Amounts shipped is dependent on shipping availability. (Roughly 3-5 MW per shipment, can be more or less) For more information or to place an order, please fill out the contact form below. Amounts shipped is dependent on shipping availability. (Roughly 3-5 MW per shipment, can be more or less) For more information or to place an order, please fill out the contact form below. A concise, regularly updated guide to notable graphene companies--covering producers, integrators, and application specialists across batteries, coatings, composites, and electronics. Why Track Graphene Companies? Graphene's combination of strength, electrical/thermal conductivity, and low weight Graphene increases power production by up to 30% when compared to other types of solar panels. This patented technology is covered by an amazing 30-year warranty that covers all parts and labor. A home with an average bill of $200 a month will pay over $100,000+ in electricity to power the home for Andwelé Energy is proud to introduce QueenGraf, the first solar panel in the world to feature Graphene. Graphene increases power production by up to 30% over other solar panels. This patented technology is covered by Andwelé Energy's industry-leading 30-Year Warranty that covers parts and labor! At American Graphene, we are pioneering the future of nanomaterials with our proprietary technology, meticulously crafting pristine semiconductor-grade single-layer graphene sheets that are poised to revolutionize technology as we know it. Our graphene represents the pinnacle of nanotechnology Our equipment is made with a material called Graphene, a thin layer of carbon that is lightweight, flexible, strong, highly conductive, and transparent. The characteristics of Graphene offer benefits to solar modules, especially compared to traditional bus bar technology in durability, power, and Graphene Solar Panels Amounts shipped is dependent on shipping availability. (Roughly 3-5 MW per shipment, can be more or less) For more information or to place an order, please fill out the contact form below. Top Graphene Companies : Best Graphene Manufacturersgraphene vs silicon solar panelsgraphene solar panels manufacturersfreevolt graphene solar panelssolar cell graphene applicationgraphene solar radiation absorptiontransparent grapheneDeep dive into Graphene solar panel manufacturergraphene vs silicon solar panelsgraphene solar panels manufacturersfreevolt graphene solar panelssolar cell graphene applicationgraphene solar radiation absorptiontransparent graphenegraphene solar technologiesgraphene for solar cellsSome results have been removed.sb_pagP_bp:after{transform-origin:-430px 0}.sb_pagP_bp:hover:after,.sb_pagP_bp:active:after,.sb_pagP_bp:focus:after{transform-origin:-514px 0}.sb_pagN_bp:after{transform-origin:-430px 0}.sb_pagN_bp:hover:after,.sb_pagN_bp:active:after,.sb_pagN_bp:focus:after{transform-origin:-514px 0}.sb_inactP:after,.sb_inactP:hover:after{transform-origin:-598px 0}.b_pag a{display:block;text-align:center}.b_pag a.sb_bp{min-width:40px;margin-right:20px;line-height:42px}.b_pag a.sb_pagN,.b_pag a.sb_pagP{border:0;padding:1px}.b_pag a.sb_pagN_bp,.b_pag a.sb_pagP_bp{width:40px;height:40px;margin-top:0}.b_pag a.sb_bp.sb_inactP{min-width:38px}.b_pag a.sb_pagP_bp.sb_inactP{width:38px}.b_pag a.b_roths{transform:rotate(180deg)}.b_pag .sw_prev,.b_pag .sw_next{margin:2px}@media screen and (forced-colors:active){.sb_pagN:after,.sb_pagP:after{content:""}li.b_pag

a.sb_pagN,li.b_pag   a.sb_pagP{width:auto}li.b_pag   a.b_roths{transform:rotate(0deg)}.b_pag .sw_next,.b_pag   .sw_prev{display:block}}z{a:1}Pagination123Next#b_content #b_context   > .b_ans{background-color:transparent;}#b_content #b_results.b_kcwptheme > li .b_deep h3 a{color:#1358A9;}#b_content #b_results.b_kcwptheme > li h2 a{color:#1358A9;}#b_content #b_results.b_kcwpthemeb   >   li   .b_deep   h3   a:hover{color:#1358A9;}#b_content #b_results.b_kcwpthemeb > li h2 a:hover{color:#1358A9;}#b_content .l_ecrd_bt_rings_img .cico{border-radius:50%;overflow:hidden;position:relative;}#b_context   .kcm-dtab-name-icon path{fill:#1358A9   !important;}#b_context   .l_ecrd_vqfcts   .b_module_expansion .b_expansion_wrapper{border:0;height:auto;margin-top:16px;}#b_context   .l_ecrd_vqfcts .b_onpage_expansion   .b_expansion_chevron{top:2px;}#b_context   .l_ecrd_vqfcts .b_onpage_expansion   .b_expansion_chevron   svg{height:12px;}#b_context   .l_ecrd_vqfcts .b_onpage_expansion   .b_expansion_text{color:#444;font-size:13px;font-weight:700;line-height:18px;}#b_context   .l_ecrd_vqfcts.whitespace   .b_module_expansion .b_expansion_wrapper{margin-top:4px;}#b_results   .lite-entcard-blk .l_ecrd_simgset{padding:16px   1px;}#b_results>li   .l_ecrd_simgset a.l_ecrd_rq_btxt{color:var(--smtc-foreground-content-neutral-primary);}#b_topw   ~   aside #b_context   .b_ans:first-child   .l_ecrd_nt{margin-top:10px;}#bpage.b_drk   .l_ecrd_vqfcts .l_ecrd_vqfcts_stock_up{color:#60BD84;fill:#60BD84;}#bpage:not(.b_drk)   .lite-entcard_f05f0 div.l_ecrd_vqfcts_row .lc_expfact a, #bpage:not(.b_drk) .lite-entcard_f05f0 div.l_ecrd_vqfcts_row .lc_expfact a:visited, .lite-entcard_f05f0 div.l_ecrd_vqfcts_row .lc_expfact a, .lite-entcard_f05f0 div.l_ecrd_vqfcts_row   .lc_expfact   a:visited,   .lite-entcard_f05f0 .l_ecrd_vqfcts_lnk{color:#1358A9;}#bpage:not(.b_drk) .lite-entcard_f05f0 div.l_ecrd_vqfcts_row a.lc_expfact_title,   #bpage:not(.b_drk)   .lite-entcard_f05f0   div.l_ecrd_vqfcts_row a.lc_expfact_title:visited, .lite-entcard_f05f0 div.l_ecrd_vqfcts_row a.lc_expfact_title, .lite-entcard_f05f0 div.l_ecrd_vqfcts_row a.lc_expfact_title:visited{color:#444;}#l_ecrd_bt_grad{--dark-color:hsl(212.39999999999998,70%,25%);--light-color:hsl(212.39999999999998,100%,45%);}#shdlg #shdlg-main, #shdlg.wide div#shdlg-main{background-color:unset;border:0;}#shdlg-sharesarea{background-color:#fff;}*:not(.l_ecrd_hero_ttl) >   div   >   a.l_ecrd_txt_lnk.l_ecrd_txt_hover:hover,*:not(.l_ecrd_hero_ttl)   >   div   > a.l_ecrd_item_hover:hover{color:var(--smtc-foreground-content-neutral-primary);}.b_dark .l_ecrd_a1_officialsite{border-bottom:1px   solid   var(--brdcol);}.b_dark   .l_ecrd_d3_svg svg{stroke:#ddd;}.b_dark .l_ecrd_ftr_txt, .b_dark .lite-entcard-main .l_ecrd_ftr_txt a, .b_dark .lite-entcard-main   .l_ecrd_ftr_txt   a:visited   {color:#767676;}.b_dark   .l_ecrd_imgpair_svg svg{stroke:#ddd;}.b_dark   .l_ecrd_mrabt_txt{color:#FAF9F8;}.b_dark .l_ecrd_txt_gl{color:var(--smtc-foreground-content-neutral-primary);}.b_dark   .l_ecrd_vqfcts .l_ecrd_vqfcts_exch{color:#FFF;}.b_dark   .l_ecrd_vqfcts .l_ecrd_vqfcts_stock_down{color:#FF6666;fill:#FF6666;}.b_dark   .lite-entcard-blk:not(:last-child):not(.l_ecrd_bkg_bdrls), .b_dark .lite-entcard-main > div:not(:last-child) > .lite-entcard-

