accessoires.
- > Lagerhausstrasse 7-9 / D-63589 Linsengericht  
Tél. +49 (0) 60 517 1037

### Mersen Maroc El Jadida

- > 2,500 m<sup>2</sup>
- > Echangeurs de chaleur en graphite ou métaux
- > Service Après-vente, Assemblage
- > Route d'Oualida Km 10 - Commune My Abdellah  
BP 135 Sidi Bouzid - Province d'El Jadida  
Tél. +212 (0)5 23 38 30 12

### Mersen USA Oxnard

- > 6,600 m<sup>2</sup>
- > Appareils sous pression, colonnes, échangeurs de chaleur (zirconium, titane)
- > 401N Rice Avenue - Oxnard, CA93030-7936  
Tél. +1 805 351 8400

The

# ADVISOR

FERRAZ SHAWMUT IS NOW MERSEN

# MERSEN

Fuses | Fuse Blocks & Holders | Power Distribution Blocks | Surge Protection Devices  
Circuit Protection Accessories | Disconnect Switches | Heatsinks & Cooling Systems | High Power Switches



# The Advisor

*More Products. More Resources. More For You Than Ever Before.*



## A Different Kind of Advisor

A lot has changed with this latest edition of the Advisor. You'll find 756 additional products including, high power switches, heatsinks and cooling, medium voltage fuses, surge protection devices, and our new Helio Protection fuse line.

There's a new Resources & Tools section with time-saving services like electrical services and the Fuse Control™ program, as well as handy tools like Select-A-Fuse software®, Protection Intelligence Quotient Quizzes, and R-Tools®, our online 3D heatsink thermal modeling tool.

In an effort to produce a more “green” catalog, we've done more with less. There are more products, but fewer pages. Product performance data (time current curves, peak let thru data, etc.) has been moved out of the catalog and onto our website. Our goal was two-fold, to print a leaner catalog and provide a method for ensuring that you have the most up-to-date data available at any given time. As part of our on-going sustainability initiatives we also took great care in selecting a more environmentally-friendly paper stock. The results — a more streamlined, information packed catalog than ever before!



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You've come to rely on the Advisor for advice. Advice on choosing the right fuse for the application. On coordinating it with upstream and downstream devices. On heatsink configurations. On complying with international standards. On selecting the right surge protection. And on a whole range of other complicated electrical protection and business issues.

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**Power Low Voltage Distribution** – Substations, transformers, transmission lines, PF correction

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# Table of Contents

## Product Quick Selector

Typical applications & recommended product types .....	3
--	---

### A

## Amp-Trap® 2000 Fuses

Class J / AJT .....	A2
Class L / A4BQ .....	A4
Class RK1 / A2D-R & A6D-R .....	A6
Class CC / ATDR .....	A8
Class CC / ATQR .....	A10

### B

## North American Power Fuses

Class RK5 / Tri-Onic® TR & TRS .....	B2
Class RK5 / Tri-Onic® TRS-RDC .....	B4
Class J / Amp-Trap® HSJ .....	B6
Class J / Amp-Trap® A4J .....	B8
Class L / Amp-Trap® A4BY .....	B10
Class L / Amp-Trap® A4BT .....	B12
Class T / Amp-Trap® A3T & A6T .....	B14
Class RK1 / Amp-Trap® A2K & A6K .....	B16
Class G / Amp-Trap® AG .....	B18
Class CC / Amp-Trap® ATMR .....	B19
Class K-5 / One-time OT & OTS .....	B20
Class H / Renewable RF & RFS .....	B22
Plug Fuses .....	B24

### C

## Midget, Miniature & PC Mount Fuses

### Midget

ATQ Time-Delay .....	C2
ATM Fast-Acting .....	C3
TRM Time-Delay .....	C4
OTM Fast-Acting .....	C5
DCT Special Purpose .....	C6
FSM Multi-Meter Fuse .....	C7
GGU Fast-Acting .....	C8
GFN Indicating Time-Delay .....	C9
SBS Fast-Acting .....	C10

### PC Mount

PCF; PCS; PCT .....	C11
---------------------	-----

### Miniature

GSA/GSA-V; GDL/GDL-V .....	C15
GGC/GGC-V; GGM/GGM-V .....	C16
GGA/GGA-V; GSC/GSC-V .....	C17
GSB/GSB-V; GDG/GDG-V .....	C18
GSD/GSD-V; GSF/GSF-V .....	C19
GGX; GAB; GSR-V .....	C20
SMG/SMG-V; STG/STG-V .....	C21
Radial Lead Micro Fuses MRF, MRT .....	C22
SFRT; SFRB; SFRG; FSFE, SFRU .....	C23
SLR, SMF, SHR .....	C24
Automotive Fuses AF, AF2, AF3, AFH20, AFH30, AF2H30, AF3H60 .....	C26

### D

## Semiconductor Fuses

Amp-Trap® Form 101 / A15QS .....	D2
Amp-Trap® Form 101 / A30QS .....	D4
Amp-Trap® Form 101 / A50QS .....	D6
Amp-Trap® Form 101 / A50P .....	D8
Amp-Trap® Form 101 / A60Q .....	D10
Amp-Trap® Form 101 / A60X .....	D11
Protistor® / A070gRB .....	D13
French Cylindrical / A70QS .....	D14
Amp-Trap® Form 101 / A70QS .....	D16
Amp-Trap® Form 101 / A70P .....	D18
Amp-Trap® Form 101 / A70Q .....	D20
Amp-Trap® Form 101 / A100P .....	D22
Amp-Trap® Form 101 / A120X .....	D24
Amp-Trap® Form 101 / A150X .....	D25
DIN 6,9gRB-URB; 6,6gRB-URB .....	D26
British Standard .....	D31
PSC Square Body 690/700V .....	D44
PSC Square Body 1250/1300V .....	D55
French Cylindrical .....	D63

### E

## Medium Voltage Fuses & Accessories

### Transformer Protection

Amp-Trap® CS-3 & 9F60/9F62 Series .....	E2
Amp-Trap® & 9F62 Bolt-In Series .....	E12
Amp-Trap® CL-14 Series .....	E16

### Motor Protection

Amp-Trap® & 9F60 Series .....	E21
Amp-Trap® Bolt-in Series .....	E27
Amp-Trap® DIN-style Series .....	E30

### Potential Transformer Protection

Amp-Trap® & 9F60 Series PT Fuses .....	E32
--	-----

### Capacitor Protection

Amp-Trap® & 9F60 Series .....	E36
-------------------------------	-----

### Distribution Transformer Protection

Sure Guard 9F59U Series ETP .....	E44
-----------------------------------	-----

### IEC Standard Back-up Fuse Links

IEC Standard Back-up Fuse-Links .....	E48
---------------------------------------	-----

### Accessories

Type EK 9F61 Series .....	E53
---------------------------	-----

### F

## International Fuses

### EURO/IEC Fuses

gl-gG, aM .....	F2
D0 type (NEOZED) .....	F7
D type (DIAZED) .....	F11
NH Dimension / gl-gG, aM .....	F15

### Canadian Fuses

Class C .....	F20
Class CA & CB, CN/CNS .....	F22
HRCII NIT/NS .....	F23
Class H NRN/NRS .....	F24
Class H CRN/CRS .....	F25

### G

## Special Purpose

CP 600V Cable Protectors .....	G2
2CL 250V Cable Protectors .....	G10
A60C Capacitor Fuses .....	G11
A4BX Welder Protectors .....	G12
A2Y & A6Y Form 600 Fuses .....	G13
Telecommunication Fuses .....	G15
Forklift Truck Fuses .....	G18
DC Rated Fuses .....	G20
Photovoltaic Fuses .....	G38