blk:not(.l_ecrd_bkg_bdrls) {border-bottom-color:var(--cardsbk);}.b_dark .lite-entcard-main{background-color:#f7f7f7;box-shadow:0 0 0 1px #E1E1E1, 0 2px 3px 0 #E1E1E1;}.b_dark .lite-entcard-main, .b_dark .lite-entcard-main a, .b_dark .lite-entcard-main a:visited {color:#444;}.b_dark .lite-entcard_f05f0 .l_ecrd_tabtbl .tfil-active, #bpage.b_drk .lite-entcard_f05f0 .l_ecrd_tabtbl .tfil-active{background-color:#B4E6FF !important;border:1px solid #B4E6FF !important;color:#292827 !important;}.b_dark .lite-entcard_f05f0 .l_ecrd_hov_thm:hover{background-color:unset;}.b_dark a.l_ecrd_a1_seemorelink:link{color:var(--acf-color-fore-semantic-link);}.b_dark a.l_ecrd_a1_see morelink:visited{color:var(--bing-smtc-ctrl-link-foreground-brand-alt-visited);}.b_kcwpthemebg{background-color:#F6F9FC !important;}.kc-dtab-name{background-color:#F6F9FC;border:1px solid #1358A9;}.kcm-dtab-name{background-color:#F6F9FC;color:#1358A9;}.l_acf_car[data-wptds-carousel] li[data-wptds-carousel-item]:has(.l_acf_car_imgset_cont:hover) > .l_acf_car_item .l_acf_car_tim .l_acf_car_tim_dot,.l_acf_car[data-wptds-carousel] li[data-wptds-carousel-item]:has(.l_acf_car_imgset_cont:focus) > .l_acf_car_item .l_acf_car_tim .l_acf_car_tim_dot{background:#1358A9;}.l_acf_smry .l_ecrd_webicons > div{overflow:visible;}.l_acf_smry .l_ecrd_webicons > div > a{display:block;outline-offset:6px;overflow:hidden;position:relative;z-index:1;}.l_acf_smry .l_ecrd_webicons > div:focus-within{outline:none;}.l_acf_smry .l_ecrd_webicons a .sp-tpwebicons{border-radius:50%;overflow:hidden;}.l_ecrd_a1{padding:16px 20px;}.l_ecrd_a1 .spl_trnsths{padding-top:var(--smtc-gap-between-content-small);}.l_ecrd_a1 div.SITE{padding:0 var(--smtc-gap-between-content-x-small) 0 0;}.l_ecrd_a1_officialsite{border-bottom:none;padding:16px 20px;}.l_ecrd_bkg_img{position:absolute;z-index:-1;}.l_ecrd_bt_ring{left:0;position:absolute;top:0;}.l_ecrd_bt_rings_img .spl_playIcon{bottom:0;height:34px;left:unset;right:0;top:unset;transition:all ease-in-out .2s;width:34px;}.l_ecrd_bt_rings_item:hover .spl_playIcon{transform:scale(1.1);}.l_ecrd_bt_rings_s{padding:16px 20px;}.l_ecrd_bt_rings_s .l_ecrd_bt_ml_tit{font-size:20px;line-height:24px;margin-bottom:8px;}.l_ecrd_bt_rings_s .l_ecrd _bt_rings_flex{column-gap:16px;display:flex;flex-wrap:nowrap;justify-content:center;row-gap:8px;}.l_ecrd_bt_rings_s .l_ecrd_bt_rings_flex.l_ecrd_rings_flex_rr{flex-direction:row-reverse;}.l_ecrd_bt_rings_s .l_ecrd_bt_rings_flex.l_ecrd_rings_flex_vc{align-items:center;}.l_ecrd_bt_rings_s .l_ecrd_bt_rings_img{border-radius:50%;flex-shrink:0;padding:7px;position:relative;}.l_ecrd_bt_rings_s .l_ecrd_bt_rings_item{cursor:pointer;position:relative;transform:translateZ(0);}.l_ecrd_bt_rings_s .l_ecrd_bt_rings_sttl{-webkit-box-orient:vertical;-webkit-line-clamp:3;display:-webkit-box;font-size:13px;font-weight:400;line-height:20px;overflow:hidden;padding-top:4px;text-align:left;}.l_ecrd_bt_rings_s .l_ecrd_bt_rings_ttl{-webkit-box-orient:vertical;-webkit-line-clamp:2;display:-webkit-box;font-size:18px;font-weight:700;line-height:22px;overflow:hidden;text-

align:left;}.l_ecrd_bt_rings_s .l_ecrd_txt_gl{display:block;padding-bottom:12px;}.l_ecrd_d3{padding:16px 20px;}.l_ecrd_d3_fct2{padding-bottom:16px;}.l_ecrd_d3_fct3{clear:both;}.l_ecrd_d3_fct3 .l_ecrd_imgpair_img{padding-top:16px;}.l_ecrd_d3_fct_l .l_ecrd_d3_img{float:right;padding-bottom:12px;padding-left:12px;position:relative;z-index:1;}.l_ecrd_d3_fct_r .l_ecrd_d3_img{float:left;padding-bottom:12px;padding-right:12px;position:relative;z-index:1;}.l_ecrd_d3_svg{display:flex;}.l_ecrd_d3_svg svg{height:1px;padding-bottom:16px;padding-top:16px;stroke:#DDD;stroke-width:2px;width:calc(100% + 20px);}.l_ecrd_ftr{display:flex;padding:12px 20px;position:relative;}.l_ecrd_ftr_seemore{background:#FFF;border:1px solid;border-radius:18px;bottom:-16px;font-weight:700;left:0;line-height:18px;margin:auto;padding:4px 16px;position:absolute;right:0;width:fit-content;z-index:1;}.l_ecrd_ftr_txt a,.l_ecrd_ftr_txt a:visited{text-decoration:underline;}.l_ecrd_ftr_txt,.l_ecrd_ftr_txt a,.l_ecrd_ftr_txt a:visited,.fdbtext{color:#444;font-size:11px;line-height:15px;}.l_ecrd_ftr_txt.hover_underline a,.l_ecrd_ftr_txt.hover_underline a:visited{text-decoration:none;}.l_ecrd_ftr_txt.hover_underline a:hover{text-decoration:underline;}.l_ecrd_hero{padding-top:1px;}.l_ecrd_hero .cico{border-radius:0;}.l_ecrd_hero .l_ecrd_rel .cico{overflow:visible;}.l_ecrd_hero .l_ecrd_rel .cico a{display:inline-block;}.l_ecrd_hero .l_ecrd_webicons{direction:ltr;margin-left:var(--mai-smtc-padding-card-default);margin-top:-14px;position:relative;}.l_ecrd_hero .l_ecrd_webicons > div{box-shadow:0 1px 4px 1px rgb(0 0 0 / 25%);}.l_ecrd_hero .l_ecrd_webicons > div:hover{box-shadow:0 1px 4px 1px rgb(0 0 0 / 40%);transform:scale(1.10,1.10);transition:all ease-in-out .2s;}.l_ecrd_hero .l_ecrd_webicons_with_title_hover{direction:ltr;margin-left:var(--mai-smtc-padding-card-default);margin-top:-14px;position:relative;z-index:2;}.l_ecrd_hero .l_ecrd_webicons_with_title_hover .l_ecrd_webicon_with_title_item{box-shadow:0 1px 4px 1px rgb(0 0 0 / 25%);}.l_ecrd_hero .spl_share{bottom:40px;color:var(--mai-smtc-foreground-ctrl-on-image-rest);position:absolute;right:var(--smtc-gap-between-content-x-small);z-index:1;}.l_ecrd_hero .spl_share a, #b_content .spl_share a{background:rgba(0, 0, 0, .7);border-radius:var(--smtc-corner-card-rest);color:var(--mai-smtc-foreground-ctrl-on-image-rest);}.l_ecrd_hero .spl_share svg{fill:var(--mai-smtc-foreground-ctrl-on-image-rest);margin:var(--smtc-gap-between-content-x-small);stroke:var(--mai-smtc-foreground-ctrl-on-image-rest);width:var(--smtc-gap-between-content-small);}.l_ecrd_hero.cliphero{padding-top:0;}.l_ecrd_hero.cliphero .l_ecrd_rel{border-top-left-radius:var(--mai-smtc-corner-list-card-nested-default);border-top-right-radius:var(--mai-smtc-corner-list-card-nested-default);display:contents;overflow:unset;}.l_ecrd_hero.kcHeroClip{clip-path:url(#kcHeroClip);;}.l_ecrd_hero_smi{background:rgba(0, 0, 0, .7);border-radius:var(--smtc-corner-card-rest);color:var(--mai-smtc-foreground-ctrl-on-image-rest);height:var(--smtc-gap-between-content-small);padding:var(--smtc-padding-ctrl-sm-horizontal-default);position:absolute;right:var(--smtc-padding-ctrl-sm-horizontal-default);}.l_ecrd_hero_smi

> div{float:right;font:var(--bing-smtc-text-global-caption1);margin-left:var(--smtc-gap-between-content-x-small);margin-top:-8px;}.l_ecrd_hero_smi > svg{float:left;}.l_ecrd_hero_ttl,.l_ecrd_hero_subttl,.l_ecrd_hero_desc,.l_ecrd_txt_bld{font-weight:bold;}.l_ecrd_hero_txt{left:var(--mai-smtc-padding-card-default);position:absolute;z-index:1;}.l_ecrd_hero_txt > div:not(:last-of-type){margin-bottom:var(--smtc-gap-between-content-x-small);}.l_ecrd_hero_txt,#b_content .l_ecrd_hero_txt p,.lite-entcard-main .l_ecrd_hero_txt div,.lite-entcard-main .l_ecrd_hero_txt a,.lite-entcard-main .l_ecrd_hero_txt a:visited,.lite-entcard-head .l_ecrd_hero_txt div,.lite-entcard-head .l_ecrd_hero_txt a,.lite-entcard-head .l_ecrd_hero_txt a:visited,#bpage.b_drk .lite-entcard-head .l_ecrd_hero_txt a,#bpage.b_drk .lite-entcard-head .l_ecrd_hero_txt a:visited{color:#fff;}.l_ecrd_hero_txt.l_ecrd_hero_txt_bottom{bottom:10%;}.l_ecrd_hero_txt.l_ecrd_hero_txt_bottom_claim{bottom:0px;}.l_ecrd_hero_txtmsk{text-shadow:0 0 40px rgb(0 0 0), 0 0 20px rgb(0 0 0 / 50%), 0 0 10px rgb(0 0 0 / 20%);}.l_ecrd_hov{min-height:30px;position:fixed;text-align:left;visibility:hidden;width:233px;}.l_ecrd_hov .l_ecrd_hov_qna .l_ecrd_hov_qna_site_txt{font-size:13px;font-weight:700;line-height:20px;overflow:hidden;text-overflow:ellipsis;white-space:nowrap;}.l_ecrd_hov.lc_hoverhook{box-shadow:0 4px 12px 0 rgb(0 0 0 / 35%);}.l_ecrd_hov_qna .l_ecrd_txt{font-size:12px;line-height:16px;position:relative;}.l_ecrd_hov_qna a{text-decoration:none;}.l_ecrd_hov_qna_site{align-items:center;display:flex;padding:0 12px 12px 12px;}.l_ecrd_hov_qna_site .sp-tpwebicons.SITE{flex-shrink:0;padding:0 8px 0 0;}.l_ecrd_hov_qna_site_fav{border-radius:4px;flex-shrink:0;height:20px;margin-right:8px;overflow:hidden;width:20px;}.l_ecrd_hov_qna_txt{padding:12px;position:relative;}.l_ecrd_hov_qna_txt p{position:relative;}.l_ecrd_imcolheader .l_ecrd_webicon_with_title_txtside{box-shadow:0 1px 4px 1px rgb(0 0 0 / 25%);}.l_ecrd_imcolheader .l_ecrd_webicons_with_title_hover{margin-left:-12px;padding-bottom:16px;}.l_ecrd_imcolheader .l_ecrd_webicons_with_title_hover .l_ecrd_webicon_with_title_item{box-shadow:0 1px 4px 1px rgb(0 0 0 / 25%);}.l_ecrd_imcolheader.gradient .l_ecrd_claimed_thumb svg path, .l_ecrd_hero .l_ecrd_claimed_thumb svg path{fill:#FFF;}.l_ecrd_imcolheader.gradient .l_ecrd_claimed_tip:hover:before, .l_ecrd_imcolheader.gradient .l_ecrd_claimed_tip:hover:after,.l_ecrd_hero .l_ecrd_claimed_tip:hover:before,.l_ecrd_hero .l_ecrd_claimed_tip:hover:after{background-color:#FFF;color:#444;}.l_ecrd_imcolheader.gradient .l_ecrd_webicon_with_title_txtside{box-shadow:0 1px 4px 1px rgb(0 0 0 / 25%);margin-top:-12px;}.l_ecrd_imcolheader.gradient .l_ecrd_webicon_with_title_txtside:hover{box-shadow:0 1px 4px 1px rgb(0 0 0 / 40%);transform:scale(1.10,1.10);transition:all ease-in-out .2s;}.l_ecrd_imcolheader.gradient .l_ecrd_webicons_with_title_hover .l_ecrd_webicon_with_title_item{box-shadow:0 1px 4px 1px rgb(0 0 0 / 25%);margin-top:-12px;}.l_ecrd_img_m{margin-bottom:auto;margin-top:auto;}.l_ecrd_imgpair{align-items:center;display:flex;flex-flow:row wrap;}.l_ecrd_imgpair.l_ecrd_imgpair_f{display:inline-block;width:100%;}.l_ecrd_imgpair.l_ecrd_imgpair_ttop{align-

items:start;}.l_ecrd_imgpair_cont{flex-basis:0;flex-grow:1;}.l_ecrd_imgpair_l .l_ecrd_img_f{float:left;}.l_ecrd_imgpair_l .l_ecrd_imgpair_img, html[dir = 'rtl'] .l_ecrd_imgpair_r .l_ecrd_imgpair_img{padding-left:0px;padding-right:12px;}.l_ecrd_imgpair_l .l_ecrd_imgpair_svg svg{margin-right:-20px;}.l_ecrd_imgpair_l .l_ecrd_imgpair_txt{text-align:right;}.l_ecrd_imgpair_l .l_ecrd_tud{float:right;}.l_ecrd_imgpair_r .l_ecrd_imgpair_img, html[dir = 'rtl'] .l_ecrd_imgpair_l .l_ecrd_imgpair_img{padding-left:12px;padding-right:0px;}.l_ecrd_imgpair_r .l_ecrd_imgpair_svg svg{margin-left:-20px;}.l_ecrd_imgpair_r .l_ecrd_imgpair_txt{text-align:left;}.l_ecrd_imgpair_svg{display:flex;padding-bottom:16px;}.l_ecrd_imgpair_svg svg{height:1px;stroke:#DDD;stroke-width:2px;width:calc(100% + 20px);}.l_ecrd_mrabt{display:block;padding:16px 20px 12px 20px;}.l_ecrd_mrabt_txt{-webkit-box-orient:vertical;-webkit-line-clamp:2;color:#111111;display:-webkit-box;font-size:20px;line-height:28px;margin-bottom:4px;overflow:hidden;padding-inline-end:20px;text-overflow:ellipsis;white-space:normal;word-break:break-word;}.l_ecrd_mttl{display:flex;margin-bottom:var(--smtc-gap-between-content-medium);}.l_ecrd_mttl > div{flex:1 1 auto;}.l_ecrd_mttl > div:last-of-type{flex:0 0 auto;}.l_ecrd_mttl svg{margin-top:-1px;vertical-align:middle;}.l_ecrd_newdesc.l_ecrd_a1{color:var(--smtc-foreground-content-neutral-secondary);display:block;margin:0;padding:0;text-decoration:none;}.l_ecrd_newdesc.l_ecrd_a1 .l_wptnewdesc .l_ecrd_see_more{color:var(--bing-smtc-foreground-content-brand-rest);}.l_ecrd_newdesc.l_ecrd_a1 .l_wptnewdesc .l_ecrd_see_more:hover{text-decoration:underline;}.l_ecrd_newdescweb.l_ecrd_webicons_with_title_A1.non-acf-web-icon .l_ecrd_webicons_with_title_SingleWrapper{display:flex;flex-direction:row;gap:var(--smtc-gap-between-content-x-small);height:fit-content;}.l_ecrd_poleheader .kc-dtab-name{background-color:#FFF;border:1px solid #1358A9;}.l_ecrd_poleheader .kc-dtab-name-active{background-color:#FFF;border:1px solid #166CCF;}.l_ecrd_poleheader .kc-dtab-name-active .l_ecrd_thmtxt{color:#FFF;}.l_ecrd_poleheader.lightbg .l_ecrd_rel{background-color:#F6F9FC;}.l_ecrd_rel{position:relative;}.l_ecrd_rq_btxt{font:var(--bing-smtc-text-global-caption1-strong);}.l_ecrd_simgset{padding:var(--smtc-gap-between-content-medium) var(--mai-smtc-padding-card-default);}.l_ecrd_simgset .l_ecrd_imgsetgrid_ttl{margin-bottom:var(--smtc-gap-between-content-medium);}.l_ecrd_simgset .l_ecrd_simgset_item_data{margin-top:var(--smtc-gap-between-content-x-small);}.l_ecrd_simgset .l_ecrd_simgset_item_data > div{-webkit-box-orient:vertical;-webkit-line-clamp:2;display:-webkit-box;overflow:hidden;text-overflow:ellipsis;}.l_ecrd_simgset a{outline-offset:-1px;}.l_ecrd_simgset li{display:inline-block;margin-right:var(--smtc-gap-between-content-x-small);overflow:hidden;vertical-align:top;}.l_ecrd_simgset li .cico{border-radius:var(--mai-smtc-corner-list-card-nested-default);}.l_ecrd_simgset li:last-of-type{margin-right:0px;}.l_ecrd_simgset ul{direction:ltr;}.l_ecrd_simgset.l_ecrd_simgset_circle .l_ecrd_simgset_item_data{text-align:center;}.l_ecrd_simgset.l_ecrd_simgset_circle li .cico{border-radius:50%;}.l_ecrd_tmln_itm:hover .l_ecrd_brdr_thm.l_ecrd_tmln_bullet{background:#1358A9;