### H

## Fuse Blocks & Holders

UltraSafe™ USCC & USM .....	H2
UltraSafe™ USFM .....	H4
UltraSafe™ US3J & US6J .....	H6
UltraSafe™ US14 & US22 .....	H8
Open Style Class J & SJ Series .....	H12
Open Style Midget & Class CC .....	H16
Open Style Class H, K & R .....	H18
Open Style Class T .....	H25
Open Style Class G .....	H30
Open Style Miniature .....	H32
In-Line Fuse Holders / FEB, FEC, FEX, FEY Series - Midget/Class CC .....	H33
Panel Mount Fuse Holders / GPM Series .....	H37
Semiconductor Fuse Blocks / P243/P266/P292 .....	H44
Modular Semiconductor Fuse Blocks / 1SC/1MSC .....	H45
Semiconductor Fuse Holders / 703, U705, U710 Series .....	H46
Ferrule Fuse Holders / PS20x127 .....	H48
Fuse Bases / NH Dimension .....	H50
Dead Front Fuse Covers /DFC Series .....	H55
Fuse Block Accessories / DFC3M, DFC3LP & DRM .....	H57
Ferrule Fuse Clips / PC Board Mount Fuse Clips .....	H58

# Table of Contents

## I

### Power Distribution Blocks

Finger-Safe / FSPDB Series.....	I2
Open Style 62000-69000.....	I4
62000-63000 Mini Series.....	I5
66000-67000 Intermediate Series.....	I6
68000-69000 Large Series.....	I8

## J

### Circuit Protection Accessories

Box Covers.....	J2
Fuse Reducers.....	J3
Fuse Pullers, Clip Clamps.....	J4
Trigger® Indicator.....	J5
Shawmut Trigger®.....	J5
Trigger® Actuator.....	J5
Blown Fuse Indicators.....	J6
Add-on Switches.....	J6
IL Indicator.....	J6
PSC Microswitches.....	J7
Protistor® Microswitches.....	J10
Point of Sale Displays.....	J12

## K

### Disconnect Switches

UL508 Non-Fused Load Break Switches, FSLBSK2	
UL98 Non-Fused Load Break Switches, FSSC, SX, SXDC, SC.....	K5
UL98 Fusible Disconnect Switches, FB Series.....	K18
Enclosed Disconnect Switches.....	K31
Fusible Shunt Trip Switches.....	K37

## L

### High Power Switches

Berg HA Range 1500V DC LV Disconnect Switch.....	L2
Berg HUVS Range 3.6kV MV Changeover Disconnect Switch.....	L3
Berg HAS Range 12kV MV Disconnect Switch.....	L4
Berg HAS Range 24kV MV Disconnect Switch.....	L5
Berg HAS Range 36kV MV Disconnect Switch.....	L6
Fouilleret NORD 1500VDC Disconnect Switch.....	L7
Soule PBD 2000V DC Disconnect Switch.....	L9
Hundt & Weber HSE-HSD Electrolytic Cell Disconnect Switch.....	L11
CBC Modular Bar Contactors.....	L12
CEX Field Excitation Contactors.....	L13
Colomix 71.....	L14
Systems Capability.....	L15

## M

### Thermal Management

<b>Air Cooled</b>	
FabFin® Heatsink.....	M2
Hollowfin® Heatsink.....	M9
Mixed Metals Heatsink.....	M10
Integrated Modules.....	M11
Copper Heatsink.....	M12
Dual Base Plate Heatsink.....	M13
Extrusion Heatsink.....	M14
Heatpipes.....	M15
Embedded Heatpipes.....	M16
<b>Liquid Cooled</b>	
Aquasink® Heatsink.....	M17
Aquamax® (Copper) Heatsink.....	M19
Aquasur® Heatsink.....	M20
Aquamax® (Aluminum) Heatsink.....	M21
<b>Cooling</b>	
Press-Pack Coolers.....	M22
Cooling Systems.....	M23
Product Materials & Tolerances.....	M24
R-Tools® 3D Heatsink Modeling.....	M26

## N

### Surge Protection

Surge-Trap® Modular SPD.....	N2
Surge-Trap® Pluggable SPD.....	N4
Surge-Trap® Type 1 T2 Series.....	N6
Surge-Trap® Type 1 XR Series.....	N8
Surge-Trap® Type 1 XP Series.....	N10
Surge-Trap® Type 1 XT Series.....	N12
TPMOV® Technology.....	N14
VSP MOV Fuses.....	N16
Surge Switch.....	N18

## O

### Resources & Tools

Arc Flash Info Center.....	O2
Electrical Services.....	O3
Electrical Safety Seminars.....	O4
Fuse Control™ Program.....	O5
High Power Test Lab.....	O6
Protection Intelligence Quotient (PIQ) Quizzes.....	O7
R-Tools® 3D Heatsink Modeling.....	O8
Select-A-Fuse® Software.....	O9
Power Electronics Solutions.....	O10
Solar Power Solutions.....	O11
Wind Power Solutions.....	O12
Technical Services Support.....	O13

## P

### Application Information

Definitions.....	P2
Fuse Descriptions.....	P4
Fuse Construction & Operation.....	P5
How to Read Time Current Curves.....	P6
Low Voltage Motor Protection.....	P7
Medium Voltage Motor Protection.....	P13
Transformer Protection.....	P14
General.....	P14
Low Voltage Primary Protection.....	P15
Secondary Fuses for LV Transformers.....	P16
Medium Voltage Primary Protection... Control Transformers.....	P17
Surge Trap® SPD, FAQ, Glossary.....	P24
Semiconductor Protection.....	P29
DC Circuit Protection & Fuse DC Ratings.....	P30
Temperature De-Rating.....	P31
Let-Thru Current & I²t.....	P33
Fuse Let-Thru Current Tables.....	P35
Bus Duct Protection.....	P39
Capacitor Protection.....	P40
Cable Protection.....	P42
Welder Protection.....	P43
Motor Starter General Info.....	P44
Fusible & Non-Fusible Disconnect Switches.....	P45
Selectivity Between Fuses.....	P54
Short Circuit Calculations.....	P55
Properties of Materials.....	P61
Stranded Copper and Aluminum Cable Data.....	P62
Recommended Tightening Torque for Bolt-on and Stud Mounted Fuses.....	P62
Small Ampere Rating Equivalents.....	P62
Short Circuit Rating.....	P63
11 Reasons for Using Current Limiting Fuses.....	P63
Fuse Obsolescence.....	P64
Class 1, Division 2 Locations.....	P65
Suggested Specs for Mersen Fuses.....	P66