}.l_ecrd_tud{float:left;padding-top:8px;}.l_ecrd_tud a,.l_ecrd_tud a:link{color:#001BA0;}.l_ecrd _txt_gl{color:var(--smtc-foreground-content-neutral-primary);font:var(--acf-font-title-1-strong);}.l_ecrd_txt_herol, .l_ecrd_txt_large{font-size:60px;line-height:60px;}.l_ecrd_txt_ hlt{font-size:18px;font-weight:bold;line-height:24px;}.l_ecrd_txt_lnk.l_ecrd_txt_hover.l_ecrd_hov_hitbox, .l_ecrd_hov_hitbox p{display:i nline;}.l_ecrd_txt_ttl,.l_ecrd_txt_bld,.l_ecrd_txt_qfttl,.l_ecrd_txt_modttl,.l_ecrd_txt_heroxl,.l_ecr d_txt_herol,.l_ecrd_txt_herom,.l_ecrd_txt_heros,.l_ecrd_txt_heroxs,.l_ecrd_txt_heroxxs,.l_ecrd_q fcts_prim,.l_ecrd_bqfcts_txt.lite-entcard-exp-tit h2{font-weight:bold;}.l_ecrd_vqfcts{padding:16px 20px;}.l_ecrd_vqfcts .b_collapse{display:none;}.l_ecrd_vqfcts .b_module_expansion{margin:0 0;}.l_ecrd_vqfcts .b_module_expansion_control{padding:0;}.l_ecrd_vqfcts .l_ecrd_vqfcts_exch{color:#767676;}.l_ecrd_vqfcts .l_ecrd_vqfcts_stock_down{color:#C80000;fill:#C80000;}.l_ecrd_vqfcts .l_ecrd_vqfcts_stock_up{color:#3B840C;fill:#3B840C;}.l_ecrd_vqfcts .lc_expfact .lc_expfact_title{font-size:13px;}.l_ecrd_vqfcts.whitespace .l_ecrd_vqfcts_row:after{border-bottom:1px solid transparent;content:" ";display:block;width:100%;}.l_ecrd_vqfcts.whitespace.line .l_ecrd_vqfcts_row.l_ecrd_vqfcts_row_nodivider:nth-last-child(1):after{border-bottom:1px solid transparent;}.l_ecrd_vqfcts.whitespace.line .l_ecrd_vqfcts_row:after{border-bottom:1px solid #ececec;margin-bottom:8px;margin-top:8px;}.l_ecrd_vqfcts.whitespace.thin .l_ecrd_vqfcts_row:after{display:none;}.l_ecrd_vqfcts.whitespace.thin .l_ecrd_vqfcts_row_space{ margin-top:4px;}.l_ecrd_vqfcts_row_space{margin-top:8px;}.l_ecrd_webicon_module_item{bord er-radius:9999px;flex-shrink:0;height:28px;width:28px;}.l_ecrd_webicon_module_item > a{borde r-radius:9999px;display:inline-block;outline-offset:2px;overflow:hidden;}.l_ecrd_webicon_module_wrapper:hover .l_ecrd_webicon_module_it em_title{text-decoration:underline;}.l_ecrd_webicon_txtside{align-items:center;display:flex;overflow:hidden;}.l_ecrd_webicon_txtside .sp-webicons32 #salookinsidebooksvg{padding:8px;}.l_ecrd_webicons{direction:ltr;display:flex;}.l_ecrd_webico ns > div{border-radius:9999px;flex-shrink:0;margin-right:12px;overflow:hidden;}.l_ecrd_webicons > div:focus-within{outline:auto;}.l_ecrd_webicons > div:last-of-type{margin-right:0;}.l_ecrd_webicons a:hover{text-decoration:none;}.l_ecrd_webicons_with_title, .l_ecrd_webicons_with_title_Single{border-top:1px solid var(--cardsbk);display:flex;padding-bottom:16px;padding-left:20px;padding-top:16px;}.l_ecrd_webicons_with_title_A1, .l_ecrd_webicons_with_title_Single_A1{display:flex; padding-bottom:16px;padding-left:20px;padding-top:16px;}.l_ecrd_webicons_with_title_SingleW rapper{display:inline-flex;}.l_ecrd_webicons_with_title_SingleWrapper > a{padding-left:8px;padding-right:8px;}.l_ecrd_webicons_with_title_SingleWrapper:hover .l_ecrd_webicon_module_item{box-shadow:0 1px 4px 1px rgb(0 0 0 /

40%);transform:scale(1.10,1.10);transition:all ease-in-out .2s;}.l_ecrd_webicons_with_title_SingleWrapper:hover .l_ecrd_webicon_txtside{text-decoration:underline;}.lite-entcard-ans > div:last-child .l_ecrd_ftr{margin-bottom:28px;}.lite-entcard-blk{clear:both;position:relative;}.lite-entcard-blk > div:not(.l_ecrd_bkg_img){position:relative;}.lite-entcard-blk:empty{visibility:hidden;}.lite-entcard-blk:not(:first-child){width:100%;}.lite-entcard-blk:not(:last-child):not(.l_ecrd_bkg_bdrls),.lite-entcard-main > div:not(:last-child) > .lite-entcard-blk:not(.l_ecrd_bkg_bdrls){border-bottom:1px solid #DDD;}.lite-entcard-main{border-radius:6px;box-shadow:0 0 0 1px rgba(0,0,0,.05), 0 2px 3px 0 rgba(0,0,0,.1);color:#444;font-size:13px;line-height:20px;margin-bottom:4px;width:100%;}.lite-entcard-main a,.lite-entcard-main a:visited{color:#444;}.lite-entcard-main a:focus-visible .bsimg{outline-offset:-2px;outline-style:auto;}.lite-entcard-mainp{-webkit-line-clamp:initial;}.lite-entcard-maintop .l_ecrd_bt_rings_flex_np .l_ecrd_bt_rings_sttl{font-size:14px;}.lite-entcard-maintop .l_ecrd_bt_rings_s{border-radius:6px;box-shadow:0px 0px 0px 1px rgba(0, 0, 0, 0.05);margin:-15px -20px 0 -20px;padding:15px 20px;}.lite-entcard-maintop .l_ecrd_ftr{margin:0 20px 0 -20px;padding:12px 20px 4px 20px;}.lite-entcard-maintop .l_ecrd_ftr_txt a{text-decoration:none;}.lite-entcard-maintop .l_ecrd_rings_flex_ml .l_ecrd_bt_rings_ttl{color:#4007a2;font-size:20px;font-weight:400;line-height:24px;}.lite-entcard-maintop l_ecrd_rings_flex_ml .l_ecrd_bt_rings_sttl{font-size:16px;line-height:24px;padding-bottom:8px;}.lite-entcard-maintop.l_ecrd_ans_expand .lite-entcard-blk{border-top:1px solid #DDD;}.lite-entcard_f05f0 .l_ecrd_chart_bar_thm{background:linear-gradient(to bottom, #009BDE 0%, #1358A9 100%);}.lite-entcard_f05f0 .l_ecrd_tabtbl .tfil-active{background-color:#1358A9 !important;border:1px solid #1358A9 !important;}.lite-entcard_f05f0 .l_ecrd_bkg_hlt{background-color:#F6F9FC;}.lite-entcard_f05f0 .l_ecrd_bkg_txthlt{background-color:#1358A9;}.lite-entcard_f05f0 .l_ecrd_brdr_thm{border-color:#1358A9;}.lite-entcard_f05f0 .l_ecrd_chart_hbar_thm{background:linear-gradient(to left, #009BDE 0%, #1358A9 100%);}.lite-entcard_f05f0 .l_ecrd_hov .l_ecrd_hov_qna .l_ecrd_hov_qna_site_txt, .lite-entcard_f05f0 .l_ecrd_txt_hlt, .lite-entcard_f05f0 .sp-tpwebicons.sp-symbolicon.SRCH {color:#1358A9;}.lite-entcard_f05f0 .l_ecrd_hov_thm:hover{background-color:#F6F9FC;}.lite-entcard_f05f0 .l_ecrd_hov_thmtxt:hover{color:#1358A9;}.lite-entcard_f05f0 .l_ecrd_thm_fill{fill:#F6F9FC;}.lite-entcard_f05f0 .l_ecrd_thmtxt, .lite-entcard_f05f0 a.l_ecrd_thmtxt, .lite-entcard_f05f0 a.l_ecrd_thmtxt:visited{color:#1358A9;}.lite-entcard_f05f0 .l_ecrd_tthm_fill{fill:#1358A9;}.lite-entcard_f05f0 .sp-ofsite, .lite-entcard_f05f0 .l_ecrd_product .spl_stf, .lite-entcard_f05f0 .spl_trnsths, .lite-entcard_f05f0 .lc_expfact_plus, .lite-entcard_f05f0 .b_slidesContainer .seeAll_chev circle, .lite-entcard_f05f0 .sp-symbolicon .gray50_fill{fill:#1358A9;}.lite-entcard_f05f0 .spl_trnsths a, .lite-entcard_f05f0 .spl_trnsths a:visited{color:#1358A9;}.lite_acf .l_ecrd_hero .l_ecrd_rel .cico a{border-radius:var(--smtc-corner-card-rest);display:flex;outline-offset:-2px;position:relative;}.lite_acf .l_ecrd_hero .l_ecrd_rel .cico a:focus{outline:3px dotted #1AEBFF;outline-offset:-4px;}.lite_acf .l_ecrd_rel >

a{display:flex;position:relative;}.lite_acf.lite-entcard_f05f0 .l_ecrd_hov_thm:hover{background-color:#F6F9FC;}.spl-car-tmln-container:hover.spl-car-tmln-dot{background:#1358A9;}a.ent-dtab-btn{background-color:var(--AC_ThemeBack2, #F6F9FC);border-color:var(--AC_ThemeFore1, #1358A9);color:var(--AC_ThemeFore1, #1358A9);}a.ent-dtab-btn.active{background-color:var(--AC_ThemeFore1, #1358A9);border-color:var(--AC_ThemeFore1, #1358A9);color:var(--AC_ThemeBack2, #F6F9FC);}a.ent-dtab-btn.ent-dtab-btn-hipo f-override.ent-dtab-tabuxv1{background-color:var(--AC_ThemeBack2, #F6F9FC);border-color:var(--AC_ThemeFore1, #1358A9);color:var(--AC_ThemeFore1, #1358A9);fill:var(--AC_ThemeFore1, #1358A9);}a.l_ecrd_a1_seemorelink:link{color:var(--acf-color-fore-semantic-link);}a.l_ecrd_a1_seemorelink:visited{color:var(--bing-smtc-ctrl-link-foreground-brand-alt-visited);}a.l_ecrd_txt_lnk{text-decoration:none;}a.l_ecrd_txt_lnk:hover *:not(.l_ecrd_txt_nound):not(p){text-decoration:underline;}a:focus > .l_ecrd_hero_smi{border:1px solid var(--mai-smtc-foreground-ctrl-on-image-rest);}a:hover .l_ecrd_hero_smi > div{text-decoration:underline;}div.l_ecrd_imcolheader div.cico{z-index:1;}html[dir='ltr'] .l_ecrd_webicon_module_wrapper, .l_ecrd_webicons_with_title_Single{padding-right:12px;}html[dir='ltr'] .l_ecrd_webicon_module_wrapper, .l_ecrd_webicons_with_title_Single_A1{padding-right:12px;}html[dir='ltr'] .l_ecrd_webicons_with_title > div:last-of-type{padding-right:0;}html[dir='ltr'] .l_ecrd_webicons_with_title_A1 > div:last-of-type{padding-right:0;}html[dir='rtl'] .l_ecrd_mttl svg{transform:scaleX(-1);}html[dir='rtl'] .l_ecrd_simgset ul li{direction:rtl;}html[dir='rtl'] .l_ecrd_tud{float:right;}html[dir='rtl'] .l_ecrd_webicon_module_wrapper{padding-left:12px;}html[dir='rtl'] .l_ecrd_webicons_with_title, .l_ecrd_webicons_with_title_Single{padding-right:20px;}html[dir='rtl'] .l_ecrd_webicons_with_title_A1, .l_ecrd_webicons_with_title_Single_A1{padding-right:20px;}.l_ecrd_webicon_module_item_title{display:block;font:11px/15px 'Roboto',Helvetica,Sans-Serif;padding-top:4px;text-align:center;}@media (prefers-color-scheme: dark){#bpage.b_med .l_ecrd_vqfcts .l_ecrd_vqfcts_exch{color:#FFF;}#bpage.b_med .l_ecrd_vqfcts .l_ecrd_vqfcts_stock_down{color:#FF6666;fill:#FF6666;}#bpage.b_med .l_ecrd_vqfcts .l_ecrd_vqfcts_stock_up{color:#60BD84;fill:#60BD84;}}@media only screen and (max-width:.9px){.l_ecrd_hero .l_ecrd_webicons{margin-top:-10px;}.l_ecrd_hero .l_ecrd_webicons_with_title_hover{margin-left:9px;margin-top:-12px;}.l_ecrd_hero .spl_share span{display:none;}.l_ecrd_hero_smi_txt{display:none;}.l_ecrd_hero_txt > div:not(:last-of-type){margin-bottom:0;}.l_ecrd_webicons > div{margin-right:8px;}.lite-entcard-main .l_ecrd_txt_herol{font-size:40px;line-height:40px;}.lite-entcard-main .l_ecrd_txt_herom{font-size:30px;line-height:30px;}.lite-entcard-main .l_ecrd_txt_heros{font-size:28px;line-height:28px;}.lite-entcard-main .l_ecrd_txt_heroxl{font-size:50px;line-height:50px;}.lite-entcard-main .l_ecrd_txt_heroxs{font-size:24px;line-height:24px;}.lite-entcard-main .l_ecrd_txt_heroxxs{font-size:20px;line-height:16px;}#b_context .l_ecrd_simgset li:nth-of-