Index.....	Index 1
------------	---------

# Product Quick Selector

Application	Recommended Product	Section
<b>Capacitor</b>		
Low Voltage	A60C Type 121	G
Medium Voltage	A100C, A150C; A200C; A250C, A300C, A430C, A550C	E
<b>Control Circuits</b>	Class CC and Midget Fuses	A, C
<b>Electronic Circuit Protection</b>	Midget Miniature, Micro and PC Mount Fuses	C
<b>General Circuits</b> (Lighting, Resistance, Heating)		
	Class J - AJT, A4J	A, B
	Class RK1 - A2D, A2K (250V); A6D, A6K (600V)	A, B
	Class RK5 - TR (250V); TRS (600V)	B
	Class K [50,000A I.R.] - OT (250V), OTS (600V)	B
	Class H [10,000A I.R.] - NRN, CRN (250V) Canadian, NRS, CRS (600V) Canadian	F
<b>Loads Requiring "No-Damage" Protection</b>	Amp-Trap 2000 Fuses Sized for IEC Type 2 - Class J - AJT; Class L - A4BQ; Class RK1 - A2D (250V), A6D (600V); Class CC - ATDR, ATQR	A
<b>Mains, Feeders, Branch Circuits</b>		
Low Voltage - Above 600A	Class L - A4BQ, A4BY, A4BT	A, B
- 600A and less	Class J or Class RK1 - AJT, A4J, A2D/A6D, A2K/A6K	A, B
Medium Voltage	E" Rated - A055 (5kV), A155 (15kV), 9F60 & 9F62 Series	E
<b>Motors</b>		
Low Voltage - Above 600A	Class L - A4BQ, A4BY, A4BT	A, B
- 600A and less	Class J - AJT, Class RK1 - A2D (250V), A6D (600V) or Class RK5 - TR (250V), TRS (600V)	A, B
Medium Voltage	"R" Rated - A240R (2.4kV), A480R (4.8kV), A072 (7.2kV), 9F60	E
Small Motors	Class CC - ATDR	A
<b>Semiconductor Protection</b>	Amp-Trap® Form 101 Fuses, Protistor Fuse	D
<b>Cable Protection</b>	Cable Protectors - CP-C (for copper cable) and CP-A- (for aluminum cable)	G
<b>Solar Power</b>		
	Helio Protection Fuses (HP6M, HP10M, HP6J)	G
	Fuses	A, B, C, E
	Fuse Holders	H
	DC Switches (SXDC)	K
	Surge Protection Devices	N
<b>Surge Protection</b>		
DIN-Rail	ST, STP	N
UL Type 1	STT2, STX(-)	N
MOV	TPMOV	N
<b>Switching</b>		
Low Voltage - UL508	FSLBS	K
Low Voltage - Non-Fuses/Fused	SX, FBJ, FBL	K
1500V to 36V (High Power)	HA, NORD, PBD	L
Contactors	CBC, CEX	L
<b>Telecom</b>	TGL, TGN, TGS, GMS	G
<b>Thermal Management</b>		
Air Cooled	Fabfin, Hollowfin, Mixed Metals, Integrated, Copper, Dual Base Plate, Extrusion, Heatpipes, Embedded Pipes	M
Liquid Cooled	Aquasink, Aquamax (Copper & Aluminum), Aquasurf	M
<b>Transformers</b>		
Low Voltage - Above 600A	Class L - A4BY, A4BT	B
- 600A and less	Class J - AJT or Class RK5 - TR 250V, TRS (600V)	A, B
Medium Voltage	"E" Rated - A055 (5kV), A155 (15kV), 9F60 & 9F62 Series	E
Control Transformers	Class CC - ATQR	A
<b>Welders</b>	Welder Protectors - A4BX (Type 150) - Class K Dims., A4BX (Type 150J) - Class J Dims.	G

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Amp-Trap® OEM Central™ Select-A-Fuse® Surge-Trap® SPD UltraSafe™  
FabFin® Hollowfin® Aquasink® Aquamax® Aquasurf® Aquamax® R-Tools® 3D Heatsink Modeling

Part Number	Description	Page	Part Number	Description	Page
08530	Power Distribution Block Covers	I5	2A391	NH Dimension Knife-Blade Fuse-Links, aM	F19
08570	Power Distribution Block Covers	I7	2B389	NH Dimension Knife-Blade Fuse-Links, aM	F19
08590	Power Distribution Block Covers	I9	2C163 - 2C175	NH Dimension Knife-Blade Fuse-Links, aM	F19
1021 CP URB 27x60	Semicond. French. Cyl. Fuse, 690V - 1000V	D68	2C245 - 2C375	NH Dimension Knife-Blade Fuse-Links, aM	F19
11 URD	PSC Semicond. Fuse 1250/1300V	D55	2C377 - 2CC387	NH Dimension Knife-Blade Fuse-Links, aM	F19
12,5URD	PSC Semicond. Fuse 1250/1300V	D55	2C023 - 2C069	NH Dimension Knife-Blade Fuse-Links, aM	F18
12 URD	PSC Semicond. Fuse 1250/1300V	D55	2C135 - 2C159	NH Dimension Knife-Blade Fuse-Links, aM	F18
132, 162, 166	Fuse Reducers, Class H&K	J3	2C613 - 2C765	NH Dimension Knife-Blade Fuse-Links, aM	F18
15009-G - 18065-G	French Ferrule Fuse, gl-gG	F3	2CL	Special Purpose Cable Protectors, 250V	G10
15511-G - 18565-G	French Ferrule Fuse, aM	F5	30305T - 30659T	300V Class T Fuse Blocks	H26
1652., 1653.	Diazed D Gauge Rings	F13	30310 - 30354	600V Midget and Class CC Fuse Blocks	H17
1655.	Diazed D Gauge Pieces	F13	30310R-30354R	600V Midget and Class CC Fuse Blocks	H17
1657., 1658.	Diazed D Screw Gauge Pieces	F13	31001T - 36051T	300V Class T Fuse Blocks	H27
1700., 1701., 1702.	Neozed DO Fuse Links	F7	32-001G - 34-016G	Fuse Pullers, Clip Clamps	J4
1705., 1706., 1701.	Neozed DO Gauge Rings	F8	40002-G - 45214-G	Bases, Shields, etc., for NH Fuse Links	H50
1707-L	Neozed DO Accessories (Spacer)	F10	40110G - 40658G	Fuse Blocks for Class G Fuses	H31
1708-L	Neozed DO Accessories (Gauge Ring Key)	F10	41002-G - 42119-G	Fuse Bases for NH Fuse Links	H52
1709-L, 1713-L	Neozed DO Accessories (Special Holding Spring)	F10	41202-G - 42619-G	Fuse Bases for NH Fuse Links	H53
1710., 1711., 1712.	Neozed DO Screw Caps (Porcelain)	F8	44502-G - 45437-G	Bases, Shields, etc., for NH Fuse Links	H54
1714., 11714., 11715., 1715-	Neozed DO Screw Caps (Plastic)	F8	412, 422	Fuse Reducers, Class H&K	J3
1716.333-L, 1716-L	Neozed DO Accessories (Screw Cap Remover)	F10	45DB	IEC Back-Up Fuse Links	E50
1718., 1721.03-L, 1728., 1732.	Neozed DO Insulating Covers	F8	5,5 URD	PSC Semicond. Fuse 690/700V	D44
1720., 1721., 1722., 1730., 1731	Neozed DO Fuse Bases	F9	581-L	Diazed D Adapter Fittings	F14
17413-G - 18465-G	Cylindrical Fuse-Links, gl-gG	F4	589-, 592-, 690-, 691- (-L)	Diazed D Screw Caps	F13
17911-G - 18965-G	Cylindrical Fuse-Links, aM	F6	594., 595., 596., 597., 598.,	Diazed D Fuse Link 500VAC	F12
181.9-L, 182.9-L	Diazed D Touch Protection Rings	F14	5 URB 000 BS88	Protistor Semicond. BS88 Fuse, 500-660V	D31
1B173 - 1B175	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F16	5URB 000	Protistor Semicond. Fuse, 690V	D28
1C023 - 1C069	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F16	5X20QC1	Fuse Blocks for 5mmx20mm Fuses	H32
1C135 - 1C171	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F16	60300 - 60658	600V Class H, K, and R Fuse Blocks	H22
1C243 - 1C281	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F17	60305R - 60658R	600V Class H, K, and R Fuse Blocks	H22
1C375 - 1C387	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F17	60300J - 60658J	600V Class J Fuse Blocks	H13
1C613 - 1C659	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F16	60305T - 60658T	600V Class T Fuse Blocks	H28
1C743 - 1C765	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F16	61005SJ - 61008J	600V Class J Fuse Blocks	H14
1SC, 1MSC	Semiconductor Fuse Blocks	H45	61031T - 66051T	600V Class T Fuse Blocks	H29
20300 - 20658	250V Class H, K, and R Fuse Blocks	H19	61035 - 62053	600V Class H, K, and R Fuse Blocks	H23
20305R - 20658R	250V Class H, K, and R Fuse Blocks	H19	61035R - 62053R	600V Class H, K, and R Fuse Blocks	H23
2071.8., 2072.8- (-L)	Diazed D Locking Caps	F14	62001J - 6663J	600V Class J Fuse Blocks	H15
21035 - 22053	250V Class H, K, and R Fuse Blocks	H20	64001 - 6663	600V Class H, K, and R Fuse Blocks	H24
212, 262, 266	Fuse Reducers, Class H&K	J3	6,6 URD	PSC Semicond. Fuse 690/700V	D44
21035R - 22053R	250V Class H, K, and R Fuse Blocks	H20	685., 686.	Diazed D Fuse Link	F11
228-700-520	Fuse Clips, Medium Voltage	E17	6,9 URE 10	Protistor Semicond. British Std. Fuse, 690V	D39
24001 - 2663	250V Class H, K, and R Fuse Blocks	H21	6,9 URS 17	Protistor Semicond. British Std. Fuse, 690V	D39
24001R - 2663R	250V Class H, K, and R Fuse Blocks	H21	6,9 URT 217	Protistor Semicond. British Std. Fuse, 690V	D39
2.5 URE 10	Protistor Semicond. British Std. Fuse, 250V	D35	690., 691.	Diazed D Screw Caps	F13
2.5 URGG 36	Protistor Semicond. British Std. Fuse, 250V	D37	6.900 CP URC 14x51	Protistor Semicond. French. Cyl. Fuse, 690V	D65
2.5 URGH 236	Protistor Semicond. British Std. Fuse, 250V	D37	6.900 CP URD 22x58	Protistor Semicond. French. Cyl. Fuse, 690V	D65
2.5 URGS 17	Protistor Semicond. British Std. Fuse, 250V	D35	6.921 CP URC 14x51	Protistor Semicond. French. Cyl. Fuse, 690V	D65
2.5 URZ 17	Protistor Semicond. British Std. Fuse, 250V	D35	6.921 CP URD 14x51	Protistor Semicond. French. Cyl. Fuse, 690V	D65
2631-2663R	250V Class H, K, and R Fuse Blocks	H21	6.921 CP URD 22x58	Protistor Semicond. French. Cyl. Fuse, 690V	D65
			6,921 CP URGD 27x60	Protistor Semicond. French. Cyl. Fuse, 600V - 690V	D67