type(3){margin-right:0px;}#b_context .l_ecrd_simgset li:nth-of-type(4){display:none;}}@media only screen and (max-width:.9px){.l_ecrd_webicon_module_wrapper:nth-of-type(n+5){display:none;}}@media only screen and (max-width:.9px){.l_ecrd_txt_herol{font-size:50px;line-height:50px;}}#b_context .l_ecrd_simgset li:nth-of-type(4){margin-right:0px;}#b_context .l_ecrd_simgset li:nth-of-type(5){display:none;}}@media only screen and (max-width:.9px) and (min-width:1269px){.l_ecrd_hero .l_ecrd_webicons{margin-top:-12px;}.l_ecrd_hero_txt > div:not(:last-of-type){margin-bottom:var(--smtc-gap-between-content-xx-small);}}@media only screen and (max-width:.9px) and (min-width:1275px){.l_ecrd_webicon_module_wrapper:nth-of-type(n+6){display:none;}}@media only screen and (min-width:.9px){.l_ecrd_vqfcts .l_ecrd_vqfcts_row:nth-child(even) .lc_expfact{margin-left:4px;}.l_ecrd_vqfcts.l_ecrd_vqfcts_row:nth-child(odd).lc_expfact{margin-right:4px;}.l_ecrd_vqfcts .l_ecrd_vqfcts_row{box-sizing:border-box;display:inline-block;width:50%;}.l_ecrd_vqfcts.line .l_ecrd_vqfcts_row.l_ecrd_vqfcts_row_nodivider:nth-child(odd):nth-last-child(2):after{border-bottom:1px solid transparent;}}@media screen and (-ms-high-contrast:active){.l_ecrd_hero_smi svg path{fill:currentcolor;}}@media screen and (forced-colors:active){.b_wpTabsWrapper .ent-dtab-content a.ent-dtab-btn.active{background:Highlight;color:HighlightText;forced-color-adjust:none;}}.entityPreview{position:fixed;width:300px;border:1px solid #ddd;background:#fff;border-radius:8px;box-shadow:0 4px 12px 0 rgba(0,0,0,.1);z-index:6}a.entityPreview{text-decoration:none}a.entityPreview:active{background-color:#ececec}.epv_caption{width:196px;position:absolute}.epv_data .cico{margin-right:12px}.epv_data .cico,.epv_caption{display:inline-block}.epv_data img{border-radius:6px}a.entityPreview .epv_data{padding:16px;min-height:30px}.epv_content{height:100%}.epv_head{margin-bottom:12px}.epv_data .epv_desc{color:#444;line-height:18px}.epv_title{font-size:16px;line-height:20px;padding-bottom:4px;color:#111}.epv_Summary,.epv_subTitle{color:#666}#epvRup,#epvLup{top:-10px}#epvRdown,#epvLdown{bottom:-20px}#epvLup,#epvLdown{left:20px}#epvRup,#epvRdown{right:20px}#epvRup,#epvLup,#epvRdown,#epvLdown{position:absolute;width:20px;height:20px}#epvRup polyline,#epvRdown polyline,#epvLup polyline,#epvLdown polyline{fill:#fff;stroke:#ddd;stroke-width:1px}.epv_content .b_icRatings.b_icRat_2{justify-content:space-around}.epv_content .b_icRatings{margin-bottom:8px;color:#111;text-align:center;padding:0;display:-webkit-box;display:-moz-box;display:-ms-flexbox;display:-webkit-flex;display:flex;justify-content:space-between}.epv_content .b_icRatings .b_imagePair>div:last-child{display:inline-block;font-weight:normal;vertical-align:top}.epv_content .b_icRatings .cico{margin-right:8px;padding-right:0;border-radius:0}.epv_content td:nth-child(2){color:#111;font-weight:bold}.epv_content td{padding:0;color:#666}.epv_content tr:not(:last-child) td{padding-bottom:4px}.epv_comp{margin-bottom:12px}.epv_relation{color:#444;padding-bottom:10px;border-bottom:1px solid #ececec;margin-bottom:10px;line-height:18px}.res25654241 {line-height:0;}@media only screen

and (max-width:1274px){.res25654241,.res25654241 img{height:176px;width:296px;}}@media only screen and (min-width:1275px) and (max-width:1362px){.res25654241,.res25654241 img{height:228px;width:384px;}}@media only screen and (min-width:1363px){.res25654241,.res25654241 img{height:280px;width:472px;}}.sp-tpwebicons{width:28px;height:28px}.sp-symbolicon>svg,.sp-ofsite{display:block}.sp-tpwebicons.SITE{padding-right:8px}.sp-tpwebicons.SITE{width:16px;height:16px;padding:6px}.sp-tpwebicons.sp-symbolicon{width:16px;height:16px;padding:6px}@media only screen and (max-width:.9px){.sp-tpwebicons{width:24px;height:24px}.sp-tpwebicons.sp-symbolicon{width:14px;height:14px;padding:5px}}@media only screen and (max-width:.9px){.sp-tpwebicons{width:20px;height:20px}.sp-tpwebicons.sp-symbolicon{width:12px;height:12px;padding:4px}}.lite-entcard-ans-m .sp-tpwebicons{width:28px;height:28px}.lite-entcard-ans-m .sp-tpwebicons.sp-symbolicon{width:16px;height:16px;padding:6px}.b_descriptionSeeMore{padding-top:5px}.b_inlineblock{display:inline-block}.b_descriptionSeeMore.b_inlineblock{padding-top:0}.b_bgdesc{font:16px/1.2em 'Segoe UI',Arial,Helvetica,Sans-Serif;line-height:1.33em}.b_trans_padding{padding-bottom:5px}.btm_sml a{line-height:16px;border-bottom-left-radius:6px;border-bottom-right-radius:6px}.btm_sml{padding-bottom:10px}.btm_sml .expansionDefaultText,.btm_sml .expansionCustomizedText{display:inline-block;*display:inline;zoom:1}.expandChevronContainer{display:inline-block;*display:inline}.expandChevronContainer.hasExpandText{line-height:16px;vertical-align:middle}.btm_sml .expandChevronContainer>*{margin-left:8px;display:inline-block;*display:inline}.btm_sml .sw_plus,.btm_sml .sw_minus,.sml .sw_plus,.sml .sw_minus{display:inline-block;text-decoration:none;margin:0 5px 1px 0}.b_tblWithExpansion .btm_sml,.b_tblWithExpansion .sml{padding-bottom:10px}.b_relative .btm_sml,.b_relative .sml{letter-spacing:2px} line{display:inline-block;margin-left:4px;*display:inline;zoom:1}.sml line .sw_plus,.sml line .sw_minus{margin:0}.hidden_nostyle{padding:0!important;margin:0!important}.exp_slide{overflow:hidden;opacity:1;transition:height ease-in-out 350ms,opacity ease-in-out 350ms}.exp_slide.b_hide{display:block;opacity:0;height:0!important;padding-top:0!important;padding-bottom:0!important;margin-top:0!important;margin-bottom:0!important;border-top:0!important;border-bottom:0!important}body.exp_scroll{transition:margin-top ease-in-out 350ms}.b_ans .btm_sml{border-top:1px solid #cdcdcd}#b_context .b_ans .btm_sml{border-top:1px solid #ebebeb}.b_ans.b_topborder .btm_sml{border-top:0}#b_results>.b_ans .btm_sml a,#b_results>.b_ans .btm_sml a:visited,#b_context>.b_ans .btm_sml a,#b_context>.b_ans .btm_sml a:visited{color:#444}.b_ans.b_top .btm_sml a,.b_ans.b_top .btm_sml a:hover{background-color:transparent}.b_ans.b_topborder .btm_sml a{background-color:#f9f9f9}.b_ans.b_topborder .btm_sml a:hover{background-color:#eee}.b_dark .b_ans.b_topborder .btm_sml a,.b_dark .b_ans.b_topborder .btm_sml a:hover{background-color:#323130}.b_ans.b_top .btm_sml{padding-bottom:10px}.b_ans.b_top .btm_sml a{margin-bottom:0}.b_ans.b_topborder .btm_sml{padding-bottom:0}.b_ans.b_topborder .sydwrap_wrapper

.btm_sml{padding-bottom:10px}.b_ans.b_topborder .btm_sml a{margin-bottom:-10px}.btm_sml a{display:block}.b_ans .btm_sml a{line-height:40px;height:40px}.b_ans.b_topborder .btm_sml a{line-height:48px;height:48px}.b_ans.b_topborder .btm_sml .newexpcont{height:32px;line-height:32px}.b_sydConvMode .b_ans.b_topborder .btm_sml .newexpcont{height:48px;line-height:32px}#b_results .b_ans:not(.b_top):not(.b_topborder) :not(.b_entityTP) .btm_sml .b_mopexpref,#b_results .b_ans.b_mop .btm_sml .b_mopexpref{height:16px;line-height:16px;color:#001ba0}.b_ans.b_topborder .btm_sml .b_segoeMDL2{font-family:"Segoe MDL2 Assets"}.btm_sml{position:relative}#b_context .b_ans .btm_sml a{line-height:40px;height:40px}.b_top .sa_cpoc .b_expando .btm_sml .expandChevronContainer>*,#b_context .b_ans .btm_sml .expandChevronContainer>*{margin-top:15px;margin-right:0;position:absolute;right:0;top:0}.sa_cpoc .b_expando .btm_sml{border-top:1px solid #bbb}#b_results .b_top .sa_cpoc .b_expando .btm_sml .b_expDesk{text-align:left}#b_results .b_top .sa_cpoc .b_expando .btm_sml a{margin:0}#b_results .b_top .sa_cpoc .b_expando .btm_sml .expansionCustomizedText{color:#444}.b_top .sml answer a,.b_top .btm_sml a{background-color:#f9f9f9;margin:0 -19px -10px -19px;display:block;text-decoration:none;text-align:center}.b_top .sml answer a{line-height:35px;outline:0}.b_top .btm_sml .leftAlign{text-align:left}.b_top .btm_sml a{line-height:40px;height:40px;vertical-align:middle}.b_top .btm_sml{padding-bottom:0}.b_top .btm_sml a:hover,.b_top .sml answer a:hover{background-color:#eee}.b_top .btm_sml a .expansionDefaultText{display:none;text-align:center}.b_top .btm_sml .leftAlignWithPadding,.b_top .btm_sml a .expansionCustomizedText{text-align:left;padding:0 0 0 19px;display:inline-block;*display:inline;zoom:1}.b_sydConvMode .b_top .btm_sml .leftAlignWithPadding,.b_sydConvMode .b_top .btm_sml a .expansionCustomizedText{padding:0}.b_top .btm_sml .expandChevronContainer.hasExpandText{line-height:40px;vertical-align:middle}.b_sydConvMode .b_top .btm_sml .expandChevronContainer.hasExpandText{margin-top:-4px}.b_top .btm_sml .expandChevronContainer.hasExpandText .smallLandscape{line-height:48px}.b_top .btm_sml .expandChevronContainer>*{margin:0 19px 0 12px}.b_top .btm_sml .expandChevronContainer.noExpandText>*{margin:0}#b_topw .btm_sml a,#b_topw .btm_sml a:visited,#b_results>.b_top .btm_sml a,#b_results>.b_top .btm_sml a:visited{color:#444}.e_mhdr .btm_sml a{padding:0;border-top:0;margin-top:10px}#b_results .b_expando .b_entityTP .btm_sml a{height:40px;border-bottom-left-radius:6px;border-bottom-right-radius:6px}#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer{display:inline-block}#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer.hasExpandText{line-height:16px;vertical-align:middle}#b_results .b_expando .b_entityTP .btm_sml a .expandChevron Container>*{display:inline-block;position:absolute;right:0;top:0;margin-top:15px;margin-right:0;margin-left:8px;box-shadow:none}#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer evronUp,#b_results .b_expando .b_entityTP .btm_sml a

.expandChevronContainer evronDown{overflow:hidden;line-height:9px;height:9px;width:16px}#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer evronDown::after,#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer evronUp::after{position:relative}#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer evronDown::after,#b_results .b_expando .b_entityTP .btm_sml a .expandChevronContainer evronUp::after{content:url(/rp/ak5A-kIzM-v9JjRbH7FaoGRYoEw.png)}#b_results .b_top .btm_sml .expandChevronContainer.hasExpandText{margin-top:-4px}#b_results .b_top .btm_sml .b_expDesk{height:48px}#b_results .b_top .btm_sml .b_expDeskNoText{height:32px}#b_results .b_ans.b_topborder .btm_sml .newexpcont{height:auto}#b_results .b_topborder evronContainerDown:hover{box-shadow:0 0 0 0 rgba(0,0,0,.05),0 2px 4px 1px rgba(0,0,0,.18)}#b_results .b_topborder evronContainerDown,#b_results .b_topborder evronContainerDown:active{box-shadow:0 0 0 0 rgba(0,0,0,.05),0 2px 3px 0 rgba(0,0,0,.1)}#b_results .b_topborder evronContainerUp:hover{box-shadow:0 0 0 0 rgba(0,0,0,.05),0 -2px 4px 1px rgba(0,0,0,.18)}#b_results .b_topborder evronContainerUp,#b_results .b_topborder evronContainerUp:active{box-shadow:0 0 0 0 rgba(0,0,0,.05),0 -2px 3px 0 rgba(0,0,0,.1)}#b_results .b_top .btm_sml a .expansionCustomizedText{padding:0}#b_results .b_top .btm_sml a .b_expcol{padding:0;color:transparent}#b_results .b_top .sydwrap_wrapper .btm_sml a .b_expcol{color:#444}#b_results .b_topborder .b_expwide{margin-left:50%}#b_results .b_topborder .b_expChevTOP{margin-left:50%}#b_results .b_top .btm_sml.b_expV3,#b_results .b_ans:not(.b_top):not(.b_topborder) :not(.b_entityTP) .btm_sml.b_expV3{display:flex;align-items:center;justify-content:center}#b_results .b_ans:not(.b_top):not(.b_topborder) :not(.b_entityTP) .btm_sml.b_expV3{padding-bottom:0}#b_results .b_top .btm_sml.b_expV3 a,#b_results .b_ans:not(.b_top):not(.b_topborder) :not(.b_entityTP) .btm_sml.b_expV3 a{box-shadow:0 2px 3px 0 #000;box-shadow:0 2px 3px 0 rgba(0,0,0,.1);border:1px solid #ddd;color:#666;height:40px;line-height:40px;border-radius:20px;padding-left:20px;padding-right:20px;background-color:#fff;margin-bottom:-30px}#b_results .b_top .btm_sml.b_expV3 a svg,#b_results .b_ans:not(.b_top):not(.b_topborder) :not(.b_entityTP) .btm_sml.b_expV3 a svg{padding-left:10px}#b_results .b_top .btm_sml.b_expV3 a:hover,#b_results .b_ans:not(.b_top):not(.b_topborder) :not(.b_entityTP) .btm_sml.b_expV3 a:hover{box-shadow:0 2px 4px 1px #000;box-shadow:0 2px 4px 1px rgba(0,0,0,.14);border:1px solid #ccc;color:#111}#b_results .b_top.b_tophb .btm_sml.b_expV3 a{margin-bottom:-35px}.cipt,.cipg,.cipa,.cipl,.ciptr,.ciplr{display:inline-block}.cipa,.cipl,.ciplr{cursor:pointer}.vab{vertical-align:bottom}.vam{vertical-align:middle}.vat{vertical-align:top}.vabl{vertical-align:baseline}.vatt{vertical-align:text-top;border-radius:0}.vatb{vertical-align:text-bottom} evronDown12, evronUp12{background:url(/rp/QKlTrqL25sGDqfRYQjkMWJWDeG8.png) no-repeat;background-size:494px 58px;width:12px;height:12px} evronDown12{background-

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position:-372px 0} evronUp12{background-position:-372px -14px}@media(prefers-color-scheme:dark){#bpage.b_med evronDown12{background-position:-386px 0}#bpage.b_med evronUp12{background-position:-386px -14px}}#bpage.b_drk evronDown12{background-position:-386px 0}#bpage.b_drk evronUp12{background-position:-386px -14px}.cipt,.cipl{margin-right:10px}.cipt .cico,.cipl .cico,.ciptr .cico,.ciplr .cico{border-radius:0}.b_action>.cipt,.b_action>.cipl{float:left}.ciptr,.ciplr{margin-left:10px}.sw_play{height:16px;width:16px}:not(.dc_aud_wrp)>.sw_play{background-image:url(data:image/png;base64,
```

iVBORw0K GgoAAAANSUhEUgAAACAAAAAgCAMAAABEpIrGAAAAaVBMVEUAAAAD58AFaQA E6UAFKUAE6QAFKUAEqYAD58AE6QAE6UAFKQAEqUAD6QAE6MAE6QAD6cAE6QAF aQAFKQAEqQAFKUAEqQAFKUAEqIAFKMAEqMAE6MAD58AE6UAE6UAE6IAFKYAFK YAE6MaDJ//AAAAI3RSTlMAEGCfz+//XyCQj79vMEDfIKAwoK/vYL9gcHDPMM9QkK+fnz HYYSkAAAEVSURBVHgBdZMFkuwwEEPVk/ULx8nSMN7/jh/X1dUDKgjpyaTIZavqLUF6q2 rTo5o24aoaRVkH9MNokk1DD3QW8AzV7M/zAtlDNGbyqKA5k9+d58OkKPukZFjmU0/0Qf6P deXGVcDu3wBQphcXpxH+vlioyhtyHRwLrWQeICCEzHyZvunlBmLImo0WtsEQQnZU2jMFQ wg5cFTCgiGEGF8CBUMMgReGdCpvng/xaT7Ennc3RFyaOMZlOu7LXLF2Q8GL1tSyROMGx 3/O0aSzH1bEyznOUKYZcC/C+XVh2nJT6Yk+yd7giz3wV/LstS8NfvgTPCN0qVkofAk8A+thMs nehzXQmqLmBVdqHXfZ97JPkPa3ldP6DeOGDlAP873EAAAAElFTkSuQmCC