# Advisor INDEX Index

Part Number	Description	Page
6,921 CP URQ 27x60	Semicond. French. Cyl. Fuse, 690V - 1000V	D68
6,9gRB 000	Semicond. Fuse, German Stnd. 500V - 690V	D28
6,9URB 000	Semicond. Fuse, German Stnd. 500V - 690V	D28
6,9 URD	PSC Semicond. Fuse 690/700V	D44
6,9 URD 00	Protistor Semicond. Fuse, 690V	D33
6,9gRB 00	Protistor Semicond. Fuse, 690V	D33
6,9gRB 000	Protistor Semicond. Fuse, 690V	D28
6,9gRB 000 BS88	Protistor Semicond. BS88 Fuse, 500-690V	D31
6,9gRB 17x49	Protistor Semicond. Fuse, 690V	D26
6,9URB 00	Protistor Semicond. Fuse, 690V	D33
6,9URB 000	Protistor Semicond. Fuse, 690V	D28
6,9URB 17x49	Protistor Semicond. Fuse, 690V	D26
6,9 URGL 36	Protistor Semicond. British Stnd. Fuse, 690V	D41
6,9 URGM 236	Protistor Semicond. British Stnd. Fuse, 690V	D41
6,9 URR 36	Protistor Semicond. British Stnd. Fuse, 690V	D41
6,9 URU 236	Protistor Semicond. British Stnd. Fuse, 690V	D41
64001R - 6663R	600V Class H, K, and R Fuse Blocks	H24
60305SJ-60358SJ	Fuse Blocks for Class SJ Fuse	H13
612, 622, 632, 636, 642	Fuse Reducers, Class H&K	J3
62000 - 63000	Power Distribution Blocks - Mini 62000 and 63000 Series	I5
66000 - 67000	Power Distribution Blocks Intermediate 66000 - 67000 Series	I6
68000 - 69000	Power Distribution Blocks 68000 - 69000 Large Series	I8
6URD	PSC Semiconductor Fuse 690/700V	D44
6X32QC1	Fuse Blocks for 1/4"x1-1/4" Fuses	H32
703, U705, U710	Semiconductor Fuse Blocks - "Open-Block"	H46
8004., 8014	NH Dimension Knife-Blade Fuse-Links, gL, gG, 690V	F17
81., 72.	Diazed D Fuse Link	F11
821 CP GRB 27x60	Semicond. French. Cyl. Fuse, 800V	D70
9F59UBC	8.3kV Sure Guard ETP Fuse	E45
9F59UBD	15.5kV Sure Guard ETP Fuse	E46
9F59UBE	23.0kV Sure Guard ETP Fuse	E47
9F60AAA	.625kV 9F60 Series Potential Transformer Fuse	E33
9F60AAB	2.75kV 9F60 Series Potential Transformer Fuse	E33
9F60BBB	2.75kV 9F60 Series Potential Transformer Fuse	E33
9F60BBD	5.5kV 9F60 Series Potential Transformer Fuse	E34
9F60BBN	5.5kV 9F60 Series Potential Transformer Fuse	E34
9F60BDB	2.75kV 9F60 Series Potential Transformer Fuse	E33
9F60BDD	5.5kV 9F60 Series Potential Transformer Fuse	E34
9F60BDE	8.25kV 9F60 Series Potential Transformer Fuse	E35
9F60BHH	15.5kV 9F60 Series Potential Transformer Fuse	E35
9F60CCB	2.75kV E-Rated Power Distribution Fuse	E4
9F60CEB	2.75kV E-Rated Power Distribution Fuse	E4
9F60CED	5.5kV E-Rated Power Distribution Fuse	E5
9F60CJH	15.5kV E-Rated Power Distribution Fuse	E8
9F60CMJ	25.8kV E-Rated Power Distribution Fuse	E10
9F60DJB	2.75kV E-Rated Power Distribution Fuse	E4
9F60DJD	5.5kV E-Rated Power Distribution Fuse	E6
9F60DJE	8.25kV E-Rated Power Distribution Fuse	E7
9F60DMH	15.5kV E-Rated Power Distribution Fuse	E8
9F60DNJ	25.8kV E-Rated Power Distribution Fuse	E10
9F60ECB	2.75kV E-Rated Power Distribution Fuse	E4