```
);background-size:16px 16px}.expansionAccessibilityText { display: none; }@media(forced-colors:active){div.sml>a>img.ciplr{filter:brightness(50%) contrast(20%) grayscale(100%) saturate(0%) hue-rotate(0deg)}}.lc_expfact_plus{display:none;padding-left:4px;min-width:12px;min-height:12px;max-width:12px;max-height:12px;cursor:pointer}.lc_expfact_plus>svg{display:block}.lc_expfact{display:flex;align-items:center}.lc_expfact_default{white-space:nowrap;overflow:hidden;text-overflow:ellipsis}.lc_expfact_title{margin-right:12px;font-weight:700;font-size:13px;line-height:15px;display:inline-block;white-space:nowrap}.lc_stvp_container{position:fixed;top:5%;left:5%;width:90%;height:90%;margin:0;padding:0;z-index:}.lc_stvp_iframe{border-radius:15px;height:100%;width:100%;border:0}.lc_stvp_overlay{position:fixed;top:0;left:0;width:100%;height:100%;background:rgba(0,0,0,.6);z-index:}.res17051623 {line-height:0;}@media only screen and (max-width:1274px){.res17051623,.res17051623 img{height:80px;width:159px;}}@media only screen and (min-width:1275px) and (max-width:1362px){.res17051623,.res17051623 img{height:104px;width:207px;}}@media only screen and (min-width:1363px){.res17051623,.res17051623 img{height:127px;width:254px;}}.res44692120 {line-height:0;}@media only screen and (max-width:1274px){.res44692120,.res44692120 img{height:68px;width:76px;}}@media only screen and (min-width:1275px) and (max-width:1362px){.res44692120,.res44692120 img{height:88px;width:99px;}}@media only screen and (min-width:1363px){.res44692120,.res44692120 img{height:108px;width:122px;}}.fdbk_thmb_root{display:inline-block;position:relative;float:right}.fdbk_hide{display:none!important}.fdbtext{display:inline-block;margin-right:3px;font-size:11px;line-height:15px;vertical-
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align:middle;color:#767676}#bpage.b_drk .fdbtext{color:#d2d0ce}.fdbk_thmb_root_mob .fdbtext{font-size:14px;line-height:20px;color:#666}.fdbk_thmb_root>a{display:inline-block;width:15px;height:15px;margin-left:6px;padding:0;background-size:15px;vertical-align:middle}.fdbk_thmb_root>a.thumb_n{transform:scaleY(-1)}.fdbk_thmb_root_mob.fdbk_thmb_root>a{width:20px;height:20px;background-size:20px}.fdbtext>span,.fdbtext>a{margin-left:4px}.fdbk_thmb_root>a.thumb_y.active{margin-left:0}.fdbk_emotion{display:none;position:absolute;right:0;width:50px;height:50px;opacity:0;animation:emotion 1s ease-in-out .1s 1 normal forwards}.fdbk_emotion .sat_img,.fdbk_emotion .dsat_img{display:none;width:50px;height:50px;opacity:.9}.fdbk_emotion.sat .sat_img,.fdbk_emotion.dsat .dsat_img{display:inline-block}.fdbk_emotion.sat{display:block;margin:-50px 3px 0 0}.fdbk_thmb_root_mob .fdbk_emotion.sat{margin:-50px 11px 0 0}.fdbk_emotion.dsat{display:block;margin:-50px -18px 0 0}.fdbk_thmb_root_mob .fdbk_emotion.dsat{margin:-50px -15px 0 0}@keyframes emotion{50%{opacity:1}100%{opacity:0;transform:translateY(-10px)}}.fdbk_thmb_root>a.thumb{background-image:url(data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAADIAAAAyCAYAAAAeP4ixAAAFMElEQVR4Ac1aa3LTSBBBuO4/K40d8g1W4QAIH2Cg5wC7ZAyxeDkBMVV6/sP0vr2JdHAAMB6ASDgDKBYBcAAsugP7k/TBfJzN229FIsl7mq1JpRmpJ8033tLpbKlBOqFardH5+bl9fX1cLhcI8H2u32sjIyP9H2u32sjIyP9H2u32sjIyMG6ASDgDKBYBcAAsugP7k/TBfJzN229FIsl7mq1JpRmpJ8033tLpbKlBOqFardH5+bl9fX1cLhcI8

2fqEC3urpqw89zVeVPkdP73lObIeQdJGiOPq7/GoIGON9gEjKdjfzDTWp/B/HvF/B0NjauOfGgrJD7e2qzDOeb0MTzqLlQZr85CTNkYjb1zrQRrDmuHw+aB+X2vxa8kDbDBeU0NDFeS/yJ7gjE9+Mmcr8Ajwab99efeF4AAAAASUVORK5CYII=)}.fdbk_thmb_root>a:hover,.fdbk_thmb_root>a:active,.fdbk_thmb_root>a.active{background-image:url(/rp/oIh0lv8-r1C0l7JNB8ZsnpYC90s.png)}.lc_hoverhook{position:fixed;border:1px solid #ddd;border-radius:8px;box-shadow:0 4px 12px 0 rgba(0,0,0,.1);z-index:6;background-color:#fff}.lc_hoverhook_vis{visibility:visible}.lc_hoverhook_hid{visibility:hidden}.lc_hoverhook_trc,.lc_hoverhook_tlc{top:-10px}.lc_hoverhook_brc,.lc_hoverhook_blc{bottom:-20px}.lc_hoverhook_tlc,.lc_hoverhook_blc{left:20px}.lc_hoverhook_trc,.lc_hoverhook_brc{right:20px}.lc_hoverhook_trc,.lc_hoverhook_tlc,.lc_hoverhook_brc,.lc_hoverhook_blc{position:absolute;width:20px;height:20px}.lc_hoverhook_trc polyline,.lc_hoverhook_brc polyline,.lc_hoverhook_tlc polyline,.lc_hoverhook_blcpolyline{fill:#fff;stroke:#ddd;stroke-width:1px}.lite-entcard-main{box-shadow:0 0 0 1px rgba(0,0,0,.05)!important}f05f0bbf-9d90-a8d2-e2dd-de9abb7b6337GrapheneCarbon allotropeAll imagesGraphene is a variety of the element carbon which occurs naturally in small amounts. In graphene, the carbon forms a sheet of interlocked atoms as hexagons one carbon atom thick. The result resembleNew content will be added above the current area of focus upon selectionGraphene is a variety of the element carbon which occurs naturally in small amounts. In graphene, the carbon forms a sheet of interlocked atoms as hexagons one carbon atom thick. The result resembles the face of a honeycomb. When many hundreds of graphene layers build up, they are called graphite.Material typeAllotrope of carbonChemical formulaCYoung's modulus (E)?1 TPaTensile strength (?)130 GPaThermal conductivity (k) W?m?¹?K?¹ The Miracle MaterialWhat if there was a material that was flexible, transparent, strong, and could conduct electricity and heat better than any other known substance?However despite being so thin, you can still see graphene with the naked eye! Graphene is the world's most conductive material.Graphene Solar Panels Amounts shipped is dependent on shipping availability. (Roughly 3-5 MW per shipment, can be more or less) For more information or to place an order, please fill out the contact form below. Top Graphene Companies : Best Graphene ManufacturersA concise, regularly updated guide to notable graphene companies--covering producers, integrators, and application specialists across batteries, coatings, composites, and Graphene Solar Panel Our patented graphene solar panels generate 20% to 40% more power compared to standard panels and come with an industry-leading 30-year warranty. In addition to photovoltaic Andwelé Energy & PowerWe specialize in designing and deploying advanced clean energy systems including graphene solar technology, battery storage, waste-to-energy solutions, microgrids, and wireless Home | American GrapheneAt American Graphene, we are pioneering the future of nanomaterials with our proprietary technology, meticulously crafting pristine semiconductor-grade single-layer graphene sheets Home We've assembled a unique team that brings together expertise in business development, high-efficiency solar cell design and low-cost high-conductivity graphene production. Global Renewables, Inc.We

offer a reliable supply of high-quality graphene solar panels to meet the growing demand for sustainable energy solutions. Solar installers can trust our graphene solar panels to provide Exploring the Use of Graphene in Solar Panel TechnologyWhile current graphene production is expensive, researchers are developing more cost-effective manufacturing techniques. The potential for lighter, more efficient solar panels Graphene Solar: Introduction and Market NewsZNShine Solar, a photovoltaic module manufacturer, presented the main highlights of its portfolio at the Intersolar South America event: graphene-coated modules, BIPV 11 Graphene Manufacturers in This section provides an overview for graphene as well as their applications and principles. Also, please take a look at the list of 11 graphene manufacturers and their company rankings.Graphene Solar Panels Amounts shipped is dependent on shipping availability. (Roughly 3-5 MW per shipment, can be more or less) For more information or to place an order, please fill out the contact form below. 11 Graphene Manufacturers in This section provides an overview for graphene as well as their applications and principles. Also, please take a look at the list of 11 graphene manufacturers and their company rankings.

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