Part Number	Description	Page
9F60FJB	2.75kV E-Rated Power Distribution Fuse	E4
9F60FJD	5.5kV E-Rated Power Distribution Fuse	E6
9F60FJE	8.25kV E-Rated Power Distribution Fuse	E7
9F60FMH	15.5kV E-Rated Power Distribution Fuse	E8
9F60FNJ	25.8kV E-Rated Power Distribution Fuse	E10
9F60FPK	38kV E-Rated Power Distribution Fuse	E11
9F60FPT	38kV E-Rated Power Distribution Fuse	E11
9F60GCB	2.75kV E-Rated Power Distribution Fuse	E4
9F60HJB	2.75kV E-Rated Power Distribution Fuse	E4
9F60HJD	5.5kV E-Rated Power Distribution Fuse	E6
9F60HJE	8.25kV E-Rated Power Distribution Fuse	E7
9F60HMH	15.5kV E-Rated Power Distribution Fuse	E8
9F60HNJ	25.8kV E-Rated Power Distribution Fuse	E10
9F60HPK	38kV E-Rated Power Distribution Fuse	E11
9F60HPT	38kV E-Rated Power Distribution Fuse	E11
9F60KLH	15.0kV E-Rated Power Distribution Fuse	E8
9F60LCB	2.4kV R-Rated EJ-2 Series	E23
9F60LCL	2.4kV R-Rated EJ-2 Series	E23
9F60LJD	5.08kV R-Rated EJ-2 Series	E25
9F60LJN	5.08kV R-Rated EJ-2 Series	E25
9F60MCB	2.4kV R-Rated EJ-2 Series	E23
9F60MCL	2.4kV R-Rated EJ-2 Series	E23
9F60MJD	5.08kV R-Rated EJ-2 Series	E25
9J60MJN	5.08kV R-Rated EJ-2 Series	E25
9F60NLD	5.08kV R-Rated EJ-2 Series	E25
9F60RJD	5.5kV 9F60 Series Capacitor Fuse	E43
9F60RJF	9.52kV 9F60 Series Capacitor Fuse	E43
9F61	Type EK 9F61 Series Fuse Supports, Disconnect Switches, Accessories	E53
9F62DCB	5.5kV E-Rated General Purpose Fuse	E6
9F62DCC	8.3kV General Purpose Fuse	E7
9F62DDD	15.5kV General Purpose Fuse	E9
9F62FCB	5.5kV E-Rated General Purpose Fuse	E6
9F62FCC	8.3kV General Purpose Fuse	E7
9F62FDD	15.5kV General Purpose Fuse	E9
9F62HCB	5.5kV E-Rated General Purpose Fuse	E6
9F62HCC	8.3kV General Purpose Fuse	E7
9F62HDD	15.5kV General Purpose Fuse	E9
9F62KCB	5.5kV General Purpose Fuse	E14
9F62KED	15.5kV General Purpose Fuse	E15
A033D1	3.3kV R-Rated Medium Voltage DIN Style	E31
A050 URB T13	Protistor Semicond. French. Cyl. Fuse, 10x38, 500/600V	D63
A050 URD T13	Protistor Semicond. French. Cyl. Fuse, 10x38, 500/600V	D63
A050 URL T13	Protistor Semicond. French. Cyl. Fuse, 10x38, 500/600V	D63
A050B	5.0kV Bolt-In Medium Voltage Fuse	E13
A050URD	PSC Semicond. Fuse 690/700V	D44
A051B	5.08kV R-Rated Bolt-in Medium Voltage Fuse	E28
A055B	5.5kV E-Rated Bolt-In Medium Voltage Fuse	E13
A055C	5.5kV E-Rated CL-14 Medium Voltage Fuse	E18
A055D1	5.5kV R-Rated Medium Voltage DIN Style	E31
A055F	5.5kV E-Rated CS-3 Medium Voltage Fuse	E5
A055URD	PSC Semicond. Fuse 690/700V	D44

Part Number	Description	Page	Part Number	Description	Page
A060 URD T13	Protistor Semicond. French. Cyl. Fuse, 10x38, 500/600V	D63	A70QS-14F	Amp-Trap Semicond. French. Cyl. Fuse, 700V	D14
A060URD	PSC Semicond. Fuse 690/700V	D44	A70QS-22F	Amp-Trap Semicond. French. Cyl. Fuse, 700V	D14
A065URD	PSC Semicond. Fuse 690/700V	D44	A70QS-4	Amp-Trap Form 101 Semicond. Fuse, 700V	D16
A070gRB	Protistor Semicond. Fuse, 550V	D13	A720T	7.2kV Potential Transformer Fuse	E35
A070URD	PSC Semicond. Fuse 690/700V	D44	A825X	8.25kV E-Rated CS-3 Medium Voltage Fuse	E7
A072B	7.2kV E-Rated Bolt-In Medium Voltage Fuse	E15	AC3, AC4, AC5, AC6	Aux.Contact Block Holder for FB Series Fusible Disconnect Switches 30 to 60A	K19
A072B	7.2kV R-Rated Bolt-In Medium Voltage Fuse	E29	AC3, AC4, AC5, AC6	Aux.Contact Block Holder for FB Series Fusible Disconnect Switches 100 to 800A	K20
A072D1	7.2kV R-Rated Medium Voltage DIN Style	E31	AC5, AC6	Aux.Contact Block Holder for FB Series Fusible Disconnect Switches 30 to 400A	K21
A072F	7.2kV R-Rated Medium Voltage Fuse	E26	ACHCD	Auxiliary Contact Block Holder for FB Series Fusible Disconnect Switches	K19
A083B	8.25kV E-Rated Bolt-In Medium Voltage Fuse	E15	ACK	Fork Lift Truck Fuse 1-400A, 125VAC	G18
A083C	8.25kV E-Rated CL-14 Medium Voltage Fuse	E19	ACL	Fork Lift Truck Fuse 30-120A, 125VAC	G18
A100C	1000V Medium Voltage Capacitor Fuse	E38	AF	Automotive Plastic Body/Silver-Plated Terminal Fuse	C26
A100P	Amp-Trap Form 101 Semicond. Fuse, 1000V	D22	AF2	Automotive Plastic Body/Silver-Plated Terminal Fuse	C26
A120X	Amp-Trap Form 101 Semicond. Fuse, 1200V	D24	AF2H	Automotive Fuse Holders	C28
A130URD	PSC Semicond. Fuse 1250/1300V	D55	AF3	Automotive Plastic Body/Silver-Plated Terminal Fuse	C26
A150C	1500V Medium Voltage Capacitor Fuse	E37	AF3H	Automotive Fuse Holders	C28
A150X	Amp-Trap Form 101 Semicond. Fuse, 1500V	D25	AFH20	In-Line Fuse Holders for Blade-Type	C27
A155B	15.5kV E-Rated Bolt-In Medium Voltage Fuse	E15		Automobile Fuse	
A155B	15.5kV R-Rated Bolt-in Medium Voltage Fuse	E29	AFH30	In-Line Fuse Holders for Blade-Type	C27
A155C	15.5kV E-Rated CL-14 Medium Voltage Fuse	E20		Automobile Fuse	
A155F	15.5kV E-Rated CS-3 Medium Voltage Fuse	E9	AG	Amp-Trap Class G Fuse, 480V	B18
A15QS	Amp-Trap Form 101 Semicond. Fuse, 150V	D2	AJT	Amp-Trap 2000 Class J T-D Fuse,600V	A2
A240R	2.4kV R-Rated Medium Voltage Fuse	E22	ALS	Fork Lift Truck Fuse 100-500A, 125VAC	G19
A240T	2.4kV Potential Transformer Fuse	E33	AOS-S, AOS-Q	Blown Fuse Indicators	J6
A250C	2500V Medium Voltage Capacitor Fuse	E39	Application Info.	Circuit Protection Application Info & Glossary	P2
A2D	Amp-Trap 2000 Class RK1 T-D Fuse, 250V	A6	Aquasink Heatsinks	Liquid Cooled Heatsinks	M17
A2K	Amp-Trap Class RK1 Fuse, 250V	B16	Aquamax Copper Heatsinks	Liquid Cooled Heatsinks	M19
A2Y	Amp-Trap Form 600 Fuse, 250V	G13	Aquamax Aluminum Heatsinks	Liquid Cooled Heatsinks	M21
A300C	3000V Medium Voltage Capacitor Fuse	E40	Aquasurf Heatsinks	Liquid Cooled Heatsinks	M20
A30QS	Amp-Trap Form 101 Semicond. Fuse, 300V	D4	Arc Flash Info Center	Arc Flash Info Center (information and resources)	O2
A3T	Amp-Trap Class T Fuse, 300V	B14	ATDR	Amp-Trap 2000 Class CC T-D Fuse, 600V	A8
A430C	4300V Medium Voltage Capacitor Fuse	E41	ATM	Amp-Trap Midget Fuse, 600V	C3
A480R	4.8kV R-Rated Medium Voltage Fuse	E24	ATMR	Amp-Trap Class CC Fuse, 600V	B19
A480T	4.8kV Potential Transformer Fuse	E34	ATQ	Amp-Trap Midget Time Delay Fuse, 600V	C2
A4BQ	Amp-Trap 2000 Class L T-D Fuse,600V	A4	ATQR	Amp-Trap 2000 Class CC T-D Fuse, 600V	A10
A4BT	Amp-Trap Class L Fuse, 600V	B12	C & CNS	Class CA & CB Canadian Fuse	F22
A4BX	Welder Protector, 600V	G12	C08915P-C08919P	Fuse Clips for Ferrule type Fuses	H58
A4BY	Amp-Trap Class L Fuse, 600V	B10	CBC Modular Bar Contactors	CBC Modular Bar Contactor (80 - 6200A)	L12
A4J	Amp-Trap Class J Fuse, 600V	B8	CC 1051 CP	gRB 20x127 1000V DC Rated Special Purpose Round Body Fuse	G22
A500T	5.0kV Potential Transformer Fuse	E34	CC 1051 CP	gRB 36x127 1000V DC Rated Special Purpose Round Body Fuse	G23
A50P	Amp-Trap Form 101 Semicond. Fuse, 500V	D8	CC 12 SRG 72 QF	1200V DC Rated Special Purpose Square Body Fuse	G34
A50QS	Amp-Trap Form 101 Semicond. Fuse, 500V	D6	CC 1500 CP	1500V gRC 20x190 DC Rated Special Purpose Round Body Fuse	G25
A550C	5.5kV Medium Voltage Capacitor Fuse	E42	CC 1500 CP	1500V gRC 36x190 DC Rated Special Purpose Round Body Fuse	G26
A60C	Low Voltage Capacitor Fuse 600V	G11			
A60Q	Amp-Trap Form 101 Semicond. Fuse, 600V	D10			
A60X	Amp-Trap Form 101 Semicond. Fuse, 600V	D11			
A6D	Amp-Trap 2000 Class RK1 T-D Fuse, 600V	A6			
A6K	Amp-Trap Class RK1 Fuse, 600V	B16			
A6T	Amp-Trap Class T Fuse, 600V	B14			
A6Y	Amp-Trap Form 600 Fuse, 600V	G13			
A70P	Amp-Trap Form 101 Semicond. Fuse, 700V	D18			
A70Q	Amp-Trap Form 101 Semicond. Fuse, 700V	D20			

Part Number	Description	Page
CC 1500 CP gRB	1500V gRB 20x127 DC Rated Special Purpose Round Body Fuse	G24
CC 1500 CP gRD	1500V gRD 20x127 DC Rated Special Purpose Round Body Fuse	G24
CC 1500 CP gRD	1500V gRD 36x190 DC Rated Special Purpose Round Body Fuse	G26
CC 1551 CP gRB	1000V gRB 20x127 DC Rated Special Purpose Round Body Fuse	G24
CC 1591 CP	1500V gRC 20x190 DC Rated Special Purpose Round Body Fuse	G25
CC 1591 CP	1500V gRC 36x190 DC Rated Special Purpose Round Body Fuse	G26
CC 20 SRC 120 QF	2000V DC Rated Special Purpose Square Body Fuse	G35
CC 20 SRD 122 QF	1800V, 2000V DC Rated Special Purpose Square Body Fuse	G36
CC 35 gRB 600 QF	3500V DC Rated Special Purpose Square Body Fuse	G37
CC 4.421 CP gLB	DC Rated, special purpose round body fuse, 440V	G20
CC 40 gRB 600 QF	4000V DC Rated Special Purpose Square Body Fuse	G37
CC 40 gRD 600 QF	4000V DC Rated Special Purpose Square Body Fuse	G37
CC 4000 CP gRC	4000V gRC 36x400 DC Rated Special Purpose Round Body Fuse	G27
CC 6,621 CP gRB	660V DC Rated, Special Purpose Round Body Fuse	G21
CC 6.6 gRB 123	660V DC Rated Special Purpose Square Body Fuse	G31
CC 6.6 gRB 2123	660V DC Rated Special Purpose Square Body Fuse	G33
CC 7,5 gRB 123	750V DC Rated Special Purpose Square Body Fuse	G31
CC 7,5 gRB 2123	750V DC Rated Special Purpose Square Body Fuse	G33
CC 7,5 gRC 120	750V, 900V DC Rated Special Purpose Square Body Fuse	G28
CC 7,5 gRC 121	750V, 900V DC Rated Special Purpose Square Body Fuse	G29
CC 7,5 gRC 122	750V, 900V DC Rated Special Purpose Square Body Fuse	G30
CC 7,5 gRC 123	750V, 900V DC Rated Special Purpose Square Body Fuse	G31
CC 7,5 gRC 2122	700V, 900V DC Rated Special Purpose Square Body Fuse	G32
CC 7,5 gRC 2123	750V, 900V DC Rated Special Purpose Square Body Fuse	G33
CC 7,5 gRD 122	750V, 900V DC Rated Special Purpose Square Body Fuse	G30
CC 7,5 gRD 123	750V DC Rated Special Purpose Square Body Fuse	G31
CC 7,5 gRD 2122	700V, 900V DC Rated Special Purpose Square Body Fuse	G32
CCNL	Shorting Links Kit for FB Series Fusible Disconnect Switches	K19
CEX	CEX Field Excitation Contactors (80 - 5000A)	L13
CNL	Fork Lift Truck Fuse 35-500A, 32V AC/DC	G18
CNN	Fork Lift Truck Fuse 10-800A	G18
Colomix 71	Colomix 71 (Blow Out Cage)	L14
Cooling Systems	Thermal Management Cooling Systems	M23
Copper Heatsinks	Air Cooled Heatsinks	M12
COU,COW,COX,COY	Box Cover Units	J2
COY-B, CSY-L, CSY-RL	Box Cover Units	J2
CP...A	Amp-Trap Cable Protectors, 600V, Al Cable	G2
CP...C	Amp-Trap Cable Protectors, 600V, Cu Cable	G2
CRN & CRS	Class H Canadian Fuse	F25
CRU,CRW,CRX,CRY	Box Cover Units	J2
CSU,CSW,CSX,CSY	Box Cover Units	J2
CTY, CCY, CKA	Box Cover Units	J2
DCT	1000V DC Ferrule Fuse	C6
DFC-1...DFC-12I	Dead Front Fuse Covers	H55
DFC3M, DFC3LP, DRM	Dead Front Safety Pullers	H57

Part Number	Description	Page
Dual Base Plate Heatsinks	Air Cooled Heatsinks	M13
EAFB..	Enclosed Disconnect Switch	K33
E AFC..	Enclosed Disconnect Switch	K33
EAFS..	Enclosed Disconnect Switch	K33
EASC..	Enclosed Disconnect Switch	K33
EBFB..	Enclosed Disconnect Switch	K33
EBFC..	Enclosed Disconnect Switch	K33
EBFS..	Enclosed Disconnect Switch	K33
EBSC..	Enclosed Disconnect Switch	K33
ECFB..	Enclosed Disconnect Switch	K33
ECFC..	Enclosed Disconnect Switch	K33
ECFS..	Enclosed Disconnect Switch	K33
ECSC..	Enclosed Disconnect Switch	K33
EDFS..	Enclosed Disconnect Switch	K33
EFFB..	Enclosed Disconnect Switch	K33
EFFC..	Enclosed Disconnect Switch	K33
EFFS..	Enclosed Disconnect Switch	K33
EFSC..	Enclosed Disconnect Switch	K33
EGFB..	Enclosed Disconnect Switch	K33
EGFC..	Enclosed Disconnect Switch	K33
EGFS..	Enclosed Disconnect Switch	K33
EGSC..	Enclosed Disconnect Switch	K33
EHFB..	Enclosed Disconnect Switch	K33
EHFC..	Enclosed Disconnect Switch	K33
EHFS..	Enclosed Disconnect Switch	K33
EHSC..	Enclosed Disconnect Switch	K.33
EJFS..	Enclosed Disconnect Switch	K33
Electrical Services	Electrical Services (Consulting, Training, Resources)	O3
Embedded Heatpipes	Air Cooled Heatpipes	M16
ES Series	Fusible Shunt Trip Engineered Disconnect Switch	K37
Extrusion Heatsinks	Air Cooled Heatsinks	M14
Fabfin Heatsinks	Air Cooled Heatsinks	M2
FBCC, FBJ Series	Fusible Disconnect Switch 30 to 60A	K19
FBJ, FBL Series	Fusible Disconnect Switch 100 to 800A	K20
FBJ Series	Fusible Disconnect Switch 30 to 400A	K21
FEB, FEC, FEX, FEY, FEBN	600V In-Line Breakaway Fuse Holders	H33
FES	Canadian Class C Fuse	F20
FESC	Canadian Class C Fuse	F20
FESF	Canadian Class C Fuse	F20
FH..	Semiconductor Fuse Blocks	H44
FSB1, FSB2	In-Line Fuse Holder Boot	H34
FSFE	Automotive SFE fuse	C23
FSLBS Series	Load Break Disconnect Switch	K2
FSM	Multi-Meter Fuse, 1000V	C7
FS-POP	Free Standing Floor Display	J12
FSPDB	Finger-Safe Power Distribution Blocks	I2
FSSC	Non-Fused Load Break Disconnect Switch	K6
Fuse Control Program	Get Control of Your Inventory	O5
G	Standard Plug Fuse-Non T-D CSA	B24
GAB	1/4" x 1" Ceramic Body Fuse	C20

Part Number	Description	Page	Part Number	Description	Page
GDG	5 mm x 20 mm Glass Body Fuse	C18	Hollowfin Heatsinks	Air Cooled Heatsinks	M9
GDG-V	5 mm x 20 mm Glass Body Fuse	C18	HP6J	600V DC Photovoltaic Protection Fuse	G40
GDL	1/4"x1-1/4" Glass Body Time Delay Fuse	C15	HP6M	600V DC Photovoltaic Protection Fuse	G38
GDL-V	1/4"x1-1/4" Glass Body Time Delay Fuse	C15	HP10M	1000V DC Photovoltaic Protection Fuse	G39
GFN	Midget Indicating Fuse	C9	HSE - HSD	Electrolytic Cell DC Disconnect Switch (Hundt and Weber)	L11
GGA	5 mm x 20 mm Glass Body Fuse	C17	HSJ	High Speed / Class J	B6
GGA-V	5 mm x 20 mm Glass Body Fuse	C17	HSP Series	Selector Handles for FB Series Fusible Disconnect Switches 30 to 60A	K19
GGC	1/4"x1-1/4" Glass Body Fast Acting Fuse	C16	HSP Series	Selector Handles for FB Series Fusible Disconnect Switches 100 to 800A	K20
GGC-V	1/4"x1-1/4" Glass Body Fast Acting Fuse	C16	HUVS Range Berg 3.6kV AC / DC	3.6kV AC / DC MV Changeover Disconnect (HUVS Range - Berg)	L3
GGM	5 mm x 20 mm Glass Body Fuse	C16	IL Indicator	Blown Fuse Indicators	J6
GGM-V	5 mm x 20 mm Glass Body Fuse	C16	Integrated Heatsinks	Air Cooled Heatsinks	M11
GGU	Midget Glass/Ceramic Body Fuse	C8	J136-J646	Class J Fuse Reducers	J3
GGX	1/4" x 1" Glass Body Fuse	C20	MC2R3E..	Protistor Microswitches	J10
GMS	Alarm Indicating Telecommunications Fuse	G17	MC3E..	Protistor Microswitch	J10
GP	Standard Plug Fuse "P" Type Non T-D CSA	B24	MCR3E..	Protistor Microswitch	J10
GPM	Panel Mount Fuse Holders	H37	MC 36	PSC Microswitch	J7
GSA	1/4"x1-1/4" Ceramic Body Time Delay Fuse	C15	MC 6,3	PSC Microswitch	J7
GSA-V	1/4"x1-1/4" Ceramic Body Time Delay Fuse	C15	MFD, MFD300	Miniature Fuse Display	J12
GSB	5 mm x 20 mm Glass Body Fuse	C18	Mixed Metals Heatsinks	Air Cooled Heatsinks	M10
GSB-V	5 mm x 20 mm Glass Body Fuse	C18	MRF, MRT	Radial Lead Micro Fuse	C22
GSC	5 mm x 20 mm Glass/Ceramic Body Fuse	C17	MS 4L..	PSC Microswitch	J7
GSC-V	5 mm x 20 mm Glass/Ceramic Body Fuse	C17	MS PA..	PSC Microswitch	J7
GSD	5 mm x 20 mm Ceramic Body Fuse	C19	MS 3V..	PSC Microswitch	J7
GSD-V	5 mm x 20 mm Ceramic Body Fuse	C19	MS 7V..	PSC Microswitch	J7
GSF	5 mm x 20 mm Ceramic Body Fuse	C19	NIT & NS	HRCII Canadian Fuse BS88	F23
GSF-V	5 mm x 20 mm Ceramic Body Fuse	C19	NORD DC Disconnect Switch	1500V DC Disconnect Switch (Fouilleret NORD)	L7
GSFC, GSFC-M	Spare Fuse Cabinets	J12	NRN & NRS	Class H Canadian Fuse	F24
GSGFD	Glass Fuse Display Rack	J12	Open Style PDBs	Open Style PDBs 62000-69000	I4
GSL	Standard Plug Fuse Rejection T-D UL	B24	OT	One-Time Fuse, Class K-5, 250V	B20
GSMR	Midget and Class CC Fuse Display Rack	J12	OTM	One-Time Midget Fuse, 250V	C5
GSR-V	7.1mm Plastic Body Fuse	C20	OTN	O-T Fuse, Class K-5, (Canadian "P") 250V	B20
GT	Standard Plug Fuse Low Temp T-D UL	B24	OTS	One-Time Fuse, Class K-5, 600V	B20
GTL	Standard Plug Fuse T-D UL	B24	P243, P266, P292	Semiconductor Fuse Blocks	H44
GW	Standard Plug Fuse-Non T-D UL	B24	PCF	PC Mount Fast-Acting Fuse	C11
HA Range Berg 1500V	1500V DC LV Disconnect Switch (HA Range - Berg)	L2	PCS	PC Mount Semiconductor Protection Fuse	C12
HADB1, HADB2	Direct Front Operation Handle for FB Series Fusible Disconnect Switches	K19	PCT	PC Mount Time Delay Fuse	C13
HADB4	Pistol Handle for FB Series Fusible Disconnect Switches	K21	PIQ Quiz	Circuit Protection Quizzes & Downloads	O7
HADB6	NFPA79 Front Operation Kit for FB Series Fusible Disconnect Switches	K19	Power Electronics	Power Electronics Solutions	O10
HADSS200	Direct mount black handle	N18	Press Pack Coolers	Press Pack Coolers	M22
HAF-..	Cable Flange Operated Handle for FB Series Fusible Disconnect Switches	K21	PS 20x127	Fuse Holders & no-load disconnectors	H48
HAS Range Berg 12kV	12kV AC MV Disconnect Switch (HAS Range - Berg)	L4	R-Tools	3D Heatsink Thermal Modeling	M26
HAS Range Berg 24kV	24kV AC MV Disconnect Switch (HAS Range - Berg)	L5	R132 - R642	Fuse Reducers Class RK1& RK5	J3
HAS Range Berg 36kV	36kV AC MV Disconnect Switch (HAS Range - Berg)	L6	RF	Renewable Fuse, 250V	B22
Heatpipes	Air Cooled Heatpipes	M15	RFS	Renewable Fuse, 600V	B22
Heatsinks, Air Cooled	Air Cooled Heatsinks	M2	RL	Renewable Links, 250V, for RF Fuse	B22
Heatsinks, Liquid Cooled	Liquid Cooled Heatsinks	M17	RLS	Renewable Links, 600V, for RFS Fuse	B22
HGPB, HGPR	External handle for Surge Switch	N18	SBS	1-3/8"x13/32" Fuse, 600V	C10
HGPB4, HGPR4	External handle for Surge Switch	N18	SC	Non-Fused Load Break Disconnect Switch	K9
High Power Test Lab	High Power Test Lab Overview & Contacts	O6	SE	IEC Back-Up Fuse Links	E49

# Advisor INDEX Index

Part Number	Description	Page
Select-A-Fuse	Select-A-Fuse Software	O9
SFRB	In-Line Fuse Holder for FSFE fuse	C23
SFRG	In-Line Fuse Holder for FSFE/2AG fuse	C23
SFRT	In-Line Fuse Holder for FSFE fuse	C23
SFRU	In-Line Fuse Holder for FSFE fuse	C23
SG200-10, SG320-10, SG400-10	Shafts for 200kA Surge Switch	N18
SHR	In-Line Fluorescent Light Fuse Holder for SLR/SMF	C24
SI	IEC Back-Up Fuse Links	E49
SL	Shorting Links Kit for FB Series Fusible Disconnect Switches 30 to 60A	K19
SL	Shorting Links Kit for FB Series Fusible Disconnect Switches 100 to 800A	K20
SLR	In-Line Fluorescent Light Fuse 1/2-15A	C24
SMF	In-Line Fluorescent Light Fuse 3/10-10A	C24
SMG	4 1/2"x14 1/2"mm Glass Body Fuse	C21
SMG-V	4 1/2"x14 1/2"mm Glass Body Fuse	C21
Solar Power Solutions	Solar Power Circuit Protection Solutions	O11
Soule PBD DC Disconnect Switch	2000V DC Disconnect Switch (Soule PBD)	L9
SS200-5 - SS500-10	Shafts for FB Series Fusible Disconnect Switches 30 to 60A	K19
SS200-10 - SS500-12	Shafts for FB Series Fusible Disconnect Switches 100 to 800A	K20
SS, SS200-4	Surge Switch, 200kA	N18
ST	Surge-Trap Modular SPD	N3
STG	4 1/2"x14 1/2"mm Glass Body Fuse	C21
STG-V	4 1/2"x14 1/2"mm Glass Body Fuse	C21
STP	Surge-Trap Pluggable SPD	N5
STT	Surge-Trap Type 1 SPD	N7
STXP	Surge-Trap Type 1 XP Series SPD	N11
STXR	Surge-Trap Type 1 XR Series SPD	N9
STXT	Surge-Trap Type 1 XT Series SPD	N13
SX	Non-Fused Load Break Disconnect Switch	K7
SXDC	Non-Fused Load Break Disconnect Switch	K8
TA	Blown Fuse Indicators	J5
TBB	1-Phase input Power Terminal	H3
TD	Standard Plug Fuse "D" Type Non T-D CSA	B24
Technical Services	Technical Services Support (Contacts and Resources)	O13
TGL	Telecommunication Fuse 70-800A, 170VDC	G15
TGN	Telecommunication Fuse 1-600A, 170VDC	G15
TGS	Telecommunication Fuse 1-70A, 170VDC	G15
Thermal Management	Product & Materials	M24
TI	Blown Fuse Indicators	J5
TL..	Terminal Lugs Kit for Fusible Disconnect Switches 100 to 800A	K20
TL..	Terminal Lugs Kit for Fusible Disconnect Switches 30 to 400A	K21
TPMOV	Thermal Protective Metal Oxide Varistor	N14
TR	Tri-onic Class RK5 Time Delay Fuse,250V	B2
TRM	Tri-onic Midget Time Delay Fuse, 250V	C4
TRS	Tri-onic Class RK5 Time Delay Fuse,600V	B2
TRS-RDC	Tri-onic DC Time Delay Fuse, 600V	B4

Part Number	Description	Page
TS..	Terminal Shroud Kits for Fusible Disconnect Switches 100 to 800A	K20
TS200SS, TS2004SS	Terminal Shields for 200kA Surge Switch	N18
U09311	Polycarbonate End Barriers for PDB Adder Blocks	I5
U09705	Polycarbonate End Barriers for PDB Adder Blocks	I7
U09911	Polycarbonate End Barriers for PDB Adder Blocks	I9
US12PJMP	12 Pole Jumper Bar	H3
US14, US22	UltraSafe Fuse Holders for 14x51 & 22x58 Fuses	H9
US3J	UltraSafe Fuse Holders for Class J 30A	H7
US3JN, US6JN	Ultrasafe Fuse Holder 1-Pole Neutral for Class J Fuses	H7
US3JPAK, US6JPAK	Pin-Tie Assembly Kits for use with US3J, US6J	H7
US6J	UltraSafe Fuse Holders for Class J 60A	H7
USCC	UltraSafe Fuse Holders for Class CC Fuses	H3
USCC-DC	UltraSafe Fuse Holders for Class CC Fuses DC Rated	H3
USFM	UltraSafe Fuse Module Compact 45mm width	H5
USM	UltraSafe Fuse Holders for Midget Fuses	H3
USM-DC	UltraSafe Fuse Holders for Midget Fuses DC Rated	H3
USN	UltraSafe Fuse Holder Neutral Link Accessory	H3
USPTH	UltraSafe Fuse Holder Pin Tie Accessory	H3
VSP	Surge Suppression Fuse	N16
Wind Power Solutions	Wind Power Circuit Protection Solutions	O12